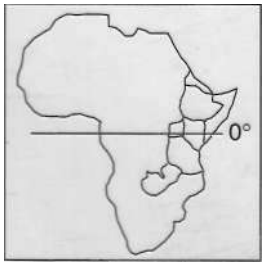
Technical Handbook No 12

# USEFUL TREES AND SHRUBS IN ERITREA

## Identification, Propagation and Management for Agricultural and Pastoral Communities

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Regional Soil Conservation Unit, Nairobi, 1996

# Useful Trees and Shrubs in Eritrea

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REGIONAL SOIL CONSERVATION UNIT, RSCU/SIDA
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# Foreword

A century ago, Eritrea was endowed with an abundant and diversified flora and fauna, but due to mismanagement during the successive periods of colonial rule, the long-drawn-out liberation war and recurrent droughts these natural resources have dwindled dramatically.

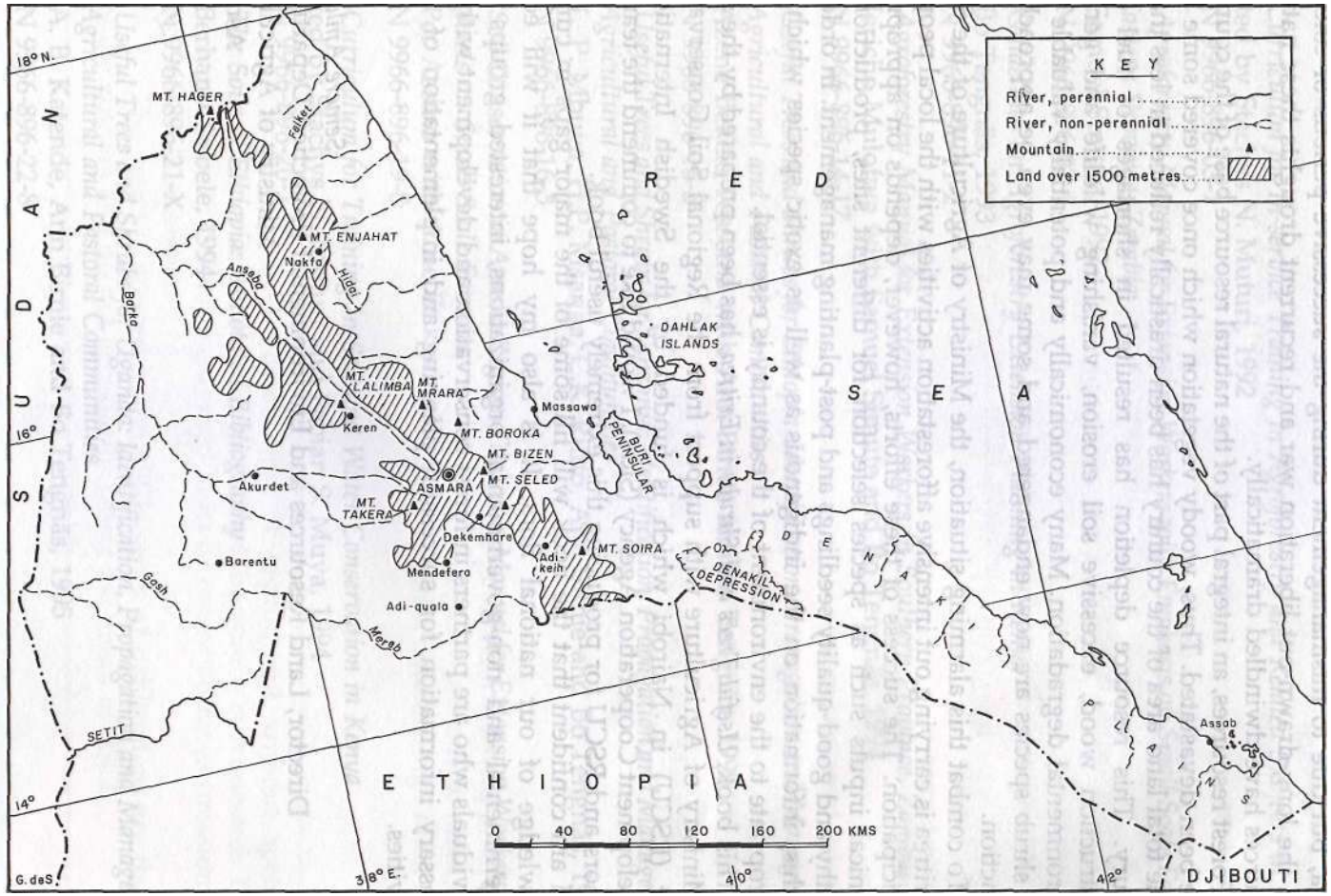
Forest resources, an integral part of the natural resource base of the country, have been devastated. Thus, woody vegetation which once covered some 30% of the total land area of the country has been drastically reduced in less than a century. This resource depletion has resulted in shortages of fuel and construction wood, excessive soil erosion, vanishing wildlife and general environmental degradation. Many economically and potentially valuable tree and shrub species are now endangered and some may even be approaching extinction.

To combat this alarming situation, the Ministry of Agriculture of the State of Eritrea is carrying out intensive afforestation activities with the local people's participation. The success of these efforts, however, depends on appropriate technical inputs such as species selection for different sites, production of healthy and good-quality seedlings and post-planting management. In order to do this, information on the indigenous as well as exotic species which are appropriate to the environment of the country is essential.

This book, *Useful Trees and Shrubs in Eritrea,* has been prepared by the staff of Ministry of Agriculture with support from the Regional Soil Conservation Unit (RSCU) in Nairobi which is funded by the Swedish International Development Cooperation Agency (Sida). I would like to commend the team of authors and RSCU for producing this extremely useful book.

I am confident that the book will fill some of the major gaps in current knowledge of our national flora. It is also my hope that it will equip Governmental and non-governmental organizations, interested groups and individuals who are partners in forest conservation and development with the necessary information for successful planning and implementation of field activities.

*Semere Amlasom*
Director, Land Resources and Environmental Protection Department
Ministry of Agriculture
Asmara




Map 1. The main physical features of Eritrea

# Publisher's preface

In 1991, the Regional Soil Conservation Unit (RSCU) initiated a series of technical handbooks on useful trees and shrubs in eastern Africa. The aim of the series is to provide information for subject-matter specialists, extension workers and farmers on the trees and shrubs that have production and conservation potential for small-scale farmers in the region.

The volume on Ethiopian trees and shrubs was published in 1993, the Tanzania volume in 1994, and the Uganda volume in 1995.

The work on this book for Eritrea started in 1995 at the request of the Government of Eritrea. Initially, E. Bein, B. Habte, A. Jaber and B. Tengnas prepared a first draft based on findings in the field combined with information available from the earlier volumes in this series and other sources.

Ann Birnie, botanical consultant and artist based in Nairobi, edited and simplified the descriptions of the tree species. She also prepared many of the illustrations and designed their layout.

RSCU publishes this handbook with the hope that it will be widely used by extension, education and research institutions in order to foster interest in the growing and management of a wider range of tree and shrub species as part of the effort to develop sustainable land-use systems in Eritrea.

*Erik Skoglund*
Head, Regional Soil Conservation Unit
Nairobi, October 1996

# Acknowledgements

The initial material for this book was collected by E. Bein, B. Habte and A. Jaber during a period of extensive travel in Eritrea. Discussions were held with people knowledgeable on trees and shrubs, among whom were many farmers and pastoralists. In fact, much of the information in this book derives from rural people in Eritrea who have enthusiastically shared their knowledge with us.

Special thanks go to the Director of Land Resources and Environmental Protection Department of the Ministry of Agriculture, Mr Semere Amlasom, for allowing the team to devote time to the data collection and for his wholehearted support throughout the process.

Mrs Sue Edwards of the National Herbarium, Addis Ababa, was particularly helpful in answering taxonomic queries. She is co-author of the new flora of Ethiopia and Eritrea currently in preparation.

The book is partly based on *A Selection of Useful Trees and Shrubs for Kenya: Notes on Their Identification, Propagation and Management for Use by Farming and Pastoral Communities* and on the earlier volumes in this series for Ethiopia, Tanzania and Uganda. Yet another source of information has been the *Indigenous Trees and Shrubs of Eritrea* developed by the Ministry of Agriculture in 1994. The work on the latter booklet was, in a sense, preparatory to activity for the major work on this publication that followed during 1995 and the early part of 1996.

Several people contributed to the production of the above-mentioned books and we acknowledge their contributions to this volume with thanks.

The Nitrogen Fixing Tree Association assisted us with confirmation of species that are known to be nitrogen fixing. Staff of the East African Herbarium at the National Museums of Kenya in Nairobi were most helpful in making available specimens from their collection to facilitate the development of the illustrations. They were also extremely helpful in providing taxonomic information.

Many of the plant illustrations are original drawings by Ann Birnie, primarily from *Trees of Kenya* by T. Noad and A. Birnie. Other drawings were made specially for this book, both from fresh material and from dried specimens in the East African Herbarium, Nairobi, and by Ato Asfaw Abdissa. A few drawings have been taken from *Plants in Zanzibar and Pemba* by R.O. Williams and *Kenya Trees and Shrubs* by I.R. Dale and P.J. Greenway. We also acknowledge with thanks the Royal Botanical Gardens, Kew, for permission to use some illustrations that appear in the published family volumes of the *Flora of Tropical East Africa.* Other illustrations have been taken from A.E.G. Storrs, *Know Your Trees.*

The copyright to the above illustrations remains with the original publishers. RSCU would also like to acknowledge the other sources of material listed in the bibliography.

Thanks are also due to Mrs Caroline Agola who did the editing, design and typesetting.

Finally, a word of thanks to the Swedish taxpayer who, through Sida, provided the funds necessary for the production of this handbook.

# Introduction

Eritrea is located in the north-eastern part of Africa, covering a land area of 124,432 $km^2$. Altitudes range from 60 metres below sea level to 3,180 m above sea level.

Some areas at higher altitudes are shrouded in mist for extended periods and this enables moisture-demanding species to grow there. Temperatures are low and the vegetation is lush, whereas lowland areas are generally hot and arid. Along the coast, the climate is hot and the vegetation is influenced by the salinity of the soils and water. The depression in the Bada area is well below sea level, very hot and the soils are saline. This wide range of ecological conditions provides the environment for many species of plants and animals, and Eritrea has a wide diversity of trees.

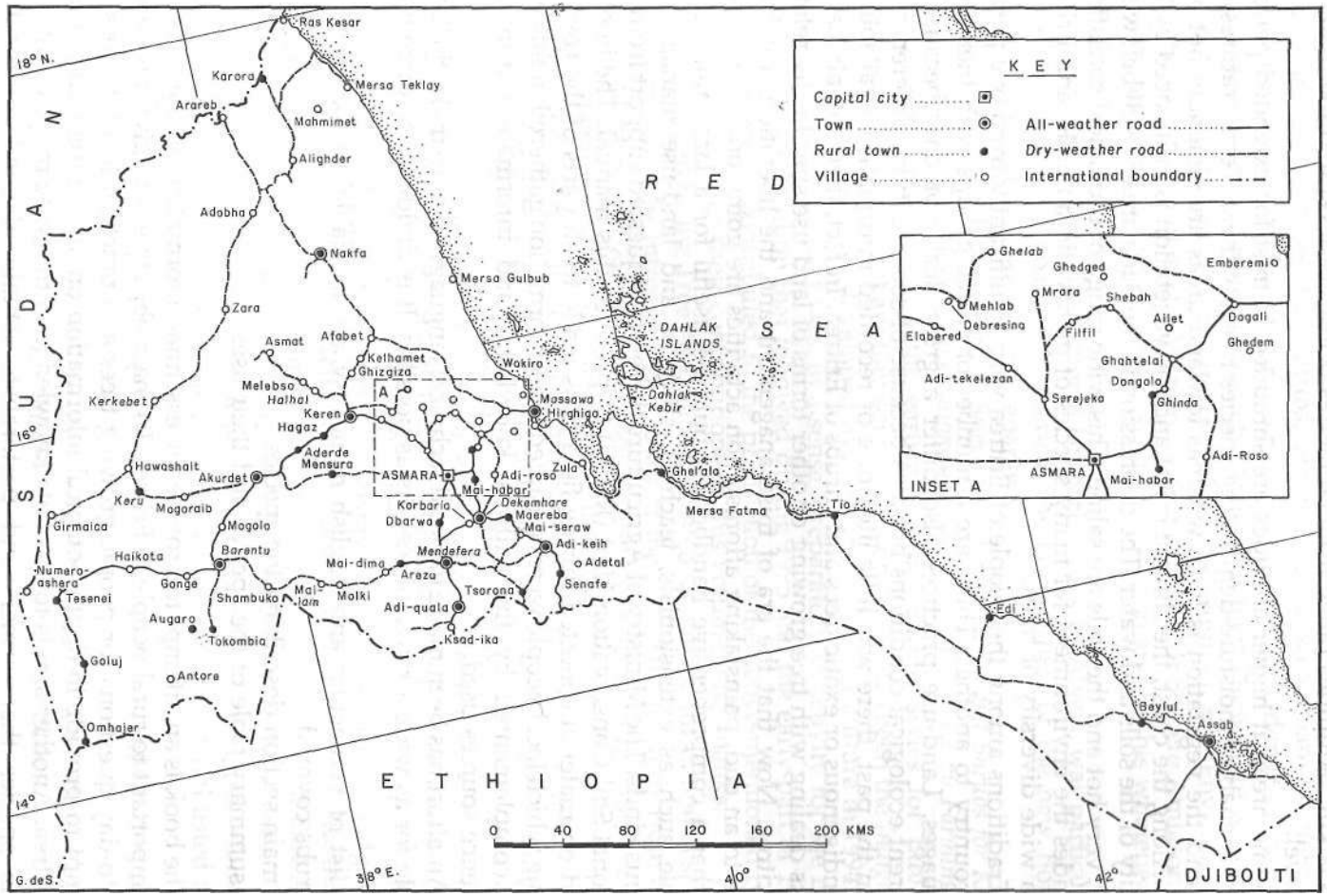
Traditions among the people of Eritrea vary significantly from one part of the country to another. There are a number of ethnic groups with their own languages. Land-use practices also differ a great deal, not only because of different ecological conditions but also because of socio-cultural differences.

In the past, there was little literature or recorded information available on the indigenous or exotic trees and shrubs of Eritrea. In fact, there are almost no books dealing with tree growing or other forms of land use specifically related to Eritrea. Now that the era of mismanagement and the liberation war have come to an end, painstaking afforestation activities are going on. Thus it was felt that a comprehensive handbook would be useful for a large number of people such as extensionists, teachers, students and land-use managers of various kinds. The Ministry of Agriculture therefore requested support from the Regional Soil Conservation Unit (RSCU) to produce this manual. The book is based on material collected during field trips made to all parts of the country during which local people were consulted. The information gathered in this way was complemented by the authors' knowledge and information from the reference sources used.

An effort has been made to avoid technical language so as to make the book usable for as wide a range of readers as possible. It is divided into three main parts:

- A list of vernacular and English names (where available) of the trees and shrubs covered
- A main section describing the species
- A summary table of the species and their uses.

The book is an attempt to provide the essential information on the trees that are important to rural people in Eritrea. Its main objective is to give answers to day-to-day questions for people growing trees at a practical level. It does not attempt to provide in-depth botanical information on all the trees and shrubs of Eritrea. Another aim is to promote knowledge of the wide range of tree and shrub species that farmers and pastoralists actually depend on for their livelihood. All too often a few exotic species have been vigorously promoted in




Map 2. The main towns and villages of Eritrea

extension work without any attention being given to the rich indigenous flora and local knowledge of it.

Any reader who feels he can contribute to an improved second edition of this book is urged to do so by using the forms at the back.

## Selection of the species to be included

It was difficult to decide which of all the tree and shrub species found in Eritrea should be included and which omitted. During the extensive field visits and consultations with local people certain species emerged as being important. Both indigenous and exotic species were considered. It was decided to include *Agave sisalana, Aloe abyssinica* and bamboos because, although not strictly trees or shrubs, they are woody perennials that have important uses in many areas. Banana and pawpaw, which are tree-like herbs, have also been included, as were two exotic species, *Opuntia ficus-indica* and *Lantana camara,* because they have been found to be useful. We should emphasize, however, that the rapid and uncontrolled spread of the latter two species is having a detrimental impact on the local ecology.

Altogether the book covers close to 200 species of trees and shrubs. For each species, vernacular names, ecology, reported uses, botanical description, seed information and relevant management practices have been indicated.

## Vernacular names

Very often development workers fail to communicate effectively with local people on issues related to trees. There is often a language barrier if the two groups cannot use a common set of names for the trees and shrubs that they deal with. In Eritrea, where there is no one common language, there are obvious limitations to communication.

The average farmer uses his own vernacular names for the trees and shrubs that he is familiar with and local languages will continue to be the most commonly used for a long time. Old people often have much more knowledge about the local trees and shrubs than the younger generation. It is therefore important that researchers, development workers and extensionists use the local vernacular names that will be familiar to the older people in the community. When this handbook was developed, it was decided to include as many vernacular names as possible. But there are parts of Eritrea that have been poorly covered and where further research needs to be done.

As far as possible, vernacular names are given for nine languages, namely Afar (Af), Arabic (Ar), Bilen (Bl), Hidareb (Hd), Kunama (Km), Nara (Nr), Saho (Sh), Tigre (Tr) and Tigrigna (Tg). It is hoped that this will help development workers communicate with local people about the relevant trees and shrubs. Recognition of the existence of a communication gap between extensionists and farmers, the need to regard local farmers' experience as a focal point in any efforts to improve land use, and the importance of sustainable utilization of tree biodiversity were underlying concepts of this book.

## Ecology

Under this heading a brief description of the origin and present distribution of each species is given, followed by an indication of where it grows in Eritrea, together with the altitudinal range, preferred climatic and soil conditions, etc.

Uses

Trees and shrubs provide a wide range of benefits to man in terms of products such as timber or medicine and services such as shade or soil improvement. Such information has been summarized for each species. It must be stressed, however, that these are *reported* uses, i.e. how the local people say they use these plants. It has not been possible to verify the accuracy of all such reported uses. In addition, the uses of a particular species may vary from one area of the country to another, or even from one community to another, and therefore it is always a good idea to verify these uses with the local people.

It must be noted also that a species cannot be grown for all of its potential ses simultaneously. Management of a particular species often aims at optimizing or maximizing a specific product or service.

## Description

For each species there is a general description followed by a detailed description of bark, leaves, flowers and fruit. Technical botanical terms have been kept to a minimum. The features in bold type indicate the special points to look for when trying to identify a species. It may not always be possible to identify a plant from the descriptive text alone. But we hope that when the drawings and vernacular names are also consulted, the descriptions will prove a practical guide to species identification in the field.

## Propagation

Wherever information on suitable methods of propagation is available, it is given under this heading. "Seedlings" indicates that seedlings are raised in a nursery, either on farm or in a central or group nursery. "Wildings" indicates that farmers propagate a certain species by collecting wildings and transplanting them to the desired farm site. Other species may be propagated by "direct sowing" of seeds, and "vegetative propagation" by cuttings is recommended for others. Coppicing ability is indicated under "management".

## Seed information

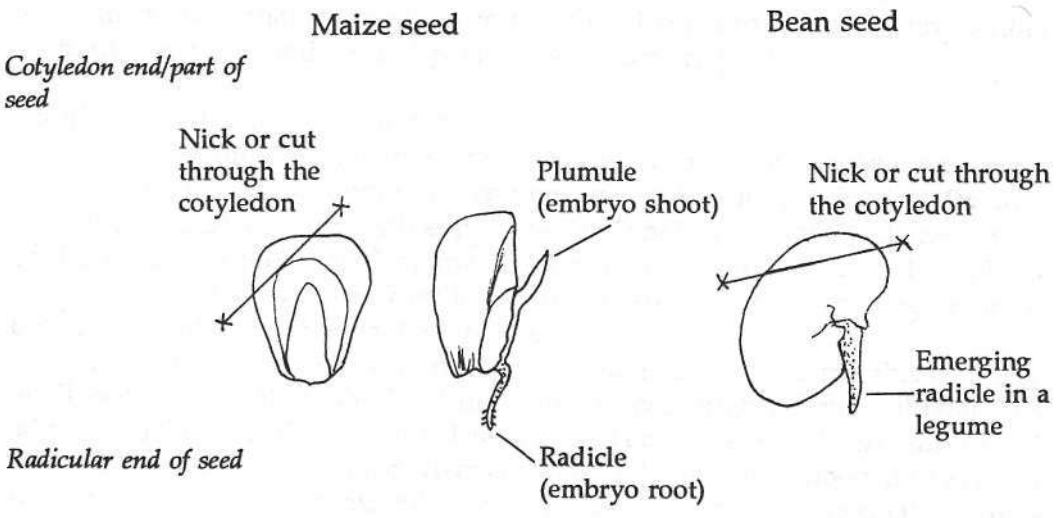
When available, information on number of seeds per kilogram, whether seeds can be stored or not, and suitable pre-sowing treatment is given. Normally, storage of seeds is to be avoided. The storage periods indicated are deliberately imprecise because there is rarely a fixed period during which seeds can be stored without harm and after which they all lose viability. Loss of viability is a gradual process, and its speed depends on many factors, mainly the storage conditions.

If seeds have to be stored for some time it is always best to keep them in a cool, dry and insect-free place.

Seed pre-treatment is done to speed up germination of viable but dormant seeds. The methods mentioned are the simple ones that can be applied under field conditions without the use of sophisticated equipment or chemicals.

Seed treatment is not needed for all species. For many, however, treatment may enhance the speed of germination. The most common methods are (a) soaking in hot or cold water, (b) nicking, and (c) de-winging. In addition, flotation can be mentioned as a simple way of separating bad (empty and thus light and floating) from good (heavy and sinking) seed.

- Soaking in water is recommended for many species and, where these are known, details of temperature and time are indicated.
- Nicking can be done by removing small pieces of the seed coat at the distal (cotyledon) end of each seed using a sharp tool such as a knife or nail clipper. Removal of the hard coat next to the storage tissue of the seed speeds up the absorption of water and hence the growth of the embryo.
- Nicking is time consuming if it has to be done to a large number of seeds, and soaking is often a more convenient alternative. Furthermore, nicking must be done with care in order to avoid damaging the vital part of the seed, i.e. the embryo itself.




*The cotyledon and radicular ends of a seed and how to nick the seed*

Winged seeds should normally be de-winged before sowing (e.g. Combretum, Terminalia).

In some species, germination is enhanced if the hard seed coat is cracked. This is a delicate operation as it is easy to damage the embryo within the seed.

As a general rule, fruits with a fleshy pulp surrounding the seeds will germinate better if the pulp is removed and the seed cleaned before sowing. Seeds of this kind often cannot be stored and should be sown soon after collection and cleaning.

**Management**

Different management techniques allow tree growers to maximize production from trees and shrubs. Management may also be applied in order to reduce negative side effects from the presence of trees or shrubs, e.g. shading effects on adjacent crops. The most common management practices are coppicing, lopping, and pollarding.

**Remarks**

Any other useful or interesting information is given under "remarks". Information on medicinal uses of the plants is given here. It is wise to check dosages, methods of administration, etc., with locally knowledgeable people before putting these reported uses into practice.

# Climate, soils and land use

Six main zones of Eritrea have been defined based on agro-climatic and soil parameters:

- The coastal plains
- The eastern escarpment, including the "green belt" zone
- The highlands
- The western escarpment
- The south-western lowlands
- The north-western lowlands.

(This section is adapted from Agricultural Sector Review and Project Identification, FAO, 1994, Annex 1.)

## The coastal plains

*Description*

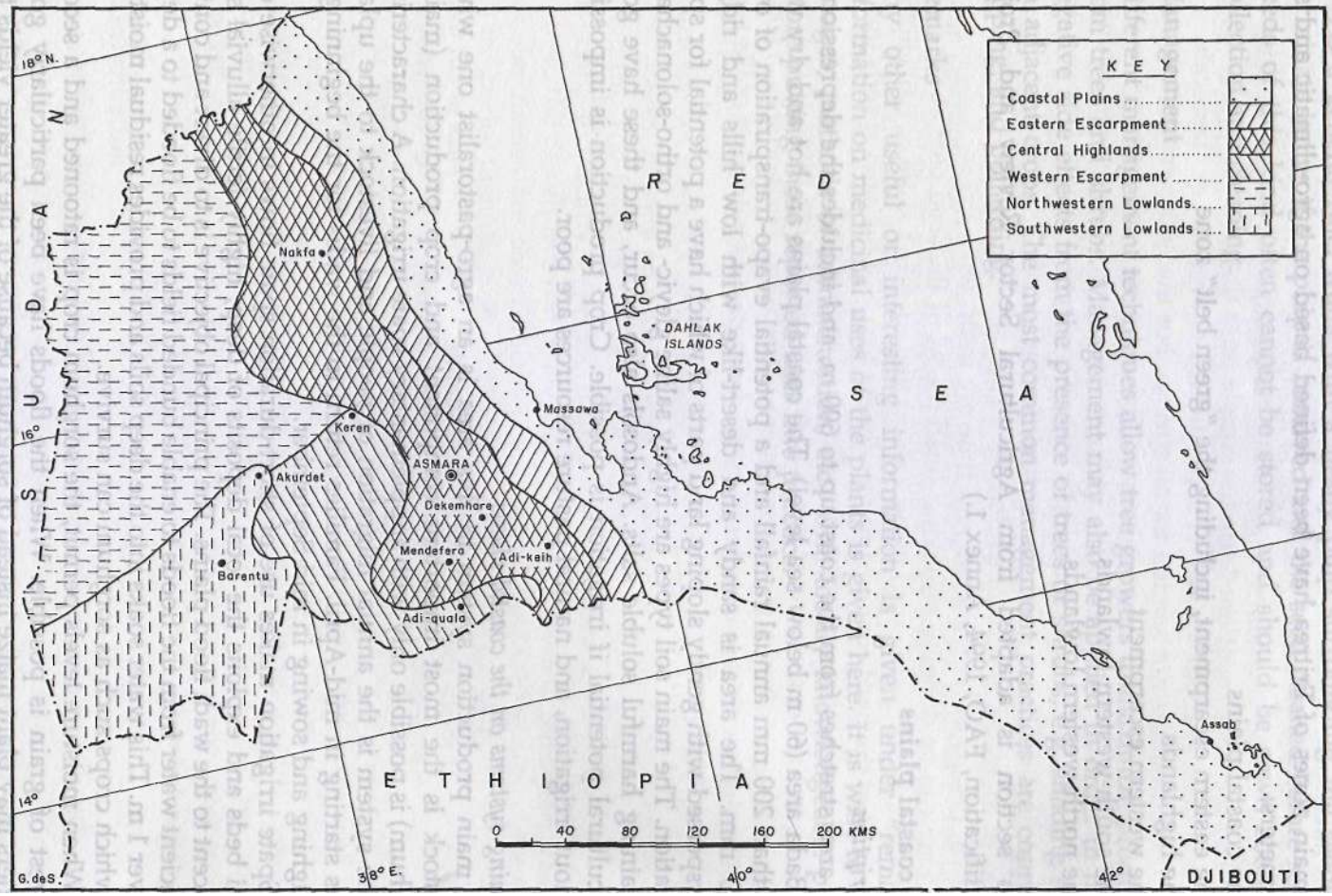
This area stretches from the coast up to 600 m, and includes the depression in the Bada area (60 m below sea level). The coastal plains are hot and dry with less than 200 mm annual rainfall and a potential evapo-transpiration of over 2,000 mm. The area is sandy and desert-like with low hills and ridges interspersed with gently sloping land parts of which have a potential for spate irrigation. The main soil types are highly saline gleyic- and ortho-solonachaks, containing harmful soluble salts. Andosols also occur, and these have good agricultural potential if irrigation is possible. Crop production is impossible without irrigation, and natural pasture resources are poor.

*Farming systems on the coastal plains*

The main production system in this area is an agro-pastoralist one where livestock is the most important component and crop production (mainly sorghum) is possible only with supplementary spate irrigation. A characteristic of the system is the annual migration of people and livestock to the upland areas starting in mid-April. Families return to the wadis for the beginning of ploughing and sowing in mid-September.

Spate irrigation makes use of short-duration spate flows in otherwise dry wadi beds and exploits the local deposits of deep, highly fertile alluvial silts adjacent to the wadi flood plains. The principal objective is to divert and control sufficient water from the floods to enable bunded fields to be flooded to a depth of over 1 m. This water soaks into the deep soils and provides residual moisture on which crops such as sorghum can survive.

When moisture levels permit, the sorghum crop is ratooned and a second harvest of grain is possible. When the floods have been particularly good, farmers may plant maize instead of sorghum because of the greater yields that can be achieved. Minor crops include maize, pearl and finger millets, sesame, groundnut, beans, cotton and vegetables.




Map 3. The main agro-climatic zones of Eritrea

## The eastern escarpment including the "green belt" zone

*Description*

The eastern escarpment stretches from north-east to south-west between the coastal plains and the highlands with an altitude range from about 600 m a s 1 to the highest peaks of Eritrea at more than 2,000 m a s 1. This zone is a unique area where the rainfall exceeds 1,000 mm. It encompasses numerous micro-ecological zones determined by the interrelationship of altitude, rainfall, exposure and soils. Micro-climates in the belt range from sub-humid temperate to humid tropical. The relief is steep and requires terracing for successful farming. The "green belt" differs from all other zones as it is able to support permanent crops such as coffee without irrigation because of the bimodal rainfall pattern. Other areas in the eastern escarpment are drier than the "green belt", but still not as dry as the coastal plains.

*Farming systems in the eastern escarpment*

The "green belt", while of considerable interest, has limited economic importance. This is because of its small area and the steep slopes which demand expensive terracing for crop production to be feasible. Currently, this area contains a substantial portion of the 53,000 ha of coniferous forest that once covered much of the Eritrean highlands. Thus, the area is also of interest from a conservation point of view.

The main production system is a mixed one including permanent tree crops such as coffee and annual crops such as wheat, barley, maize and sorghum as well as different pulses and vegetables. Livestock are also kept.

## The central highlands

*Description*

The central highland zone lies at an altitude of over 1,500 m, has 500 mm of annual rainfall, a warm-to-cool semi-arid climate and potential evapo-transpiration ranging between 1,300 and 1,800 mm. There are normally about three months of rain starting in June and ending in August or early September; in addition there are occasional showers in March and April. Predominant soils are chromic, eutric and calcic cambisols of a strong brown and red colour and with good agricultural potential.

There are three sub-zones with many common features, in particular major crops, but they are distinguishable by differences in altitude, annual rainfall, relief, soils, population density and degree of environmental degradation. The sub-zones are:

- Highlands: over 2,000 m altitude, 500-600 mm rainfall, very high population density
- Southern midlands: 1,500-2,000 m altitude, more than 700 mm rainfall and generally lower population density
- Northern midlands: 1,500-2,000 m altitude, less than 400 mm rainfall and low population density.

Land degradation is worst in the central and northern highlands. A long history of cultivation, grazing and fuelwood and timber harvesting without recycling of nutrients or management of organic matter has resulted in poor soils and depleted vegetation.

*Farming systems in the central highlands*

There are two main production systems in the highland area as a whole: a rainfed-cereals/pulses-based system and an irrigated-horticulture-based system.

- The rainfed-cereals/pulses-based system is based on the cultivation of a single cereal and/or pulse crop during the wet season with considerable reliance on residual moisture for the later part of the crop's growth.

  The amount of land available for each family is very limited, varying between 0.5 and 2 ha and with an average of about 1 ha. Farmers grow a mixture of crops as a strategy for spreading risk and to satisfy diverse family requirements. Barley, wheat and taff are the main cereals, while finger millet, sorghum and maize occupy small areas. Amongst the pulses cultivated in rotation with cereals, chickpeas dominate, followed by field beans and field peas. Oilseeds such as linseed and nihug are also grown but on relatively small areas.

  The system relies heavily on animal power for land preparation (oxen), threshing (oxen) and transport (donkeys and horses). The availability of oxen determines the timing of ploughing and planting during the short rainy season. The livestock population in the highlands has decreased significantly as a consequence of the drought in the 1980s, the war situation and population pressure. To complement income from crops, farmers also rear sheep and goats.
- The irrigated-horticulture-based system is practised by a minority of farmers who have been able to invest in the development of irrigation. On the irrigable plots of land, they cultivate vegetables and on the remaining land cereals under the previously described rainfed system. The main vegetables grown are potatoes, tomatoes, green peppers and onions. They can be grown almost all year round, but farmers avoid having crops in the ground between January and February because of the risk of frost.

## **The** western escarpment

*Description*

The western escarpment lies at an altitude of 600-1,500 m and has a warm-to-hot semi-arid climate. It is a transition zone between the highlands and the western lowlands in terms of climate, population density and farming systems. The soils are similar to those of the highlands.

*Farming systems in the western escarpment*

The dominant production system is an agro-pastoralist one. Farms are larger than in the highlands, averaging 2-3 hectares. The main crops are sorghum,

finger millet, taff, maize, sesame, cowpeas and chickpeas. Given the more abundant grazing resources in this area, the herds of cattle, sheep and goats are also larger. Highlanders bring down their herds of cattle to the western escarpment seasonally to take advantage of the better grazing. Shortage of fuelwood is less acute than in the highlands.

### The south-western lowlands

*Description*

This area is flat, hot and semi-arid and lies at an altitude of 600-750 m. Heavy vertisol soils are predominant. The population density, both of people and livestock, is low. Extreme climatic variations do not occur and the rainfall, though only 400-600 mm, is relatively reliable.

*Farming systems in the south-western lowlands*

There are four main production systems:

- Nomadic pastoralist
- Semi-sedentary agro-pastoralist
- Crop/livestock mixed production
- Commercial farming.

Most of the livestock are kept under a highly mobile nomadic pastoralist system. Many of the animals in this area have come from the highlands for the dry season and stay to browse the riverine vegetation or migrate further into Ethiopia or the Sudan. Camels are the preferred species because of their resistance to drought and because they are easier to feed during dry periods. These nomadic people are on the move in search of pasture and water for their herds almost throughout the year.

The semi-sedentary agro-pastoralist system is predominant in the area but may not easily be differentiated from the nomadic system. During the rainy season, homesteads are established close to a mountain and near the sites where sorghum and sesame will be planted. These sites are relatively permanent as the families will remain there until the crop is harvested. They return each year to plant and harvest crops. During the rainy season, most of the livestock are kept near the homestead, but at the beginning of the dry season people move with their herds to the dry-season sites. Later in the dry season, one male family member will take the cattle further south in search of pasture while the rest of the family stay at the dry-season site and later move to the rainy-season site to prepare for the cropping season.

Camels provide milk and are also used for long-distance transport of goods into the Sudan where the goods are exchanged for food. They are also used for ploughing. Male cattle are sold or slaughtered with a few being kept as breeding stock. Sheep and goats are sold whenever the need for cash arises. Donkeys are kept for short-distance transport of water and firewood by the women.

Currently there is increasing competition for land between the agro-pastoralists and commercial horticulturalists who are expanding their farms beside the major rivers which are the most important dry-season grazing reserves in the area.

In the crop/livestock mixed production system people do not shift homes during the year and crop production is more important. The livestock herds are similar to those in the agro-pastoralist system but with a tendency to keep fewer camels and larger herds of cattle. Ploughing is carried out with oxen instead of camels, though the use of camels for ploughing has increased recently because of the losses in cattle caused by the prolonged drought. The main crops are sorghum, pearl millet and sesame, which are all drought-resistant. They are never intercropped. Traditionally in this system, farmers have developed an important complementary activity: irrigated small-scale horticulture. The most common crops are tomatoes, onions, bananas and peppers, all irrigated by open shallow ditches along the river beds.

Recently, commercial farming has developed as a result of a policy of land distribution in the form of medium- and large-scale land concessions favoured after independence. Concessions may be both for large-scale rainfed production of sorghum and sesame or irrigated production of fruit and vegetables to supply Asmara and for export. The commercial enterprises have been developed by private farmers with adequate financial resources since large investments are necessary to start production in these remote areas.

## The north-western lowlands

*Description*

The north-western lowlands border on the Sudan. Altitudes are between 400 and 1,500 m and the climate is hot and arid with an average annual rainfall of 300 mm. Evapo-transpiration is between 1,500 and 2,000 mm.

Sustainable crop production is generally not possible without irrigation and pasture resources are poor to moderate. Prevalence of malaria combined with the poor agricultural potential has resulted in a low population density. Lopping trees as livestock fodder during dry periods is a common practice. In recent years, areas of riverine forest and some woodland have been converted to irrigated fields for vegetables.

*Farming systems in the north-western lowlands*

The main production system is a nomadic pastoralist one very similar to that found in the south-western lowlands. The nomadic people keep mixed herds, mostly camels, cattle and goats, and make long journeys, including across the border into the Sudan, in search of pasture and water.

## The vegetation

The vegetation of Eritrea varies greatly with altitude and moisture regime (see plates section after page xxviii) and Figure 1 (fold-out chart opposite page xxxviii) which is an east-west transect through the country showing the distribution of the different tree species.

Starting from the Red Sea in the east, the first notable plant species grow on the Dahlak Islands and along the shoreline. *Suaeda monoica,* a shrub, and *Avicennia marina* are the dominant mangrove species. Near the shore, and most commonly in towns, *Conocarpus lancifolius, Azadirachta indica* and *Prosopis* spp. have been planted. Prosopis is spreading rapidly on its own.

A unique place is the depression in the Bada area. Soils are saline and shallow, developed over hard rock, and the area is generally inhospitable. The most common trees here are *Hyphaene thebaica* var. *dankaliensis, Acacia* spp., *Cadaba* spp. and *Euphorbia* spp.

Further inland and below 500 m tree growth is sparse because of the hot and dry conditions. *Acacia oerfota* and *A. tortilis* subsp. *tortilis* are common on the flat areas, while *A. tortilis* subsp. *spirocarpa* is found only along rivers and streams. *Tamarix aphylla* grows along streams and river banks and is occasionally dominant. It usually grows as a fairly solitary species.

Between 500 and 1,500 m, *Acacia tortilis* often dominates, but because of the harsh climate there are no dense stands. *Acacia asak* occupies rocky hillsides and *A. seyal* grows in isolated localities. The baobab, *Adansonia digitata,* is also present as scattered individual trees as well as in "family" groups, generally on lower hill slopes and in valley bottoms. The degree to which these areas have been influenced by man is not easy to determine, and the current situation may not be very different from the natural climax.

Between 1,500 and 2,000 m, *Acacia tortilis* and *A. seyal* grow on steep and rocky sites in the lower areas gradually being replaced by *A. etbaica* higher up. Along rivers, *Faidherbia albida, Balanites aegyptiaca* and *Ziziphus spina-christi* used to form closed-canopy woodlands, albeit not very tall ones. But these are now reduced to scattered individual trees because of their exploitation for firewood and charcoal and overgrazing by goats. *Boswellia papyrifera,* exploited for frankincense, can be found locally in association with these mid-altitude woodlands. Now it appears in almost pure stands because of the removal of the Acacia for fuel.

Above 2,000 m, *Acacia abyssinica* used to dominate on the waterlogged plateaux. The trees have almost all been cleared leaving only occasional remnants around perennial springs.

The highland forest, dominated by *Juniperus procera* with some *Olea africana,* once covered the greater part of the highlands of Eritrea above about 2,000 m. Only where the soils are subject to seasonal waterlogging, as on the plains, have such associations given way to *Acacia abyssinica.* The forests have now been destroyed by clearing of land for cultivation and timber. On the plateau, occasional mutilated individual trees remain in farmland, while on the steeper, less desirable and accessible eastern escarpment, an estimated 53,000 ha of

degraded forest remain. Man-made plantations have been established in the highlands, where *Eucalyptus cladocalyx* dominates, especially on marginal sites. E. *globulus* grows in the wetter river valleys and *E. camaldulensis* is generally found on better arable land. Occasional use has been made of *Acacia saligna* and *A. mearnsii,* but their crooked form discouraged widespread planting.

Where the natural forest has been cleared, and the land subsequently badly degraded, a limited number of relatively aggressive pioneers establish themselves, in particular *Opuntia ficus-indica* in the highlands, *Dodonaea angustifolia, Carissa edulis* and *Euclea schimperi* at mid-altitudes and *Calotropis procera* and *Nicotiana glauca* in the lowlands. Although the exact area is unknown, these species cover thousands of hectares. Such a succession should not be removed, since there may be secondary species regenerating within the protection afforded, including *Euphorbia candelabrum, Pterolobium stellatum, Calpurnia aurea, Rumex* spp. and *Croton macrostachyus.* At the mid- and lower altitudes the climax Acacias, including *A. mellifera* and *A. tortilis,* quickly move back into degraded areas.

The vegetation density and tree size on the western escarpment vary with the amount of rainfall, which diminishes towards the north and west. Along the moister river valleys, the vegetation is mainly savannah and wooded savannah, whereas the higher slopes are covered by Combretum woodland. *Albizia amara, Adansonia digitata, Boscia angustifolia, Terminalia brownii, Balanites aegyptiaca, Boswellia papyrifera, Commiphora* spp., *Combretum molle, Salvadora persica, Faidherbia albida, Acacia tortilis* subsp. *spirocarpa, Ximenia americana, Ficus sycomorus, Ziziphus spina-christi, Dalbergia melanoxylon, Delonix elata, Sterculia tomentosa* and *Dombeya torrida* subsp. *torrida* are common species. *Boswellia papyrifera* is highly valued for its gum production while *Commiphora* spp. provide myrrh. The purple or brown-black hearrwood of *Dalbergia melanoxylon,* which is sometimes referred to as African blackwood or African ebony, is of considerable commercial value.

In the far west of the western lowlands are extensive grasslands. Aristida dominates in the west and *Sorghum purpurea-Sericeum* grassland in the south-west. They are intermixed with riverine forest and large tracts of Acacia woodland. In the east and south-east, the vegetation incudes *Acacia seyal, Acacia Senegal, Acacia mellifera* and very sparse *Balanites aegyptiaca. Acacia tortilis* subsp. *spirocarpa* grows along the river banks. In the driest areas, *Boscia senegalensis* and *Cadaba* spp. are also found. Large specimens of *Kigelia africana, Adansonia digitata* and *Acacia* spp. grow around Barentu and in the middle reaches of the River Gash.

In Figure 1, species that grow along rivers and in valley bottoms have been differentiated from ones that grow on slopes or hillsides. Riverine areas are often extremely valuable for the livelihood of people, and riverine forests are well developed along the Gash, Barka, Anseba and Setit rivers and their tributaries. It is estimated that there are some 14,000 ha of the doum palm *(Hyphaene thebaica)* in the riverine forests of Eritrea. Both the stems and leaves

of the palm have many uses. The stems are used for house construction, and those of the male plant, which are particularly durable, were used as railway sleepers by the Italians during the construction of the early Eritrean railway. The leaves have numerous uses—basketry, thatch, fuel and fodder—and the fruit and kernel have other uses. Thus, this is one of the most important trees for the rural people of Eritea but it is now under heavy pressure from clearing for agriculture and grazing by cattle.

### Dwindling forest resources

It has been claimed that only a century ago, 30% of the total land area of Eritrea was covered by forest. By 1952, that figure had dwindled to 11%, and in 1960 the forest cover was estimated at a mere 5% (Pagini, 1952 in MOA, 1994).

The National Environmental Management Plan for Eritrea stated that the main causes for the reduction of the forests are:

- Expansion of agriculture: e.g. 300,000 ha of forest land is said to have been cleared for agriculture upon the arrival of the Italian colonialists (Renato, 1911 in MoA 1994)
- Consumption of fuelwood: an estimated 4.4 million cubic metres are consumed annually on a national scale (MoA, 1993 in FAO, 1994)
- Thirty years of liberation war
- Construction of traditional houses known as *hidmo*
- The attitude that trees are abundant and a gift of God to be utilized at will.

### Tree resources and tree utilization in the different zones

In most areas, attempts have been made to plant trees to meet local people's needs for wood as well as fruit, shade, etc.

In the **coastal plains,** tree growing has mainly been confined to areas around towns, particular around Massawa and Assab. There are small plantations of *Conocarpus lancifolius* in Massawa. *Cassia siatnea, Delonix regia* and *Azadirachta indica* are common along roadsides in other major towns. Approximately 10% of the fuelwond for Asmara is collected from the coastal plains.

The **central and northern highlands** are denuded of trees and there is **a** widespread shortage of fuel and wood for construction. Soil erosion is severe. In recent years, many tree nurseries have been established in the zone. Also some hillsides have been fenced in in an attempt to promote natural regeneration of the trees, *funiperus procera* and *Olea africana* are among the economically and ecologically valuable trees that still grow in the zone, although they are rare. Plantations of *Eucalyptus cladocalyx, E. camaldulensis, E. globulus* and *E. rudis* have been established, especially on marginal lands and along river banks. Efforts have also been made to plant *Acacia saligna, A. mearnsii* and *Schinus molle.* The total area of plantations in the highlands is estimated at 10,000 hectares.

In the **north-western lowlands** woodland, savannah, bush and thicket are the main vegetation types. Some species that occur are *Acacia tortilis, A. mellifera,*

*Balanites aegyptiaca, Cadaba rotundifolia* and *Ziziphus spina-christi. Hyphaene thebaica* (doum palm) is common along the Barka river. Other riverine species such as *Salvadora persica* and *Tamarix aphylla* also occur. About 40% of the firewood for Asmara is collected from the upper and lower Barka areas. Doum palm leaves (about 300 quintals annually) are extracted from the Barka river bank for baskets, mats and other household items. A fibre factory 6 km north-west of Akordat, originally set up in 1950, has been renovated and is now functioning again. The factory has a capacity to utilize 26,000-40,000 tonnes of doum palm leaves, a quantity that cannot be extracted sustainably unless efforts are made to grow more of the trees.

In the savannah woodlands of the **south-western lowlands,** bushland and thicket are the major vegetation types. About 50% of the firewood for Asmara is collected from this zone. In addition, about 3,000 quintals of gum olibanum from *Boswellia papyrifera* and gum arabic are extracted annually. Doum palm leaves are cut for the production of sacks, baskets and other crafts. The major tree species of this zone are *Acacia tortilis, A. nilotica, A. Senegal, A. seyal, Balanites aegyptiaca, Adansonia digitata, Ziziphus spina-christi, Tamarix aphylla* and *Boswellia papyrifera.* Exotic species such as *Azadirachta indica* and *Senna siamea* are common along road sides in the major towns. *Prosopis chilensis* is dominant along the lower part of Gash river. It was introduced from the Sudan in the last 10 years.

## Some environmental concerns

A number of environmental issues which are directly related to forest resources have been highlighted in the National Environmental Management Plan for Eritrea. Those issues are:

- Shortage of fuelwood
- Construction of traditional houses
- Soil erosion
- Land/tree tenure
- Eucalyptus plantations
- The spread of the cactus *Opuntia ficus-indica*
- Clearing of woodlands for agriculture
- Fire in the woodlands and savannah areas
- The use of lime and brick kilns
- Resettlement
- Endangered tree species
- Drought and desertification
- Salinity of water
- Spate diversion and related deforestation
- Expansion of evaporation ponds (salt fields).

### Shortage of fuelwood

Most of the domestic energy of Asmara is fuelwood which is obtained from woodlands in the lowlands. The price of this fuelwood has increased primarily because of increasing demand and scarcity and the long distances from the collection areas to the city.

The fuelwood problem is, however, not only an urban one. There is a shortage of fuelwood in all highland areas that are intensively cultivated. This does not only bring hardship to the people, but also undermines the whole farming system since cow dung and crop residues are used as substitutes when there is no firewood. This is part of a vicious circle as it means that nutrients and organic matter that would be returned to the soil are lost, resulting in reduced crop yields.

### Construction of traditional houses

Another important activity that requires wood is the construction of the traditional houses called *hidmo.* Some estimates indicate that about 100 trees are felled to construct one such house in the highlands as a *hidmo* is very large and is covered with poles that provide support for the earthen roofing. *Oka africana* and *Juniperus procera* are used as pillars inside and outside the house. In the process of selecting the most appropriate trunk, many more trees are cut than is necessary. In addition, every now and then renovation is required to replace poles that become damaged. The present rate of exploitation for poles appears to be unsustainable.

## Soil erosion

Soil erosion is linked to deforestation. Most highland areas are badly affected by erosion because of local farming practices, overgrazing and deforestation.

### Overgrazing

At present, overgrazing and overbrowsing in the highlands are not serious since livestock numbers were reduced significantly by the 30 years of liberation war. The grazing/browsing pressure is, however, uneven, with certain areas still having a very high population of sheep and goats.

## Land/tree tenure

The *dessa* land-tenure system, involving the periodic redistribution of arable land, provides no incentive for farmers to carry out permanent improvements to the land. To make matters worse, if the farmer did not exploit the trees, the next tenant certainly would. With the new land law 58/1994, the land-tenure system is now changing.

## Eucalyptus plantations

Eucalypts are prominent among the tree species being planted in the highlands. The cultivation of eucalypts has caused much controversy in Eritrea, as in many other countries. It has been argued that they have adverse environmental effects, including excessive water and nutrient requirements and allelopathic effects on adjacent crops. On the other hand, it has also been argued that the area under eucalypts is very small compared to the total area of the country and the effect on the environment is insignificant as long as the trees are planted away from river banks and arable land. The competition with crops can be much reduced if eucalypts are managed on a short rotation and thus never grow to become huge trees. Some researchers have also concluded that eucalypts are very efficient in the use of water and nutrients, and their competitiveness is a result of their fast growth rather than of their being "greedy" and wasteful. The decision as to whether or not to plant Eucalyptus must be made on a case-by-case basis taking into account local circumstances such as the views of the local people, land availability, competing land uses, performance of alternative tree species, forest-product requirements, and so on. Further, it must be noted that cultivation of eucalypts has the potential to contribute to improved nutrient- and organic-matter recycling in the farming system if plenty of fuelwood can be produced. This would minimize the use of cow dung and useful crop residues that should be returned to the soil. It should also be noted, however, that eucalypts will not meet all the needs of the people. Thus, they are not a substitute for a greater variety of indigenous and exotic species.

## The coastal plains

A mangrove swamp with heaps of extracted salt

Regeneration of *Avicennia marina*

Neem is a good shade tree in Massawa

## The eastern escarpment

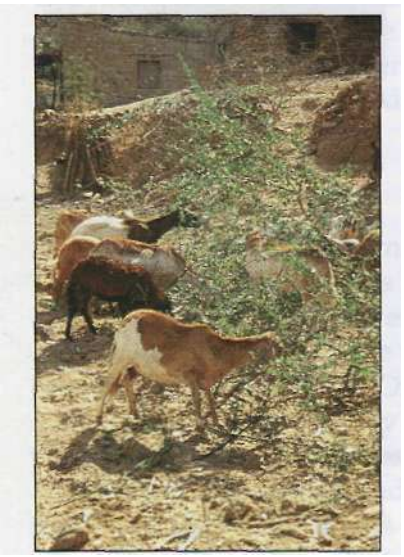
Lush vegetation at Filfil, c. 720 m

*Ficus sycomorus* near Filfil

The eastern escarpment, *contd*

General view towards the coast from the middle of the escarpment with *Carissa edulis* in the foreground

Lopping Balanites to feed sheep, Dongola Tahtay



Sheep feeding on Balanites leaves

View of the Medhanit area on the eastern escarpment

A view of the Mutsub valley

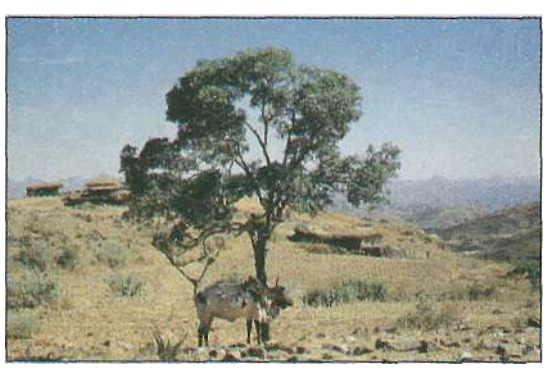
*Entada abyssinica* at Medhanit, 1,600 m

View of regenerating natural forest in the Mt. Bizen-Gobolemin area with fog bringing moisture to the vegetation, 1,930 m

Natural regeneration of *Juniperus procera* at Mt. Mirara

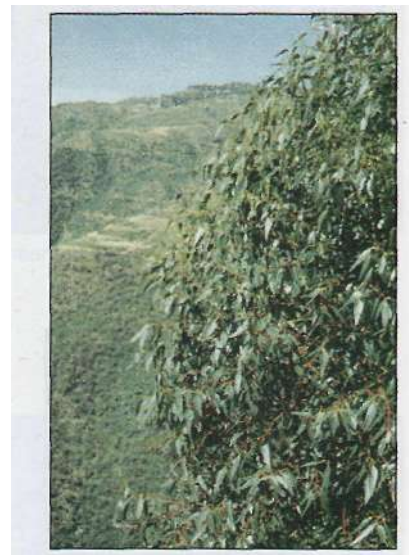
In cultivated areas, there are remnant forests intermingled with Eucalyptus, 2,200 m

**The central highlands**

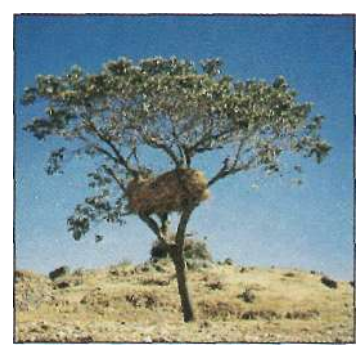


An ox rubbing against *Euclea schimperi* at Adibeza (Kohain), 1,800 m

*Diospyros abyssinica* with Rumex near a nursery at Mirara, 2,150 m; castor oil in foreground



The typical shiny leaves of *Eucalyptus cladocalyx,* at the rim of the escarpment



Hay being stored in a fork of *Cordia africana* at Andelas, near Maimene, 1,800 m

**The central highlands, center**

Juniperus regeneration. "Weki" at the top of the escarpment

Natural regeneration with Opuntia, *Eucalyptus cladocalyx* and *Dodonaea angustifolia*

Animals grazing near Olea trees growing on old soil conservation structures, stabilizing the edge of an old terrace, 1,800 m

A beehive wedged in a *Cordia africana* tree at Andelas (Kohain), 1,750 m

Rugged terrain with grass strips along contours south of Kohain

Acacia woodland in a wide valley near Kinafina, 1,550 m

## The western escarpment

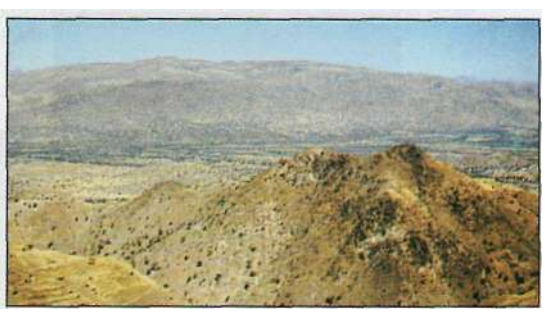
Euphorbia and a dam under construction

Huge *Ficus vasta* tree in a village

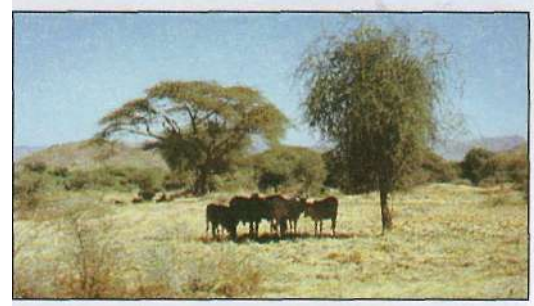
Entada pods

*Albizia amara* near Adi-neamen

## The south-western lowlands



Distant view of open scrub in the Ubel area, 1,600 m

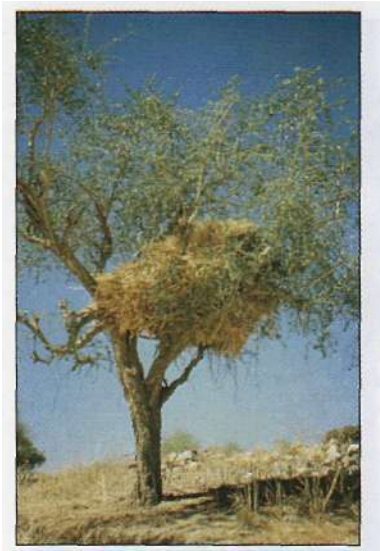


Cows in the shade of Acacia and Balanites trees at Enda-giorgis, 1,460 m

"Parkland agroforestry" in the Ailagundet area, Enda-giorgis, 1,460 m

A camel browsing on Acacia

**The south-western lowlands, *contd***



*Balanites aeyptiaca* used for storing dry grass out of reach of cattle

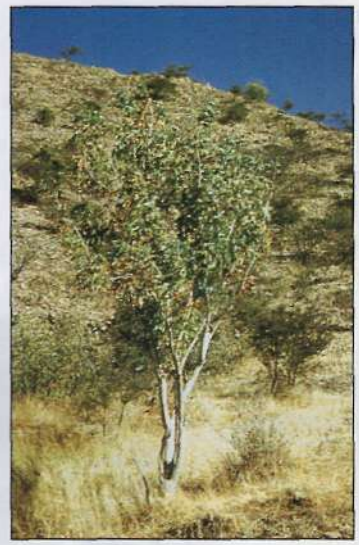
**The north-western lowlands**

River bank stabilization with *Ziziphus spina-christi* at Jengeren

*Kigelia africana* near the River Areway at Aibaba village

*Arundo donax* along a watercourse near Elabered

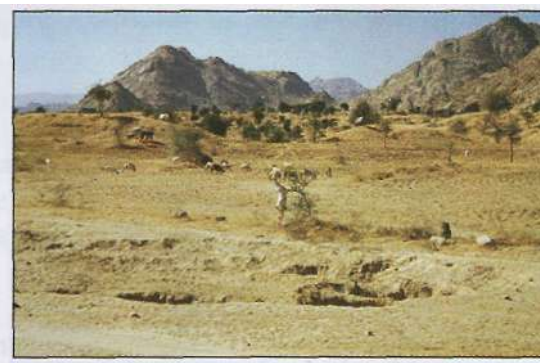
*Adansonia digitata* (baobab) used as a store for hay at Jengeren



*Steganotaenia araliacea* naturally growing near Geleb, 1,720 m

*Mimusops kummel* on the river bank near Areway, 1,580 m

*Maytenus senegalensis* near the bank of the River Belte (Mensa), 1,680 m



Goats browsing on Acacia in a very dry area, Balanites and *Ziziphus spina-christi* in the background

*Terminalia brownii* with roots exposed by heavy erosion at the roadside

Balanites with roots exposed by heavy erosion

**The north-western lowlands, *contd***

Egyptian doum palms *Hyphaene thebaica*

Cows and herdsmen in the shade of Balanites

Dry landscape with short *Acacia mellifera* and a taller *A. tortilis*

Dorcas gazelles in Acacia country

### The spread of the cactus *Opuntia ficus-indica*

Another environmental issue in the highlands, especially on the eastern escarpment, is the invasion of the cactus *Opuntia ficus-indica.* It is claimed that the cactus was introduced to Eritrea by missionaries in the 1830s. Gradually, it has been dispersed by people and animals, especially by monkeys in the eastern escarpment, and it now covers more than 10,000 hectares. Aside from its advantage in conserving soil and producing edible fruit, the spread of this species has an impact on the local ecology that is difficult to assess. Valuable species such as Olea and Juniperus appear not to regenerate in the areas covered by cactus, and in such areas only scattered pioneer species such as *Calpurnia aurea* and *Pterolobium stellatum* are left.

### Clearing of woodlands for agriculture

Some river basins, e.g. along the Mereb-Gash and Barka rivers, are fertile and thus there is an interest in agricultural expansion in such areas. Development for agriculture needs to be harmonized with other values and interests. *Hyphaene thebaica* and *Tamarix aphylla* are examples of species that merit attention.

### Fire

The ecological role of fires in the tropics and sub-tropics has been debated over the years. It has been argued that fires are detrimental and constitute a problem, especially in the south-western lowlands when it is very dry, windy and hot.

### Use of lime and brick kilns

These kilns consume significant amounts of fuelwood, especially along the rivers Gash and Sawa.

### Resettlement

People returning from the Sudan are settling around the Gash and Barka river basins in the south-western lowlands as well as in the north-western lowlands. These settlements lead to demands for wood for house construction and fuel as well as agricultural expansion, thus increasing the pressure on the local woody resources.

### Endangered tree species

*Boswellia papyrifera,* which is intensively utilized for extraction of gum olibanum in the south-western lowlands, is regarded as being endangered. *Adansonia digitata* has also been included in this category because of its poor regeneration. *Tamarindus indica* is intensively used to make mortars which are used in the production of sesame oil in areas where sesame is grown. Fruits of the tree are used for food and for medicine. As a result, the population of Tamarindus has decreased in some areas of the south-western lowlands. Other species that are rare in that zone are *Ximenia americana, Dobera glabra* and *Maerua crassifolia.*

### Drought and desertification

It has been argued that degradation in the north-western lowlands is rapidly leading to desert-like conditions. Browsing of camels and goats is very intense, tree regeneration is poor and the environment as a whole is becoming increasingly degraded. Similar conditions occur in the eastern coastal zone.

### Salinity of water

It has been noted that afforestation using conventional methods is unsuccessful in the north-western lowlands and parts of the eastern coastal zone. Seedlings die immediately after germination because of the salinity of the ground water used for watering.

### Spate diversion and related deforestation

People living in the eastern lowlands have practised spate irrigation for **a** long time. Intermittent rapidly flowing rivers from the high part of the escarpment are diverted to the agricultural fields with the help of primary, secondary and tertiary canals supported by Acacia branches. The cutting of trees and shrubs for this purpose is such that it contributes significantly to deforestation locally.

### Expansion of evaporation ponds (salt fields)

Evaporation ponds for salt production are expanding, particularly around Massawa. These salt fields are constructed at the coast, where mangrove vegetation is found, and thus affect the marine environment.

## Future outlook

Developments during the past decades have not been very encouraging with regard to the management of the tree resources of Eritrea. Action is required to reverse the situation. The National Environmental Management Plan proposes measures aimed at increased tree growing and reduced consumption, e.g.:

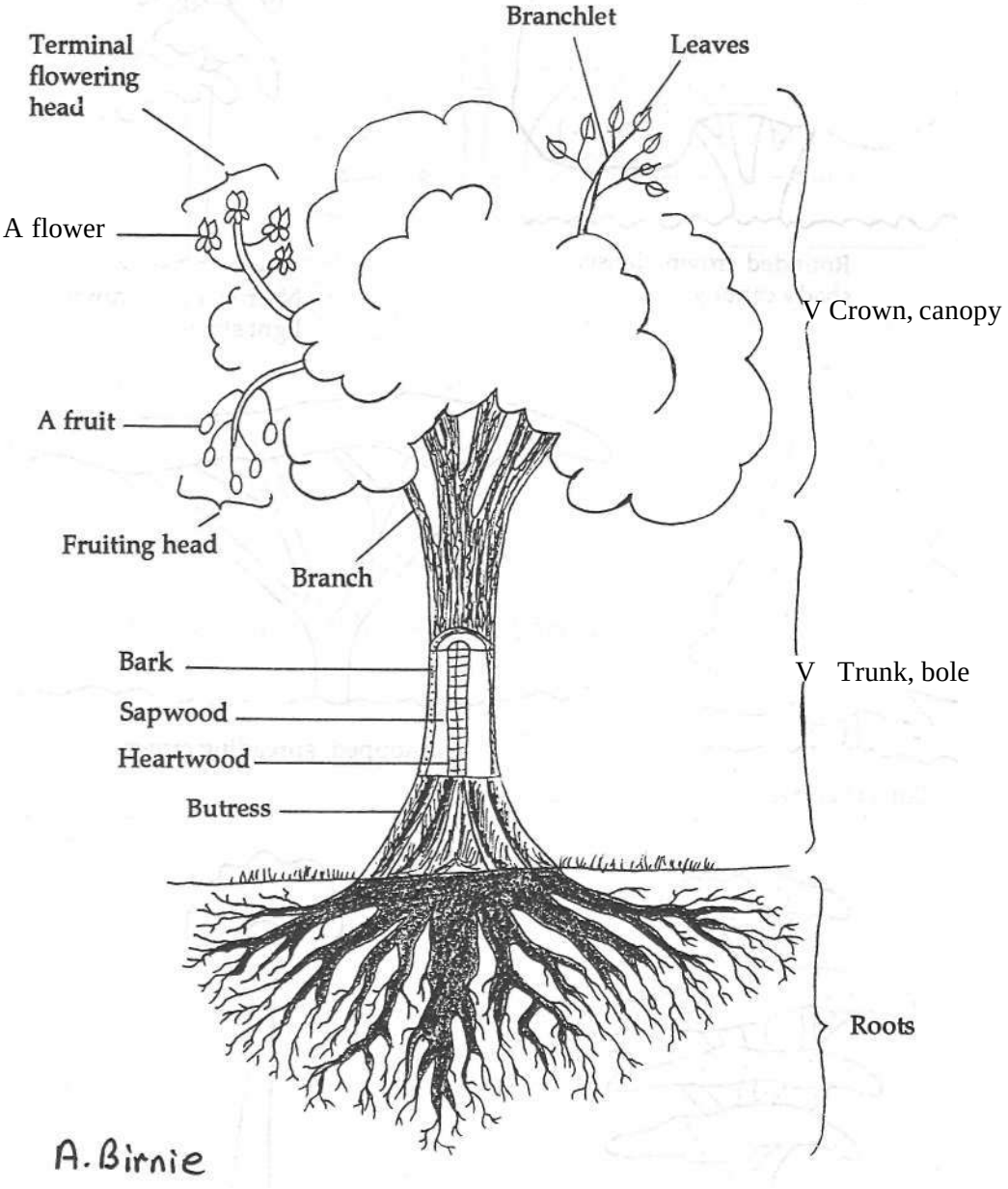
- Increasing the availability of quality tree seeds
- Encouraging establishment of on-farm tree nurseries
- Encouraging agroforestry practices including on-farm woodlots
- Promotion of energy-saving cooking practices
- Promotion of soil and water conservation
- Awareness creation
- Promotion of natural regeneration through hillside closure, for example
- Environmental education
- Research on biodiversity conservation and Eritrea's ecology.

In densely populated parts of eastern Africa there are now some positive trends with regard to restoration of tree cover. In intensively cultivated and densely populated areas the amount of woody biomass is increasing, mainly on the small plots cultivated by individual families. Often, only small areas of communal lands remain and these communal lands have long lost their importance as areas for supply of fuelwood and other resources. Farmers have responded by growing more trees on their own farms.

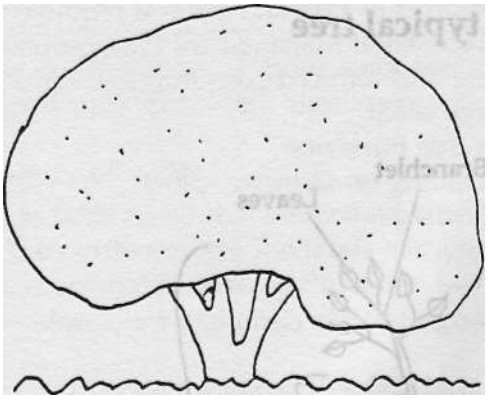
With a new era of peace and stability, new policies and new land legislation in Eritrea, there is hope that the negative trends of the past can be reversed in the coming decades.

Illustrated glossary of some botanical terms

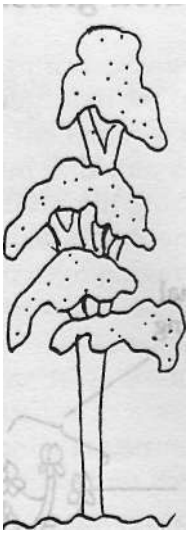
## The parts of a typical tree



# Tree shapes

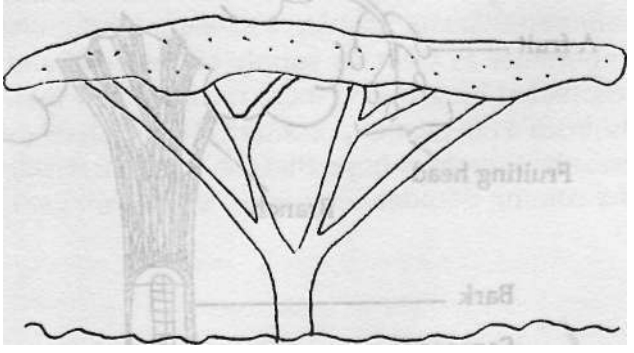


Rounded crown, dense, shady canopy

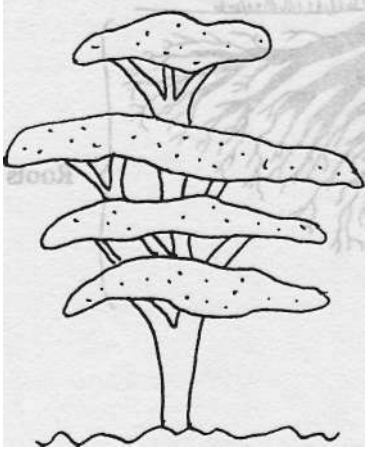


Narrow open crown, light shade

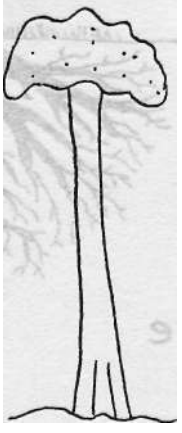
Conical crown



Flat-topped, spreading crown



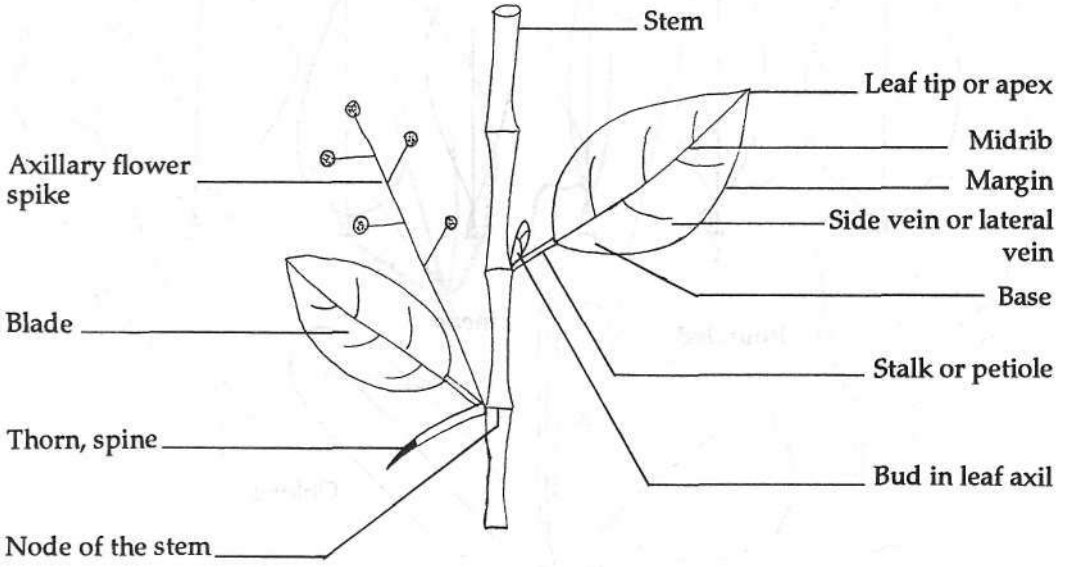
Canopy in layers



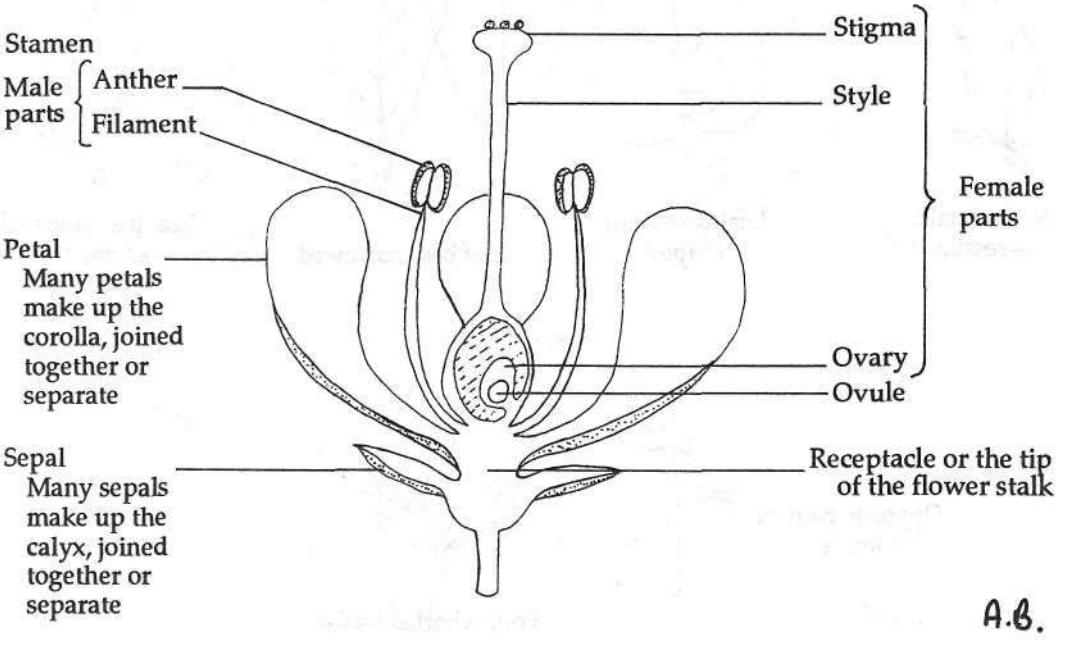
A tall bole, small dense crown

# Leaves and stems

Diagram showing two simple leaves alternate on a stem

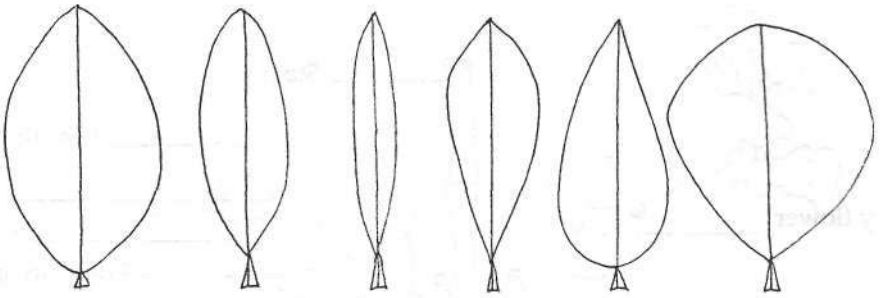


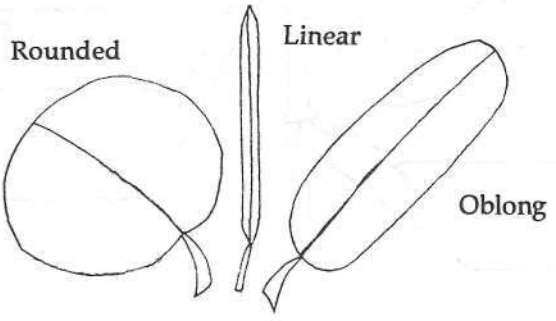

## A diagrammatic section through a typical flower



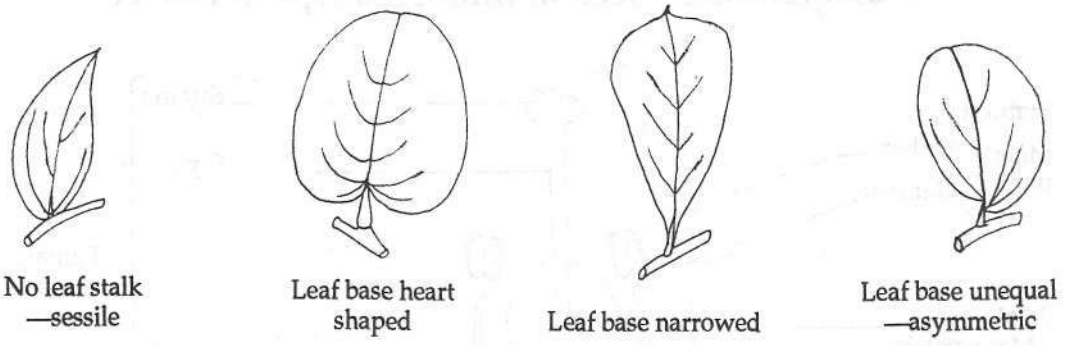
# Leaves

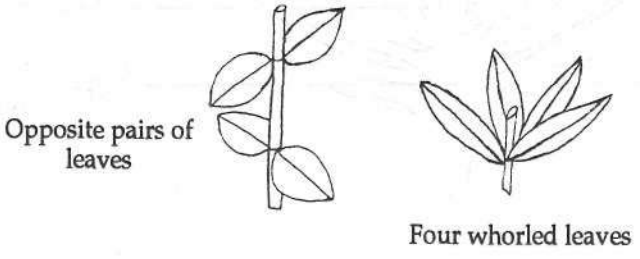
**A variety of simple oval-shaped leaves**



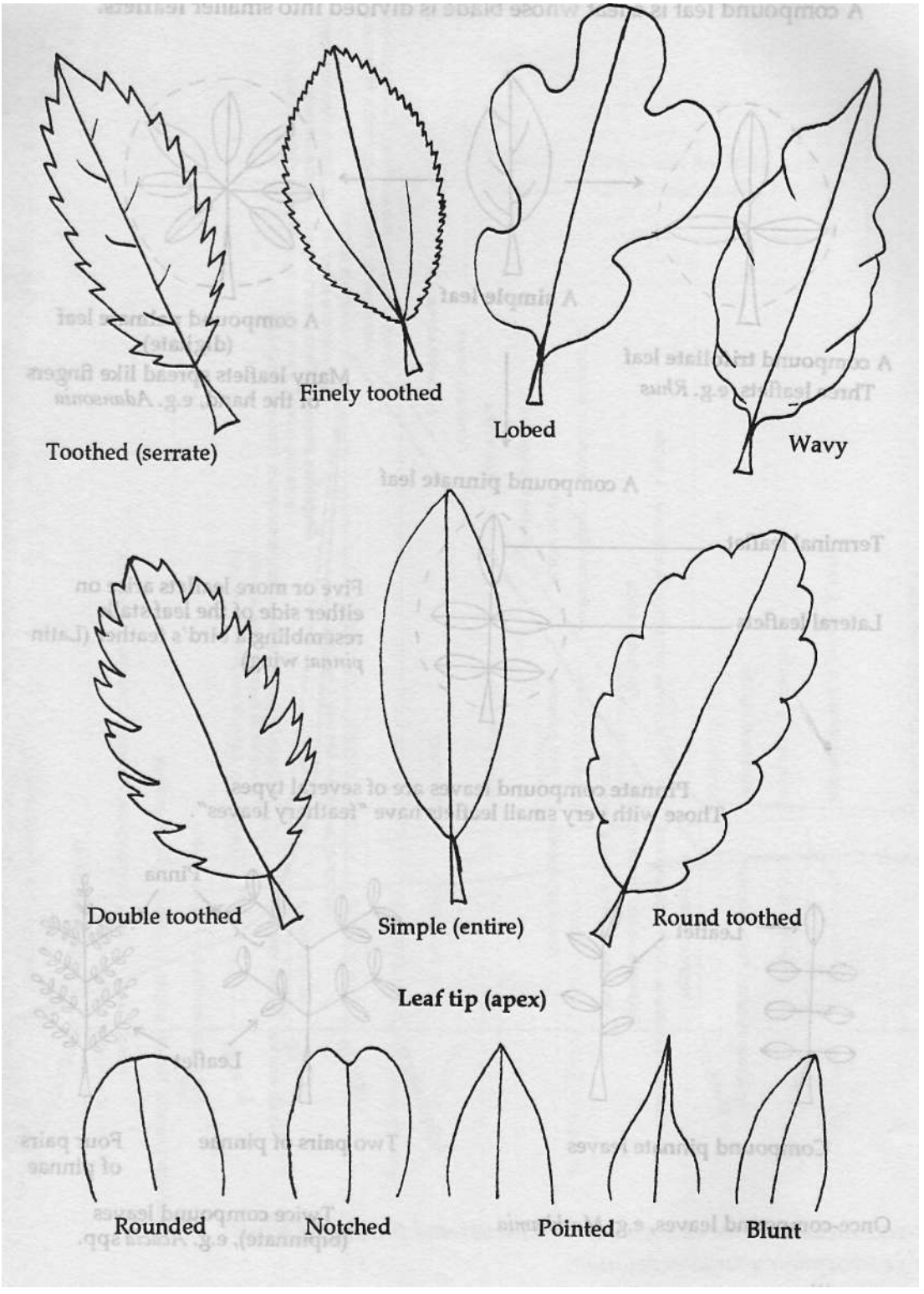



**Leaf base**

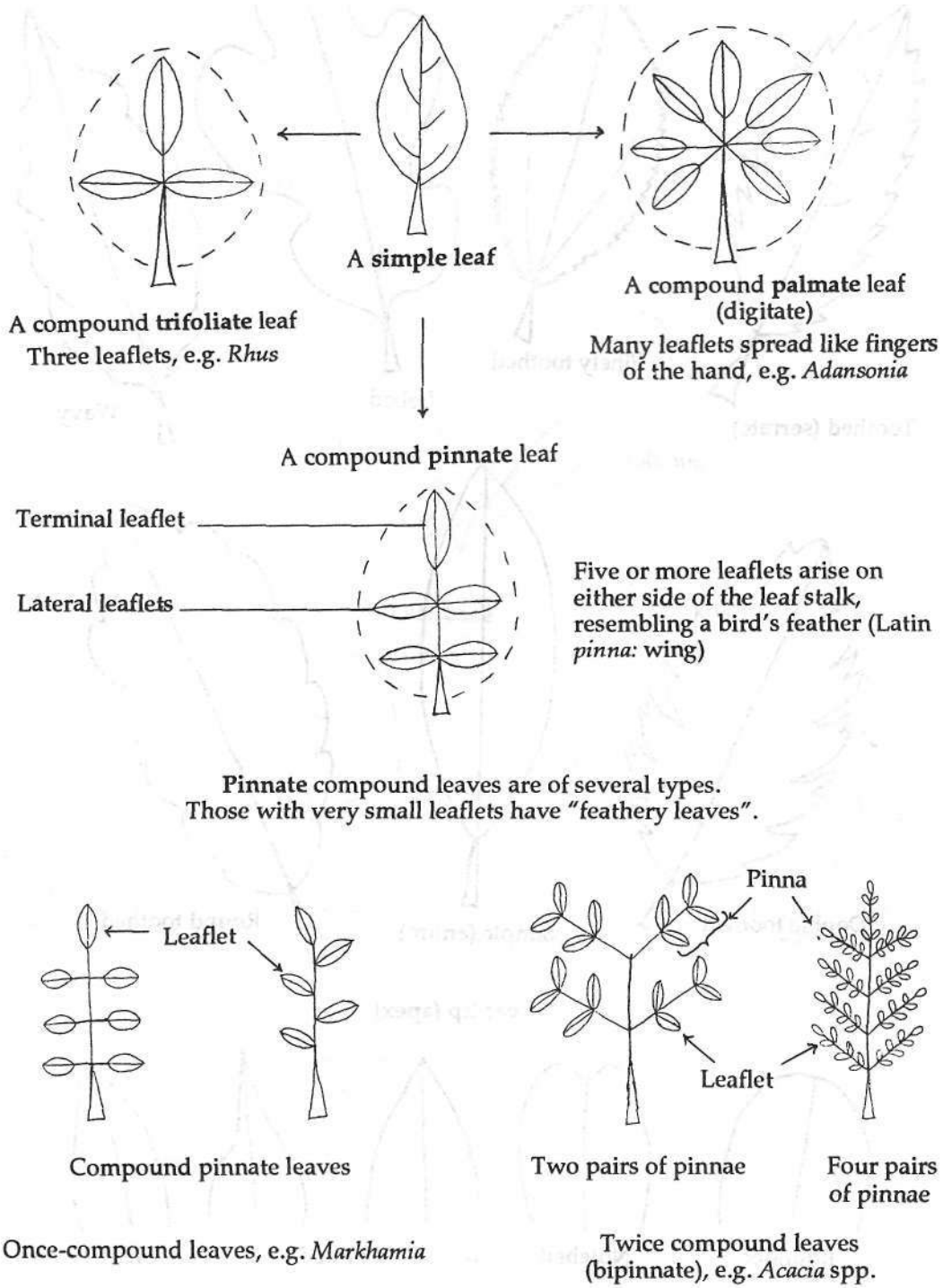


**Leaf edge (maigin)**



Leaves may be simple or compound.
A compound leaf is a leaf whose blade is divided into smaller **leaflets.**



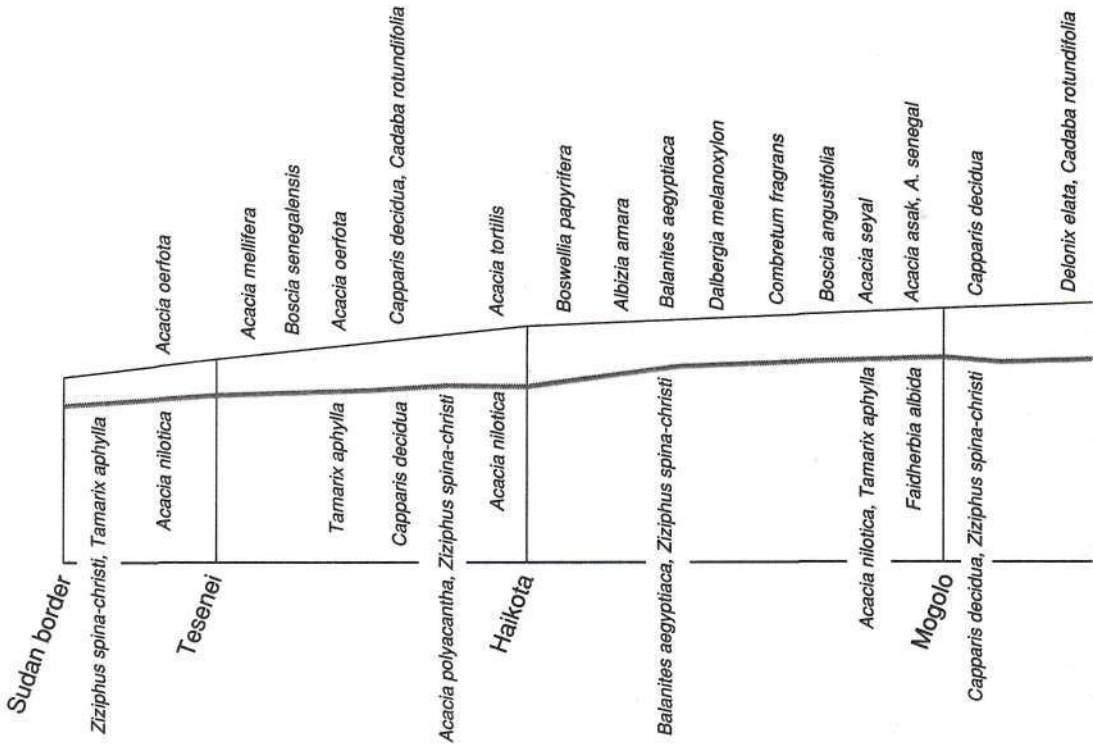
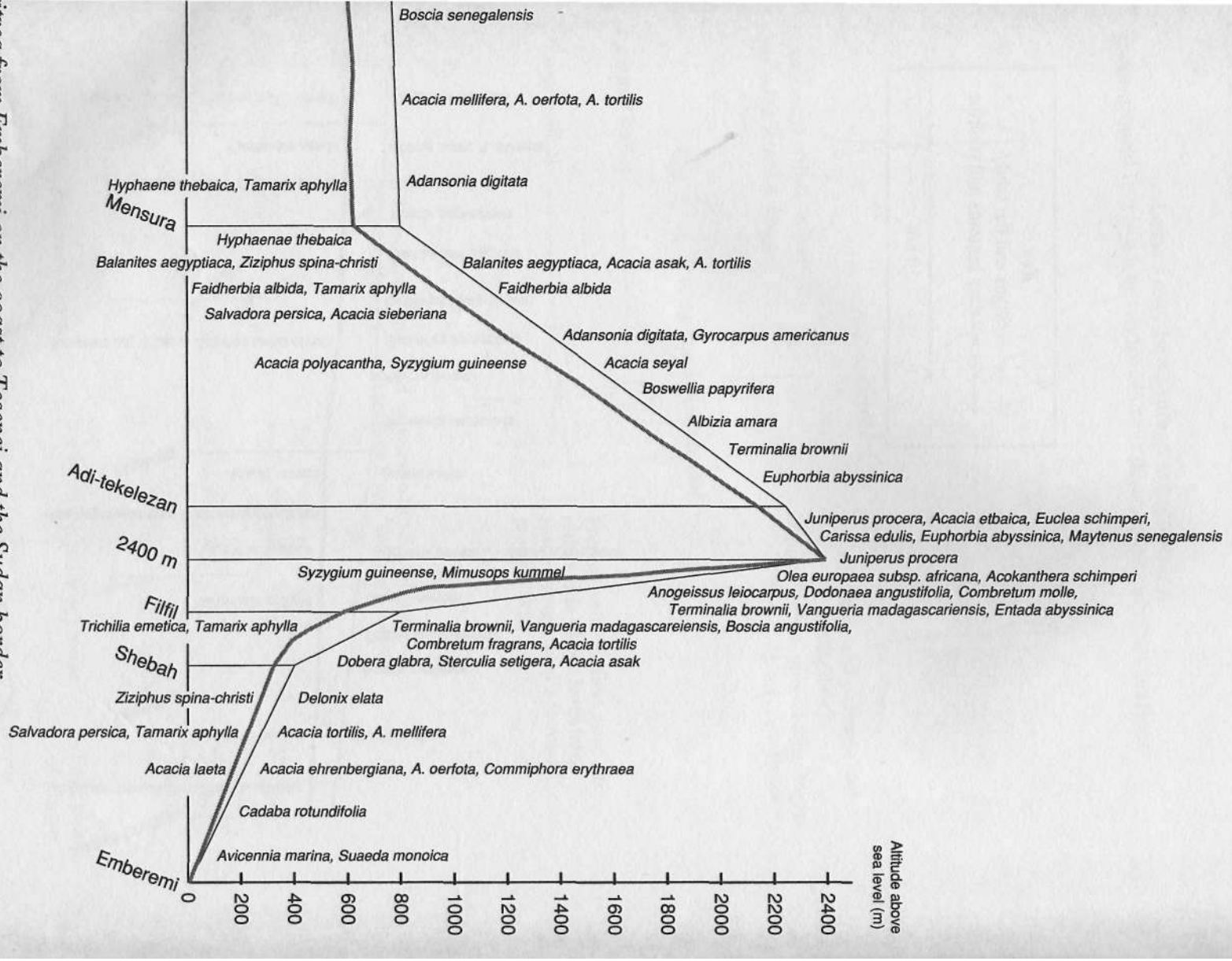



Figure 1. *Schematic diagram of an east–west transect across*
*showing the relationship be*




*itrea from Emberemi on the coast to Tesenei and the Sudan border*

*en geomorphology and vegetation*

# PART I

# COMMON NAMES

AFAR (AF)

| | |
|---|---|
| Adaito | Salvadora persica |
| Aden | Conocarpus lancifolius |
| Alaito | Balanites aegyptiaca |
| Amaito | Delonix elata |
| Anagali | Cadaba rotundifolia |
| Dawa | Grewia mollis |
| Eebi | Acacia tortilis |
| Fo | Grewia ferruginea |
| Garaito | Hyphaene thebaica *(H. dankalensis)* |
| Gharsa | Dobera glabra |
| Ghulaento | Calotropis procera |
| Gomerto | Acacia oerfota (A. *nubica)* |
| Huda | Grewia tenax |
| Hudumto | Suaeda monoica |
| Keselto | Acacia abyssinica |
| Kurbeito | Commiphora africana |
| Kurbeito | Commiphora erythraea |
| Kusrto | Ziziphus spina-christi |
| Lemin | Citrus limon |
| Maegherto | Acacia mellifera |
| Maraito | Ficus vasta |
| Mekeany | Acacia ehrenbergiana (A. *flava)* |
| Numhele | Cadaba farinosa |
| Sanu | Senna alexandrina *(Cassia alexandrina)* |
| Segeito | Tamarix aphylla |
| Sekekto | Acacia etbaica |
| Sihigto | Acacia asak |
| Subula | Ficus sycomorus |
| Takaito | Avicennia marina |
| Tikilbeito | Acacia laeta (A. *trentiniani)* |
| Weibaito | Terminalia brownii |
| Yaa | Agave sisalana |

ARABIC (AR)

| | |
|---|---|
| Abu khamira | Ximenia americana |
| Algaseb | Cadaba rotundifolia |
| Alhamet | Suaeda monoica |
| Ancob | Oncoba spinosa |
| Arak | Salvadora persica |
| Arar | Juniperus procera |
| Arar | Maesa lanceolata |
| Ardeib | Tamarindus indica |
| Arrad | Acacia etbaica |
| Arrad | Albizia amara |
| Asak | Acacia asak |
| Athl | Tamarix aphylla |
| Aud | Acacia oerfota (A. *nubica)* |
| Babanus | Dalbergia melanoxylon |
| Babaya | Carica papaya |
| Basham | Grewia mollis |
| Beles | Opuntia ficus-indica |
| Burtukal | Citrus sinensis |
| Damas | Conocarpus lancifolius |
| Darot | Terminalia brownii |
| Deleb | Ficus vasta |
| Dom | Hyphaene thebaica *(H. dankaliensis)* |
| Dus | Erythrina abyssinica |
| Emir | Carissa edulis |
| Enab | Vitis vinifera |
| Felfel-kazib | Schinus molle |
| Gafal | Commiphora africana |
| Gafal | Commiphora erythraea |
| Gambil | Cordia africana |
| Haraz | Faidherbia albida *(Acacia albida)* |
| Hashab | Acacia Senegal |
| Heghem | Dichrostachys cinerea |
| Heglig | Balanites aegyptiaca |
| Hena | Lawsonia inermis |
| Homeid | Sclerocaryabirrea |
| Hummaida | Rumex usambarensis |
| Injil | Euphorbia tirucalli |
| Juafa | Psidium guajava |
| Jughan | Diospyros mespiliformis |
| Kadar | Grewia tenax |
| Kakamut | Acacia polyacantha |
| Kedad | Acacia mellifera |
| Kerat | Euphorbia polyacantha |
| Khash | Stereospermum kunthianum |
| Khashkhash | Lonchocarpus bussei *(L. laxiflorus)* |
| Khuk | Prunus persica |
| Kisher | Calotropis procera |
| Kurmut | Cadaba rotundifolia |
| Kurwaa | Ricinus communis |
| Lemun | Citrus limon |
| Leyun | Lannea fruticosa |
| Manga | Mangifera indica |
| Masaka | Albizia anthelmintica |
| Mashilah | Delonix elata |
| Mutraq | Grewia villosa |
| Muze | Musa sapientum |
| Nakhala | Phoenix canadensis |
| Nim | Azadirachta indica |
| Sabbar | Aloe macrocarpa |
| Sallm | Acacia ehrenbergiana (A. *flava)* |

| | |
|---|---|
| Sambu | Rhus glutinosa |
| Samra | Acacia tortilis |
| Sanna makka | Senna alexandrina *(Cassia alexandrina)* |
| Shahab | Anogeissus leiocarpus *(A. schimperi)* |
| Shajar-al-zaref | Maerua angolensis |
| Shajaret al kutun | Ceiba pentandra |
| Shajaret al sim | Euphorbia abyssinica |
| Shajeret almarfin | Boscia angustifolia |
| Sharube | Capparis tomentosa |
| Shitra | Acacia laeta (A *trentiniani)* |
| Shora | Avicennia marina |
| Sidr | Ziziphus spina-christi |
| Suffar abyad | Acacia seyal |
| Suffar ahmer | Acacia seyal |
| Sunt | Acacia nilotica |
| Surrih | Cadaba farinosa |
| Tarak tarak | Boswellia papyrifera |
| Tebeldi | Adansonia digitata |
| Temer musa | Prosopis chilensis. |
| Temer | Phoenix dactylifera |
| Terter | Sterculia africana |
| Terter | Sterculia setigera *(S. tomentosa)* |
| Tin | Ficus carica |
| Tufah | Malus domestica |
| Tundyb | Capparis decidua |
| Tutal | Celtis africana |
| Ugum | Euclea schimperi |
| Wakhale | Phoenix reclinata |
| Yasimum | Jasminum floribundum |
| Yosufi | Citrus reticulata |
| Zeitun bari | Olea europaea subsp. africana |
| Zobra | Dobera glabra |

BILEN(BL)

| | |
|---|---|
| Abelwa | Combretum molle |
| Abengula | Sclerocarya birrea |
| Adaya | Salvadora persica |
| Aira | Diospyros mespiliformis |
| Alendia | Ormocarpum pubescens |
| Anquora | Commiphora africana |
| Anquora | Commiphora erythraea |
| Aranshi | Citrus sinensis |
| Argudi | Maytenus senegalensis |
| Arkobkobai | Hyphaene thebaica *(H. dankaliensis)* |
| Arkobkobay | Hyphaene dankalensis |
| Ashel | Carissa edulis |
| Atenka | Gyrocarpus americaria |
| Bamba | Ficus sycomorus |
| Banana | Musa sapientum |
| Basune | Albizia anthelmintica |
| Beles | Opuntia ficus-indica |
| Bobaye | Carica papaya |
| Busa | Senna singueana *(Cassia singueana)* |
| Chea serwa | Acacia seyal |
| Cheaereba | Acacia tortilis |
| Chebir | Aloe macrocarpa |
| Chergelo | Cordia africana |
| Chergelo | Cordia monoica (C. *ovalis)* |
| Dalkus | Ficus glumosa |
| Darsel | Sterculia africana |
| Darsel | Sterculia setigera *(S. tomentosa)* |
| Deghuna | Ficus vasta |
| Dira | Adansonia digitata |
| Duwa | Acacia sieberiana |
| Enkema | Terminalia brownii |
| Gemrota | Acacia oerfota *(A. nubica)* |
| Gengera | Ozoroa insignis *(Heeria reticulata)* |
| Gerbesha | Faidherbia albida *{Acacia, albida)* |
| Guada | Balanites aegyptiaca |
| Guara | Dichrostachys cinerea |
| Guff | Ziziphus spina-christi |
| Gulka | Ricinus communis |
| Habina | Grewia villosa |
| Hamta | Boscia senegalensis |
| Hastena | Cadaba farinosa |
| Hena | Lawsonia inermis |
| Hichawech | Calpurnia aurea |
| Higula | Capparis tomentosa |
| Hila | *Oxyienanthera abyssinica* |
| Jungule | Kigelia africana |
| Kedada | Acacia mellifera |
| Kenchib | Euphorbia tirucalli |
| Kentetef | Pterolobium stellatum |
| Keresh | Acacia etbaica |
| Kilheb | Gyrocarpus americana |
| Kiliaw | Euclea schimperi |
| Kirkira | Anogeissus leiocarpus *(A. schimperi)* |
| Kitrit | Acacia mellifera |
| Kota | Trichilia emetica *(T. roka)* |
| Kuara | Erythrina abyssinica |
| Kulankala | Euphorbia abyssinica |
| Lemin | Citrus limon |
| Manderin | Citrus reticulata |

**Bilen (contd)**

| | |
|---|---|
| Mangus | Mangifera indica |
| Mechecho | Rhus natalensis |
| Mechecho | Rhus retinorrhoea |
| Medka | Grewia flavescens |
| Nima | Azadirachta indica |
| Ogg | Mimusops kummel |
| Sahtera | Grewia tenax |
| Sebkan | Albizia amara |
| Selsel | Arundo donax |
| Senker | Grewia mollis |
| Sensa | Boscia angustifolia |
| Serekana | Psydrax schimperiana |
| Senna | Teclea nobilis |
| Shawa | Tamarindus indica |
| Shebeta | Acacia Senegal |
| Shehata | Grewia ferruginea |
| Shelawa | Acacia asak |
| Shewina | Parkinsonia aculeata |
| Shinara | Dalbergia melanoxylon |
| Sinara | Vangueria madagascariensis |
| Sorob | Capparis decidua |
| Temer | Phoenix dactylifera |
| Tenfia | Calotropis procera |
| Terengi | Ximenia americana |
| Tesesa | Dodonaea angustifolia |
| Ubela | Tamarix aphylla |
| Wal wal | Boswellia papyrifera |
| Wekhora | Olea europaea subsp. africana |
| Wekhora | Olea europaea subsp. africana |
| Zeitun | Psidium guajava |

ENGLISH

| | |
|---|---|
| Abyssinian rose | Rosa abyssinica |
| Adriatic fig | Ficus carica |
| African black-wood | Dalbergia melanoxylon |
| African ebony | Dalbergia melanoxylon |
| African ebony | Diospyros mespiliformis |
| African pencil cedar | Juniperus procera |
| African wild olive | Olea europaea subsp. africana |
| Alexandrian senna | Senna alexandrina *(Cassia alexandrina)* |
| Apple | Malus domestica |
| Apple of Sodom | Calotropis procera |
| Apple-ring acacia | Faidherbia albida *(Acacia albida)* |
| Athel tree | Tamarix aphylla |
| Australian beefwood | Casuarina cunninghamiana |
| Australian blackwood | Acacia melanoxylon |
| Banana | Musa sapientum |
| Baobab | Adansonia digitata |
| Ben-oil tree | Moringa oleifera |
| Bitter frankincense | Boswellia papyrifera |
| Bitter leaf | Vernonia amygdalina |
| Black wattle | Acacia mearnsii *(A. mollissima)* |
| Buffalo thorn | Ziziphus mucronata |
| Cabbage tree | Moringa oleifera |
| Camel's foot tree | Piliostigma thonningii |
| Canary palm | Phoenix canariensis |
| Cape mahogany | Trichilia emetica *(T. roka)* |
| Carrot tree | Steganotaenia araliacea |
| Castor oil plant | Ricinus communis |
| Crested wattle | Albizia lophantha |
| Date palm | Phoenix dactylifera |
| Dead Sea fruit | Calotropis procera |
| Desert date | Balanites aegyptiaca |
| Desert fan palm | Washingtonia filifera |
| Doum palm | Hyphaene thebaica *(H. dankaliensis)* |
| Egyptian doum palm | Hyphaene thebaica *(H. dankaliensis)* |
| Egyptian plane tree | Sterculia africana |
| Egyptian thorn | Acacia nilotica |
| Falcon's-claw acacia | Acacia polyacantha |
| Finger euphorbia | Euphorbia tirucalli |
| Flamboyant | Delonix regia |
| Flame tree | Erythrina abyssinica |
| Flooded gum | Eucalyptus rudis |
| Grape | Vitis vinifera |
| Grapefruit | Citrus paradisi |
| Guava | Psidium guajava |
| Gum arabic | Acacia Senegal |
| Henna | Lawsonia inermis |
| Hog plum | Ximenia americana |
| Hoop pine | Araucaria cunninghamiana |
| Hop bush | Dodonaea angustifolia |
| Horse-radish tree | Moringa oleifera |
| India rubber tree | Ficus elastica |
| Indian fig | Opuntia ficus-indica |
| Ironwood | Senna siamea *(Cassia siamea)* |
| Jerusalem thorn | Parkinsonia aculeata |
| Kapok tree | Ceiba pentandra |

| | |
|---|---|
| Kassod tree | Senna siamea *(Cassia siamea)* |
| Lantana | Lantana camara |
| Large-leaved star chestnut | Sterculia africana |
| Large-leaved sterculia | Sterculia africana |
| Leafless tamarisk | Tamarix aphylla |
| Lemon | Citrus limon |
| Loquat | Eriobotryajaponica |
| Lowland bamboo | Oxytenanthera abyssinica |
| Lucky-bean tree | Erythrina abyssinica |
| Madras thorn | Pithecellobium dulce |
| Mandarin | Citrus reticulata |
| Mango | Mangifera indica |
| Mangrove | Avicennia marina |
| Manilla tamarind | Pithecellobium dulce |
| Mauritius thorn | Caesalpinia decapetala |
| Mesquite | Prosopis chilensis |
| Mexican cypress | Cupressus lusitanica |
| Monkey bread | Piliostigma thonningii |
| Murray red gum | Eucalyptus camaldulensis |
| Mysore thorn | Caesalpinia decapetala |
| Neem | Azadirachta indica |
| Pawpaw | Carica papaya |
| Peach | Prunus persica |
| Pepper tree | Schinus molle |
| Persian lilac | Melia azedarach |
| Petticoat palm | Washingtonia filifera |
| Pigeon pea | Cajanus cajan |
| Poison-arrow tree | Acokanthera schimperi |
| Port Jackson willow | Acacia saligna |
| Prickly pear | Opuntia ficus-indica |
| Red river gum | Eucalyptus camaldulensis |
| Reed grass | Arundo donax |
| Rubber plant | Ficus elastica |
| Salt cedar | Tamarix aphylla |
| Sandpaper bush | Ehretia amoena *(E. stuhlmannii)* |
| Sausage tree | Kigelia africana |
| Silky oak | Grevillea robusta |
| Siris tree | Albizia lebbeck |
| Sisal | Agave sisalana |
| Small-fruited teclea | Teclea nobilis |
| Smyrna fig | Ficus carica |
| Soursop | Annona muricata |
| Spiked acacia | Albizia lophantha. |
| Sugar gum | Eucalyptus cladocalyx |
| Sweet orange | Citrus sinensis |
| Sycamore fig | Ficus sycomorus |
| Tamarind | Tamarindus indica |
| Tamarisk | Tamarix aphylla |
| Tangerine | Citrus reticulata |
| Tasmanian blue gum | Eucalyptus globulus |
| Toothbrush tree | Salvadora persica |
| Treevernonia | Vernonia amygdalina |
| Umbrella thorn | Acacia abyssinica |
| Velvet-leaved combretum | Combretum molle |
| Wait-a-bit thorn | Acacia asak |
| Waterberry | Syzygium guineense |
| Weeping wattle | Acacia saligna |
| White whistling thorn | Acacia seyal |
| White-galled acacia | Acacia seyal |
| Wild date palm | Phoenix reclinata |
| Wild plum | Ximenia americana |
| Willow wattle | Acacia saligna |
| Winged bersama | Bersama abyssinica |
| Winter cassia. | Senna singueana *(Cassia singueana)* |
| Worm cure albizia | Albizia anthelmintica |

HIDAREB (HD)

| | |
|---|---|
| Abunusa | Dalbergia melanoxylon |
| Akter | Acacia mellifera |
| Botek | Acacia seyal |
| Bqullas | Ricinus communis |
| Debeleab | Maytenus senegalensis |
| Delaw | Acacia Senegal |
| Eghered | Acacia nilotica |
| Emberese | Calotropis procera |
| Embirka | Senna alexandrina *(Cassia alexandrina)* |
| Eradieb | Tamarindus indica |
| Ex hassab | Ximenia americana |
| Ghui | Delonix elata |
| Habedengul | Sclerocaryabirrea |
| Himet | Commiphora erythraea |
| Iriab | Diospyros mespiliformis |
| Kamey | Boscia angustifolia |
| Kemtet | Maerua angolensis |
| Lala | Ozoroa insignis *(Heeria reticulata)* |
| Lawlow | Boswellia papyrifera |
| Lemin | Citrus limon |
| Mentaro | Ficus vasta |
| Mikae | Dobera glabra |
| Nim | Azadirachta indica |
| Ochea | Faidherbia albida *(Acacia albida)* |

**Hidareb (contd)**

| | |
|---|---|
| Senganet | Acacia tortilis |
| Shemi | Grewia flavescens |
| Sorob | Capparis decidua |
| Teham | Boscia senegalensis |
| Teker | Acacia asak |
| Temer musa | Prosopis chilensis |
| Teseni | Commiphora africana |
| Tesha | Balanites aegyptiaca |
| Tetwen | Premna resinosa |
| Tewei | Acacia tortilis |
| Tghaba | Ziziphus spina-christi |
| Todfaf | Terminalia brownii |
| Tom | Grewia tenax |
| Ukurmut | Cadaba rotundifolia |
| Weama | Tamarix aphylla |
| Weika | Hyphaene thebaica (//. *dankaliensis)* |
| Welow | Acacia oerfota (A. *nubica)* |
| Wendra | Cordia monoica (C. *ovalis)* |
| Wihib | Salvadora persica |

KUNAMA (KM)

| | |
|---|---|
| Agaga | Commiphora africana |
| Agaga | Gyrocarpus americana |
| Aikota | Maytenus senegalensis |
| Aitra | Combretum aculeatum |
| Akika | Acacia polyacantha |
| Asa | Adansonia digitata |
| Aseba | Ziziphus spina-christi |
| Banana | Musa sapientum |
| Bela | Anogeissus leiocarpus (A. *schimperi)* |
| Bibila | Grewia flavescens |
| Buka | Calotropis procera |
| Burtukan | Citrus sinensis |
| Burumbura | Delonix elata |
| Dekina | Dalbergia melanoxylon |
| Dugula | Lanneafruticosa |
| Dura | Terminalia brownii |
| Egla | Salvadora persica |
| Etera | Acacia seyal |
| Ghergheja | Acacia mellifera |
| Ghirgida | Acacia oerfota *(A. nubica)* |
| Ghunja | Cordia africana |
| Goda | Boscia senegalensis |
| Gomera | Acacia Senegal |
| Gulmema | Combretum fragrans *(C. adegonium)* |
| Gulumfa | Grewia tenax |
| Ilia | Tamarindus indica |
| Imela | Boswellia papyrifera |
| Inna | Lawsonia inermis |
| Intura | Ricinus communis |
| Jedeba | Piliostigma thonningii |
| Juna | Boscia angustifolia |
| Kara | Acacia asak |
| Lemuna | Citrus limon |
| Lila | Psidium guajava |
| Mangusa | Mangifera indica |
| Masketima | Ormocarpum pubescens |
| Nim | Azadirachta indica |
| Olala | Capparis tomentosa |
| Oma | Hyphaene thebaica *(H. dankaliensis)* |
| Saghila | Ficus sycomorus |
| Sebeta | Acacia tortilis |
| Shengla | Balanites aegyptiaca |
| Sherga | Capparis decidua |
| Shilla | Tamarix aphylla |
| Sola | Faidherbia albida *(Acacia albida)* |
| Sowa | Diospyros mespiliformis |
| Susa | Dichrostachys cinerea |
| Tanfa | Calotropis procera |
| Tugla | Sclerocarya birrea |
| Uba | Grewia mollis |
| Umesela | Albizia amara |
| Usa | Stereospermum kunthianum |

NARA (NR)

| | |
|---|---|
| Abumbu | Delonix elata |
| Alebo | Sterculia africana |
| Alebo | Sterculia setigera *(S. tomentosa)* |
| Aleden | Dalbergia melanoxylon |
| Arembile | Maerua angolensis |
| Asegho | Grewia mollis |
| Ashela | Combretum aculeatum |
| Boo | Calotropis procera |
| Burtukan | Citrus sinensis |
| Dame | Dobera glabra |
| Dari | Adansonia digitata |
| Dawro | Grewia villosa |
| Ghamba | Hyphaene thebaica *(H. dankaliensis)* |
| Gheri | Acacia oerfota (A. *nubica)* |
| Hamburi | Ziziphus spina-christi |
| Hangutate | Sclerocarya birrea |
| Hindi | Tamarindus indica |
| Inditi | Balanites aegyptiaca |
| Jelow | Acacia seyal |

| | |
|---|---|
| Kamb | Boscia angustifolia |
| Kar | Acacia asak |
| Kulmet | Cadaba rotundifolia |
| Kushi | Boscia senegalensis |
| Lawlan | Boswellia papyrifera |
| Lomen | Citrus limon |
| Loo | Salvadora persica |
| Manga | Mangifera indica |
| Man | Acacia Senegal |
| Meghe | Acacia mellifera |
| Meghere | Acacia Senegal |
| Mendebkal | Maytenus senegalensis |
| Mulgi | Ziziphus spina-christi |
| Mus | Musa sapientum |
| Nim | Azadirachta indica |
| Sae | Acacia tortilis |
| Sala | Albizia amara |
| Serka | Capparis decidua |
| Shaf | Combretum fragrans *{C. adegonium)* |
| Shaghe | Grewia tenax |
| Shaile | Ficus vasta |
| Sheri | Cordia monoica (C. *ovalis)* |
| Sola | Faidherbia albida *{Acacia albida)* |
| Sora | Faidherbia albida *{Acacia albida)* |
| Soreb | Gyrocarpus americana |
| Takendeb | Acacia nilotica |
| Tibila | Terminalia brownii |
| Ubel | Tamarix aphylla |
| Umberi | Stereospermum kunthianum |
| Unqua | Commiphora africana |
| Zeitun | Psidium guajava |

SAHO (SH)

| | |
|---|---|
| Adad | Maytenus arbutifolia |
| Adahur | Buddlej a polystachya |
| Adaito | Salvadora persica |
| Aden | Conocarpus lancifolius |
| Adhar | Lannea fruticosa |
| Aflo | Acacia nilotica |
| Aito | Diospyros mespiliformis |
| Allaki | Psiadia punctulata |
| Amus | Rhus glutinosa |
| Anegto | Albizia amara |
| Arangele | Cadaba rotundifolia |
| Aras | Osyris quadripartita *{0. abyssinica)* |
| Asasia | Acacia ehrenbergiana (A. *flava)* |
| Asena | Entada abyssinica |
| Asraerra | Acokanthera schimperi |
| Assurto | Trichilia emetica *{T. roka)* |
| Atami | Rhus natalensis |
| Atami | Rhus retinorrhoea |
| Aulaeto | Olea europaea subsp. africana |
| Azaz | Maytenus senegalensis |
| Azela | Carissa edulis |
| Beles | Opuntia ficus-indica |
| Bretaro | Grewia flavescens |
| Burtukan | Citrus sinensis |
| Calua | Mimusops schimperi |
| Danigto | Albizia amara |
| Datahor | Dovyalis abyssinica |
| Dawa | Grewia mollis |
| Debina | Cadaba farinosa |
| Digdale | Otostegia integrifolia |
| Ebokh | Tarchonanthus camphoranthus |
| Egrabo | Boscia salicifolia |
| Enaerto | Ficus vasta |
| Erra | Acokanthera schimperi |
| Firanfaro | Vangueria madagascariensis |
| Gaga | Rosa abyssinica |
| Garab hara | Allophylus abyssinicus |
| Garomo | Maerua angolensis |
| Gerina | Ficus thonningii |
| Geseha | Rhamnus prinoides |
| Gharsa | Dobera glabra |
| Ghelaeto | Calotropis procera |
| Gomero | Acaciaoerfota (A. *nubica)* |
| Habeno | Grewia villosa |
| Hahot | Rumex usambarensis |
| Hambuka | Dombeya torrida |
| Hanse | Anogeissus leiocarpus (A. *schimperi)* |
| Hena | Lawsonia inermis |
| Hichawiche | Calpurnia aurea |
| Hudato | Grewia tenax |
| Humerto | Tamarindus indica |
| Hurum | Suaeda monoica |
| Karuwah | Cordia monoica (C. *ovalis)* |
| Kedkida | Dodonaea angustifolia |
| Kekea | Flueggia virosa *{Securinega virosa)* |
| Kermedo | Boscia angustifolia |
| Kiliawto | Euclea schimperi |
| Kistani-schahala | Rhamnus staddo |
| Kurbet | Commiphora africana |
| Kurbet | Commiphora ery thraea |
| Kurwah | Ehretia cymosa |
| Kusurto | Ziziphus spina-christi |

**Saho (contd)**

| | |
|---|---|
| Labie | Myrica salicifolia |
| Lalua | Mimusops kummel |
| Lamasa | Nuxia congesta |
| Lemin | Citrus limon |
| Madre | Cordia africana |
| Maeger | Acacia mellifera |
| Makuak | Psydrax schimperiana |
| Manderin | Citrus reticulata |
| Mangus | Mangifera indica |
| Mastaw | Sageretia thea |
| Mekieto | Balanites aegyptiaca |
| Merhad | Combretum fragrans (C. *adegonium)* |
| Mezba | Euphorbia polyacantha |
| Momon | Faidherbia albida *{Acacia albida)* |
| Nakobeles | Ricinus communis |
| Nim | Azadirachta indica |
| Sabahambo | Stereospermum kunthianum |
| Sakeho | Grewia ferruginea |
| Seaito | Acacia seyal |
| Seaito | Acacia tortilis |
| Seber | Phytolacca dodecandra |
| Segel | Tamarix aphylla |
| Seraw | Acacia etbaica |
| Seredo | Juniperus procera |
| Sia | Acacia abyssinica |
| Subula | Ficus sycomorus |
| Suhuga | Acacia asak |
| Suluha | Teclea nobilis |
| Tabeb | Becium grandiflorum |
| Tambukh | Croton macrostachyus |
| Tekai | Avicennia marina |
| Temeilko | Celtis africana |
| Temer | Phoenix dactylifera |
| Tikilbe | Acacia laeta *(A. trentiniani)* |
| Unga | Hyphaene thebaica *(H. dankaliensis)* |
| Unugto | Dichrostachys cinerea |
| Ura | Aloe macrocarpa |
| Weibo | Terminalia brownii |
| Yebusus | Delonix elata |
| Zanguh | Combretum aculeatum |
| Zeitun | Psidium guajava |

TIGRE(TR)

| | |
|---|---|
| Abdenesh | Lannea fruticosa |
| Abengul | Sclerocarya birrea |
| Abertetet | Albizia amara |
| Adai | Salvadora persica |
| Agam | Carissa edulis |
| Aira | Diospyros abyssinica |
| Akba | Acacia tortilis |
| Alazeyen | Dalbergia melanoxylon |
| Algen | Mimusops schimperi |
| Andel | Capparis tomentosa |
| Anjeba | Agave sisalana |
| Anona | Annona muricata |
| Anqua | Commiphora africana |
| Anqua | Commiphora erythraea |
| Arake | Dovyalis abyssinica |
| Argizana | Stereospermum kunthianum |
| Arkobkobai | Hyphaene thebaica *(H. dankaliensis)* |
| Asten | Cadaba farinosa |
| Awhi | Cordia africana |
| Awhi-tsergah | Cordia monoica (C. *ovalis)* |
| Banana | Musa sapientum |
| Basunait | Albizia anthelmintica |
| Beles | Opuntia ficus-indica |
| Burtukan | Citrus sinensis |
| Cafta | Maesa lanceolata |
| Cazmir | Casimiroa edulis |
| Chea | Acacia abyssinica |
| Chea | Acacia seyal |
| Chiet | Acacia polyacantha |
| Daero | Ficus vasta |
| Daero-telian | Ficus carica |
| Dalgus | Ficus thonningii |
| Dalkus | Ficus glumosa |
| Darsel | Sterculia africana |
| Darsel | Sterculia setigera *(S. tomentosa)* |
| Dewet | Acacia sieberiana |
| Echet-etub | Ceiba pentandra |
| Enab | Vitis vinifera |
| Esit wulad | Adenia venenata |
| Etsetferfer | Schinus molle |
| Etsmayet | Nuxia congesta |
| Felei | Erythrina abyssinica |
| Futfusto | Oncoba spinosa |
| Genji | Ozoroa insignis *{Heeria reticulata)* |
| Geret harmaz | Ormocarpum pubescens |
| Ghemrot | Acacia oerfota *(A. nubica)* |
| Ghered | Acacia nilotica |
| Gherset | Dobera glabra |
| Ghindae | Calotropis procera |
| Ghondel | - Avicennia marina |
| Gulie | Ricinus communis |
| Gum | Euclea schimperi |
| Hachewchew | Calpurnia aurea |

| | |
|---|---|
| Hadalma | Otostegia fruticosa *(0. repanda)* |
| Hafiile | Grewia villosa |
| Hahut | Rumex usambarensis |
| Hajef, shuf | Combretum fragrans *(C. adegonium)* |
| Hal-aqba | Acacia ehrenbergiana (A. *flava)* |
| Hal-awhi | Ehretia amoena *(E. stuhlmannii)* |
| Hal-kusra | Ziziphus mucronata |
| Hamta | Boscia senegalensis |
| Haq | Acacia asak |
| Harinke | Sterculia africana |
| Harinke | Sterculia setigera *(S. tomentosa)* |
| Heghem | Dichrostachys cinerea |
| Hena | Lawsonia inermis |
| Hergitte | Maytenus arbutifolia |
| Hichum | Suaeda monoica |
| Hil | Oxytenanthera abyssinica |
| Himboy | Senna singueana *(Cassia singueana)* |
| Himeret | Adansonia digitata |
| Hirgitte | Maytenus senegalensis |
| Hisas-atal | Steganotaenia araliacea |
| Huda | Grewia tenax |
| Humert | Tamarindus indica |
| Iskee | Becium grandiflorum |
| Kalabitos | Eucalyptus camaldulensis |
| Kalabitos | Eucalyptus cladocalyx |
| Kalabitos | Eucalyptus globulus * |
| Kalabitos | Eucalyptus rudis |
| Karnotai | Combretum aculeatum |
| Kedad | Acacia mellifera |
| Kenchib | Euphorbia tirucalli |
| Kerets | Acacia etbaica |
| Kerets | Osyris quadripartita *(0. abyssinica)* |
| Ketse | Tamarindus indica |
| Kilheb | Gyrocarpus americana |
| Kirkire | Anogeissus leiocarpus *(A. schimperi)* |
| Kog | Balanites aegyptiaca |
| Koloshem | Rosa abyssinica |
| Kontetefe | Pterolobium stellatum |
| Kulmet | Cadaba rotundifolia |
| Kulunqual | Euphorbia abyssinica |
| Kuota | Trichilia emetica *(T. roka)* |
| Kurareas | Syzygium guineense |
| Kuslet | Ziziphus abyssinica |
| Kuslet | Ziziphus spina-christi |
| Lacheb | Cadaba rotundifolia |
| Lebettelit | Sageretia thea |
| Lebun | Citrus limon |
| Lechem | Grewia mollis |
| Leisham | Barbeyaoleoides |
| Leshem | Celtis africana |
| Manderin | Citrus reticulata |
| Mangus | Mangifera indica |
| Mektee | Acokanthera schimperi |
| Melhat | Pappea capensis |
| Melhitta | Ximenia americana |
| Melmelet | Faidherbia albida *(Acacia albida)* |
| Meraat | Maerua angolensis |
| Meret | Boscia salicifolia |
| Mewets-dinghil | Heteromorpha trifoliata *(H. arborescens)* |
| Mim | Melia azedarach |
| Motet | Steganotaenia araliacea |
| Nered | Juniperus procera |
| Nim | Azadirachta indica |
| Pabayo | Carica papaya |
| Rakub | Grewia flavescens |
| Ref | Delonix elata |
| Refna | Delonix elata |
| Sabunet | Buddleja polystachya |
| Sangosango | Vangueria madagascariensis |
| Sanu | Senna alexandrina *(Cassia alexandrina)* |
| Sarakan | Psydrax schimperiana |
| Sarakan | Tarchonanthus camphoranthus |
| Sawaria | Allophylus abyssinicus |
| Sebute | Buddleja polystachya |
| Sekeb | Premna resinosa |
| Sesban | Prosopis chilensis |
| Shaghla | Ficus sycomorus |
| Shamut-ketan | Rhus retinorrhoea |
| Shamutet | Rhus glutinosa |
| Shamutet | Rhus natalensis |
| Shehat | Grewia ferruginea |
| Shelshel | Arundo donax |
| Shenebet | Otostegia integrifolia |
| Shibota | Acacia mellifera |
| Shuluh | Teclea nobilis |
| Sobeth | Phytolacca dodecandra |
| Sorob | Capparis decidua |
| Subuh | Entada abyssinica |
| Sutora | Calpurnia aurea |
| Tambuk | Croton macrostachyus |
| Tambuk deber | Dombeyatorrida |
| Tases | Dodonaea angustifolia |
| Tashab | Acacia laeta (A. *trentiniani)* |

**Tigre (contd)**

| | |
|---|---|
| Temer | Phoenix canadensis |
| Temer | Phoenix dactylifera |
| Temer-hindi | Pithecellobium dulce |
| Teshab | Acacia Senegal |
| Towayet | Acacia tortilis |
| Tsaan | Euphorbia polyacantha |
| Tsada-airo | Meriandra bengalensis |
| Tsai | Boscia angustifolia |
| Tsebir | Aloe macrocarpa |
| Tsehaiferhet | Psiadia punctulata |
| Tsehat | Terminalia brownii |
| Tselim airo | Diospyros mespiliformis |
| Tselimo | Diospyros abyssinica |
| Tserob | Combretum molle |
| Tufah | Malus domestica |
| Tumera | Rhamnus staddo |
| Ubel | Tamarix aphylla |
| Wal wal | Boswellia papyrifera |
| Wegre | Olea europaea subsp. afncana |
| Zeitun | Psidium guajava |
| Zelzele | Kigelia africana |

TIGRIGNA(TG)

| | |
|---|---|
| Abelwa | Combretum molle |
| Abengul | Sclerocarya birrea |
| Adai | Salvadora persica |
| Agam | Carissa edulis |
| Aguseana | Phoenix reclinata |
| Akba | Acacia tortilis |
| Alendia | Ormocarpum pubescens |
| Alia | Acacia tortilis |
| Allakhit | Psiadia punctulata |
| Amam-gemel | Piliostigma thonningii |
| Amus | Rhus glutinosa |
| Andel | Capparis tomentosa |
| Ander guhila | Steganotaenia araliacea |
| Anderguhila | Brucea antidysenterica |
| Anona | Annona muricata |
| Anqua | Commiphora africana |
| Anqua | Commiphora erythraea |
| Aranshi | Citrus sinensis |
| Areragud | Pappea capensis |
| Arghudi | Maytenus senegalensis |
| Argizana | Stereospermum kunthianum |
| Arkai | Oxytenanthera abyssinica |
| Arkobkobai | Hyphaene thebaica *(H. dankaliensis)* |
| At at | Maytenus arbutifolia |
| Awhi-tsergah | Cordia monoica (C. *ovalis)* |
| Awhi | Cordia africana |
| Awliie | Olea europaea subsp. africana |
| Aye | Diospyros mespiliformis |
| Azamaro | Allophylus abyssinicus |
| Banana | Musa sapientum |
| Beles-telian | Ficus carica |
| Beles | Opuntia ficus-indica |
| Berbere-tselim | Schinus molle |
| Bersema | Bersama abyssinica |
| Bersenai | Cadaba farinosa |
| Bessenna | Albizia anthelmintica |
| Bun tilian | Lantana camara |
| Burtukan | Citrus sinensis |
| Cazmir | Casimiroa edulis |
| Chea | Acacia abyssinica |
| Cheare | Acacia sieberiana/ |
| Chebaale | Celtis africana |
| Chekomte | Ficus glumosa |
| Chigono | Albizia amara |
| Chindog | Otostegia integrifolia |
| Daero | Ficus vasta |
| Darile | Sterculia africana |
| Darile | Sterculia setigera *(S. tomentosa)* |
| Dugdugunga | Lannea fruficosa |
| Duma | Adansonia digitata |
| Ebokh | Tarchonanthus camphoranthus |
| Eka | Agave sisalana |
| Elam | Lawsonia inermis |
| Fesihadima | Otostegia fruticosa *(0. repanda)* |
| Fyori | Bougainvillea spectabilis |
| Gaba | Ziziphus spina-christi |
| Gaba-agdi | Ziziphus abyssinica |
| Gaba-harmaz | Ziziphus mucronata |
| Gharsai | Dobera glabra |
| Ghered | Acacia nilotica |
| Ghesho | Rhamnus prinoides |
| Ghindae | Calotropis procera |
| Ghomoro | Acacia polyacantha |
| Ghonok | Dichrostachys cinerea |
| Ghumero | Acacia oerfota *(A. nubica)* |
| Grawa | Vernonia amygdalina |
| Gulii | Ricinus communis |
| Gumeh | Trichilia emetica *(T. roka)* |
| Habene | Grewia villosa |
| Habi-tselim | Jasminum floribundum |
| Halka | Entada abyssinica |
| Hamat tsedo | Sageretia thea |
| Hambo hambo | Senna singueana *{Cassia singueana)* |
| Hamta | Boscia senegalensis |

| | |
|---|---|
| Hanse | Anogeissus leiocarpus *(A. schimperi)* |
| Harmazo | Flueggia virosa *(Securinega virosa)* |
| Harnkeren | Vangueria madagascariensis |
| Hehot | Rumex usambarensis |
| Hetsawus | Calpurnia aurea |
| Hichum | Suaeda monoica |
| Hina | Lawsonia inermis |
| Hirmi-tel | Barbeyaoleoides |
| Huguat | Oncoba spinosa |
| Humer | Tamarindus indica |
| Jakara | Adenia venenata |
| Kabout | Premna resinosa |
| Keih chea | Acacia seyal |
| Keih-kelamitos | Eucalyptus camaldulensis |
| Keih-kelamitos | Eucalyptus cladocalyx |
| Kelamitos megdalina | Eucalyptus rudis |
| Kenchib | Euphorbia tirucalli |
| Kenteb | Acacia laeta *(A. trentiniani)* |
| Kentebera | Nuxia congesta |
| Keremo | Maerua angolensis |
| Kerets | Osyris quadripartita *(0. abyssinica)* |
| Kermed | Boscia angustifolia |
| Kiliaw | Euclea schimperi |
| Kolodashim | Rosa abyssinica |
| Kolqual | Euphorbia abyssinica |
| Kontetefe | Pterolobium stellatum |
| Kuk | Prunus persica |
| Kummel | Mimusops kummel |
| Kurbah | Ehretia cymosa |
| Kuto | Combretum aculeatum |
| Lehai | Acacia lahai |
| Lemin | Citrus limon |
| Liham | Syzygium guineense |
| Lucina | Leucaena leucocephala |
| Lullae | Mimusops schimperi |
| Manderin | Citrus reticulata |
| Mangus | Mangifera indica |
| Mebtae | Acokanthera schimperi |
| Mederba | Kigelia africana |
| Meker | Boswellia papyrifera |
| Mekie | Balanites aegyptiaca |
| Melia | Melia azedarach |
| Messenna | Albizia anthelmintica |
| Metere | Buddleja polystachya |
| Mezba | Euphorbia polyacantha |
| Momona | Faidherbia albida *Acacia albida)* |
| Mosoqua | Grewia flavescens |
| Mullo | Ximenia americana |
| Murkus-tebi | Heteromorpha trifoliata *(H. arborescens)* |
| Nefasha | Albizia amara |
| Nihba | Meriandra bengalensis |
| Niibi | Myrica salicifolia |
| Nim | Azadirachta indica |
| Oba | Boscia salicifolia |
| Ova | Grewia mollis |
| Palasandro | Jacaranda mimosifolia |
| Papayo | Carica papaya |
| Saghla | Ficus sycomorus |
| Sanda-ere | Aloe macrocarpa |
| Sawaria | Allophylus abyssinicus |
| Sawarja | Maesa lanceolata. |
| Seraw | Acacia etbaica |
| Serneg | Grewia tenax |
| Sesewe | Combretum molle |
| Shambuko | Arundo donax |
| Shewit hagai | Parkinsonia aculeata |
| Shibaka | Ficus thonningii |
| Shibti | Phytolacca dodecandra |
| Shotora | Securidaca longepedunculata |
| Siye | Phoenix canariensis |
| Sono | Senna alexandrina *(Cassia alexandrina)* |
| Sonqua | Dombeya torrida |
| Suhug | Acacia asak |
| Sulha | Teclea nobilis |
| Suluh | Teclea nobilis |
| Tahbeb | Becium grandiflorum |
| Tahses | Dodonaea angustifolia |
| Tambuk | Croton macrostachyus |
| Temri | Phoenix dactylifera |
| Temri-hindi | Pithecellobium dulce |
| Tenkeleba | Combretum fragrans (C. *adegonium)* |
| Tetale | Rhus natalensis |
| Teteale | Rhus retinorrhoea |
| Tishbealalito | Pappea capensis |
| Tsaeda kenteb | Acacia Senegal |
| Tsaeda-kelamitos | Eucalyptus globulus |
| Tseada chea | Acacia seyal |
| Tsedo | Rhamnus staddo |
| Tsehdiferenji | Cupressus lusitanica |
| Tselim kenteb | Acacia mellifera |
| Tselimo | Diospyros abyssinica |
| Tsenqua | Grewia ferruginea |
| Tsihdi | Juniperus procera |
| Tufah | Malus domestica |
| Ubel | Tamarix aphylla |
| Ugot | Oncoba spinosa |
| Weiba | Terminalia brownii |

**Tigrigna (contd)**

| | |
|---|---|
| Weini | Vitis vinifera |
| Zabia wedi mahyo | Ehretia amoena *(E. stuhlmannit)* |
| Zahak | Psydrax schimpenana |
| Zanzai | Ozoroa insignis *(Heeria reticulata)* |
| Zebe | Dalbergia melanoxylon |
| Zeitun | Psidium guajava |
| Zengherefa | Lonchocarpus bussei *(L. laxiflorus)* |
| Zuwawue | Erythrina abyssinica |

# PART II

# THE USEFUL TREES AND SHRUBS

## Acacia abyssinica subsp. abyssinica *Mimosoideae*

Indigenous

*Af: Keselto* *Eng: Umbrella thorn* *Sh: Sia*
*Tg: Chea* *Tr: Chea*

**Ecology:** In wooded grassland, highland forest edges, 1,600-2,300 m, extending to east, central and southern Africa. Grows in the central and northern highlands as well as in the western escarpments, e.g. around Tselema, Segenaiti, Seladaaro, Serejeka, Embaderho, Rora-mensa and Rora-habab.

**Uses:** **Firewood, charcoal,** poles, posts, tool handles, medicine, **fodder, bee forage, soil conservation,** nitrogen fixation, shade (for cattle), fence (cut branches).

**Description:** A large **flat-topped** tree to 20 m when mature. BARK: Young bark flaking, papery; rough, grooved and dark brown when mature; branchlets grey-yellow, hairy. THORNS: Very variable, short or long, 4-40 mm, sometimes none. LEAVES: Compound, 15-36 pairs pinnae when mature, on a stalk to 9 cm, **leaflets tiny.** FLOWERS: Very many, **round** heads of **cream** flowers, buds **pink-red.** FRUIT: **Pods to 12 cm,** usually **straight,** red-grey-brown, splitting to set free seed.

**Propagation:** Seedlings, direct sowing, root suckers.

**Seed:** Seed quite small, highly susceptible to beetle attack while still in pods. Damaged seeds should be separated by floating. No. of seeds per kg: 16,000-18,000.

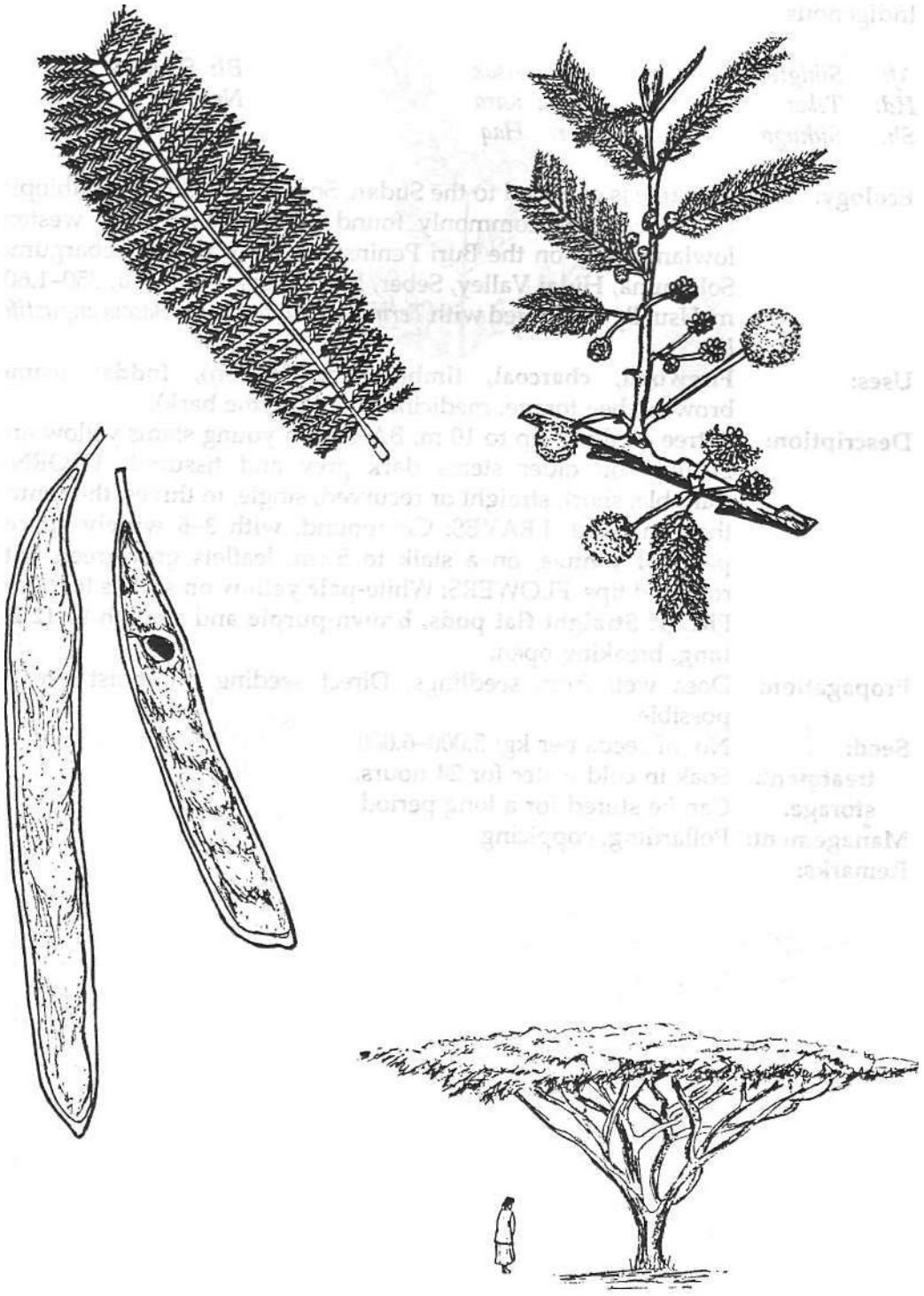
**treatment:** Soak in cold water or put in hot water and allow to cool for 36-48 hours.

**storage:** Seed can be stored for long periods if kept in a cool, dry and insect-free place.

**Management:** Growth rate is medium to fast.

**Remarks:** Spreading roots make it unsuitable for planting beside fields. Drought tolerant, will grow on degraded land and along gullies. It makes good fuelwood but the hard timber is difficult to work.

Acacia abyssinica subsp. abyssinica *Mimosoideae*



## Acacia asak *Mimosoideae*

Indigenous

| | | |
|---|---|---|
| ***Af:*** *Sihigto* | *Ar: Asak* | *Bl: Sh.ela.wa* |
| *Hd: Teker* | *Km: Kara* | *Nr: Kar* |
| *Sh: Suhuga* | *Tr: Haq* | *Tg: Suhug* |

**Ecology:** This tree is confined to the Sudan, Somalia, Arabia and Ethiopia. In Eritrea, it is commonly found in the eastern and western lowlands, e.g. on the Buri Peninsula, around Zula, Sebarguma, Solomuna, Hidai Valley, Seber, Mai-lam and Barentu, 350-1,600 m. Usually associated with *Terminalia brownii* and *Boscia angustifolia.*

**Uses:** **Firewood, charcoal, timber** (construction), fodder (camel browse), bee forage, medicine (smoking the bark).

**Description:** A tree or shrub up to 10 m. BARK: On young stems yellow and peeling, on older stems dark grey and fissured. THORNS: Variable, short, straight or recurved, single, in threes, the central thorn hooked. LEAVES: Compound, with **3-6 widely spaced pairs of pinnae,** on a stalk to 5 cm, leaflets grey-green with rounded tips. FLOWERS: White-pale **yellow on spikes to** 11 **cm.** FRUIT: **Straight flat pods, brown-purple** and smooth **to 12 cm long,** breaking open.

**Propagation:** Does well from seedlings. Direct seeding on moist sites is possible.

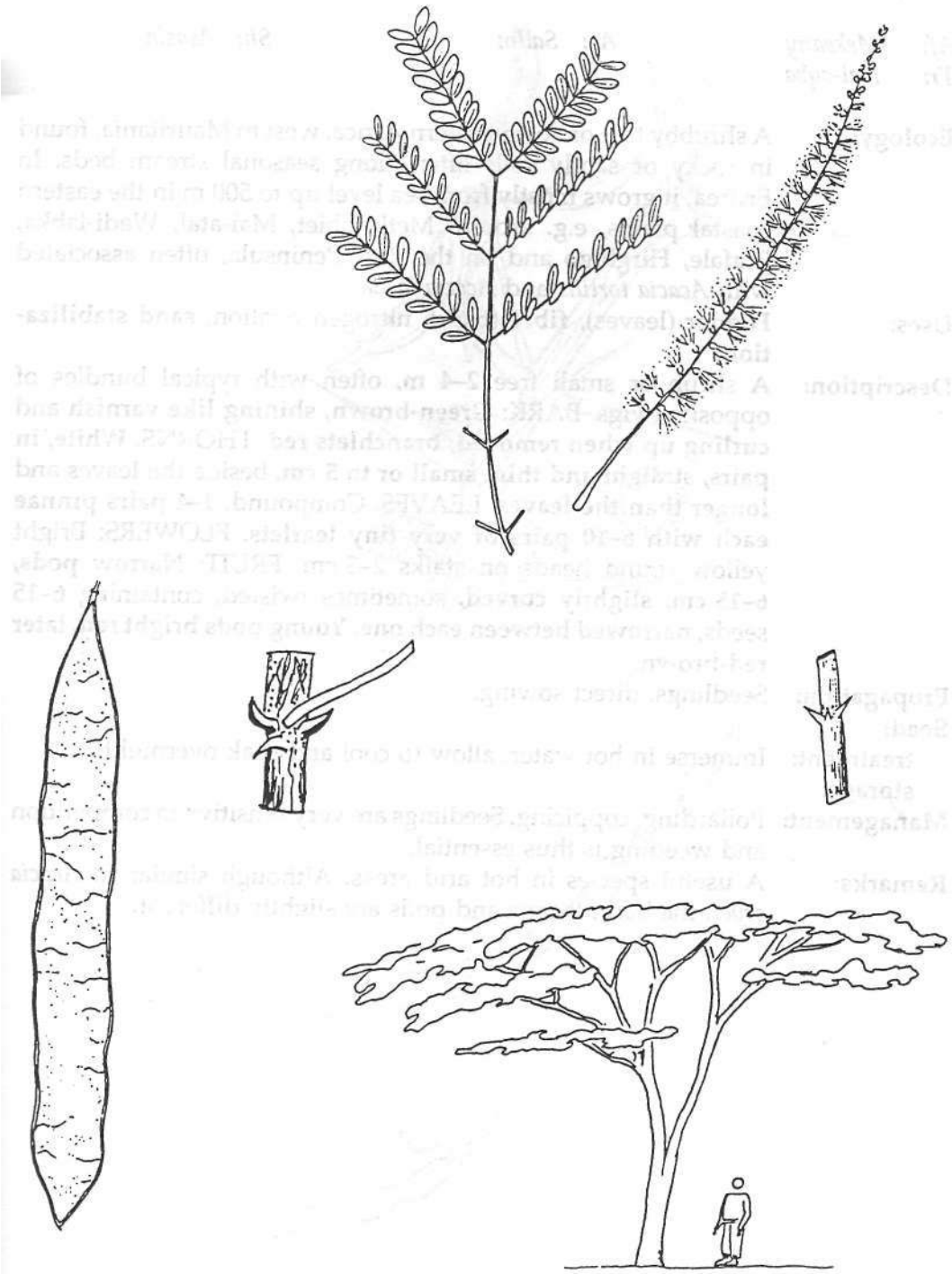
**Seed:** No. of seeds per kg: 5,000-6,000.

**treatment:** Soak in cold water for 24 hours.

**storage:** Can be stored for a long period.

**Management:** Pollarding, coppicing

**Remarks:**



## Acacia ehrenbergiana (A. flava) *Mimosoideae*

Indigenous

*Af:* *Mekeany* *An* *Sallm* *Sh:* *Asasia*
*Tr:* *Hal-aqba*

**Ecology:** *A* shrubby tree of north-eastern Africa, west to Mauritania, found in rocky or sandy soils often along seasonal stream beds. In Eritrea, it grows mostly from sea level up to 500 m in the eastern coastal plains, e.g. around Metkelabiet, Mai-atal, Wadi-labka, Erafale, Hirghigo and on the Buri Peninsula, often associated with *Acacia tortilis* and *Acacia laeta.*

**Uses:** **Fodder** (leaves), **fibre (bark),** nitrogen fixation, **sand stabilization.**

**Description:** A shrub or small tree 2-4 m, often with typical bundles of opposite twigs. BARK: **Green-brown, shining like varnish** and **curling up when removed; branchlets red.** THORNS: **White, in pairs, straight and thin, small or to 5 cm,** beside the leaves and **longer than the leaves.** LEAVES: Compound, **1-4 pairs pinnae each with 8-10 pairs of very tiny leaflets.** FLOWERS: Bright yellow round heads on stalks 2-3 cm. FRUIT: **Narrow pods, 6-15 cm, slightly curved,** sometimes twisted, containing 6-15 seeds, **narrowed between each one. Young pods bright red, later red-brown.**

**Propagation:** Seedlings, direct sowing.

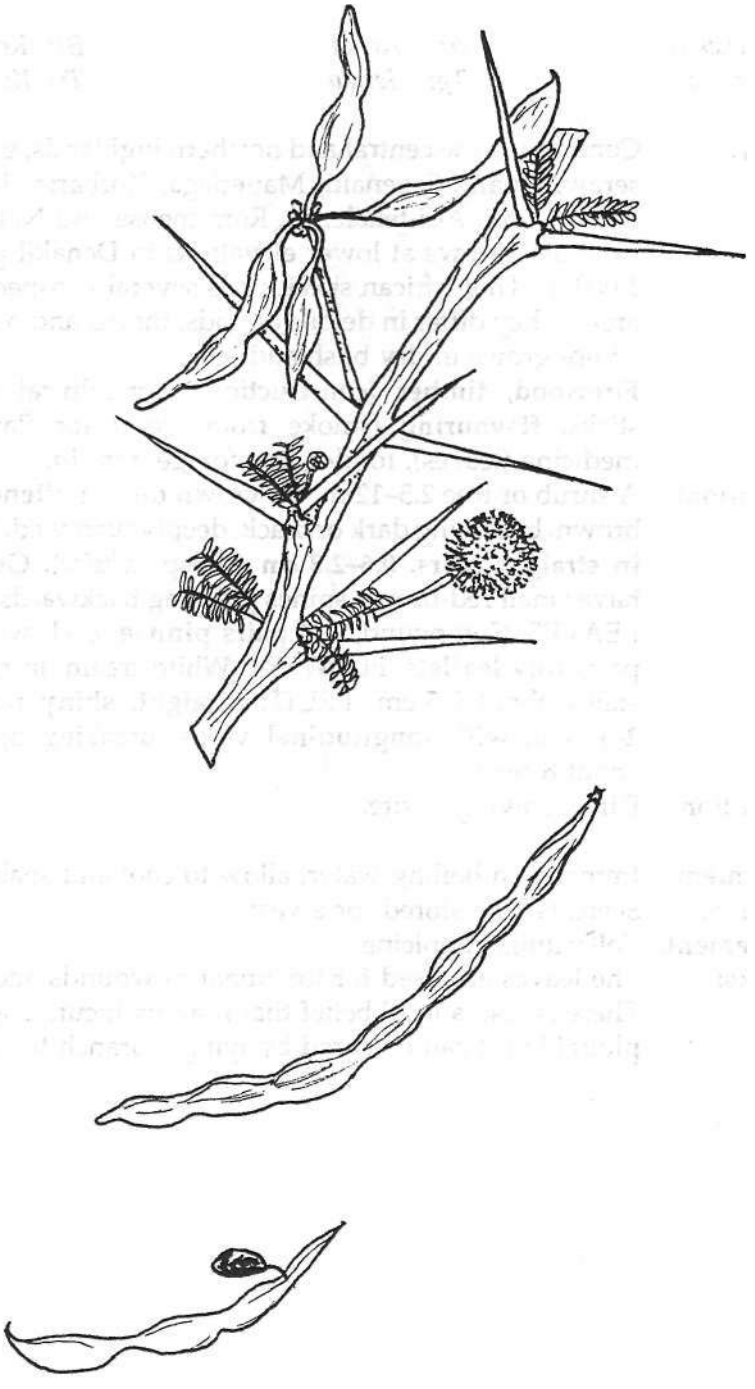
**Seed:**

**treatment:** Immerse in hot water, allow to cool and soak overnight.

**storage:**

**Management:** Pollarding, coppicing. Seedlings are very sensitive to competition and weeding is thus essential.

**Remarks:** A useful species in hot arid areas. Although similar to *Acacia seyal,* the bark, thorns and pods are slightly different.



## Acacia etbaica *Mimosoideae*

Indigenous

| | | |
|---|---|---|
| *Af: Sekekto* | *Ar: Arrad* | *Bl: Keresh* |
| *Sh: Seraw* | *Tg: Seraw* | *Tr: Kerets* |

**Ecology:** Common in the central and northern highlands, e.g. around Mai-seraw, Quatit, Segenaiti, Mai-edaga, Korbaria, Tselema, Meng-uda, Seharti, Adi-tekelezan, Rora-mensa and Nakfa, 1,400-2,300 m. It also grows at lower elevations in Denakil plains, at about 1,000 m. This African species has several subspecies in different areas. They differ in details of pods, thorns and hairs. Subspecies *etbaica* grows in dry bushland.

**Uses:** **Firewood, timber** (construction), agricultural tools, walking sticks, **flavouring** (smoke from wood for flavouring milk), medicine (leaves), fodder, bee forage, **tannin.**

**Description:** A shrub or tree 2.5-12 m, the **crown often flattened.** BARK: Pale brown, becoming dark or black, deeply furrowed. THORNS: **Pale in straight pairs, 0.6-2.8 cm** (subsp. *etbaica).* Other subspecies have small red-brown spines pointing backwards, or both kinds. LEAVES: Compound, **1-9 pairs pinnae,** each with about 10-20 pairs **tiny leaflets.** FLOWERS: White-cream, in round heads on stalks about 2.5 cm. FRUIT: **Straight, shiny red-brown pods 2-12 cm, with longitudinal veins,** breaking open to set free about 8 seeds.

**Propagation:** Direct sowing at site.

**Seed:**

**treatment:** Immerse in boiling water, allow to cool and soak for 24 hours.

**storage:** Seeds can be stored for a year.

**Management:** Pollarding, coppicing.

**Remarks:** The leaves are used for treatment of wounds and skin diseases. There is also a local belief that if an ox incurs a leg injury while ploughing it can be cured by tying a branch to its tail.

## Acacia laeta (A. trentiniani) *Mitnosoideae*

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *Af:* | *Tikilbeito* | *Ar:* | *Shitra* | *Sh:* | *Tikilbe* |
| *Tg:* | *Kenteb* | *Tr:* | *Tashab* | | |

Ecology: An Acacia growing from Niger to Egypt, Arabia and south to Tanzania. In Eritrea, it grows in the eastern and western lowlands, e.g. around Seber, Hashishai, Hirghigo, Metkelabiet, Wadilabka and on the Buri Peninsula, 0-1,800 m associated with *Acacia mellifera* and *Acacia oerfota.* It prefers neutral or slightly alkaline sandy loamy or loamy soils.

**Uses:** **Firewood,** charcoal, poles, food (edible gum), **fodder** (leaves, pods), fibre (ropes from young stems or bark), dry fencing, gum arabic.

**Description:** A **shrub or small tree to 6 m with a rounded crown. BARK: Grey-green** (appears black at a distance). Young branchlets smooth grey-brown. PRICKLES (not the usual stipular spines): A **pair of purple-black claw-shaped prickles** grow just below leaf nodes to 5 mm long; sometimes a third prickle grows above the pair, but more often a leaf appears. LEAVES: Compound, **2-3 pairs of pinnae,** each with **2-5 pairs of fairly large leaflets, well spaced in the stalk.** Each leaflet 4-14 mm, wider at the tip. FLOWERS: In cream-white fragrant spikes to 5 cm long, usually single but up to 3 together. FRUIT: **Pale brown pods,** rim thick with clear net veins, **straight, oblong,** with a sharp **tip,** 4-8 cm by 2 cm across, splitting to set free rounded seeds less than 1 cm wide.

**Propagation:** Seedlings, direct sowing at site.

**Seed:** No. of seed per kg: 8,500-10,000.

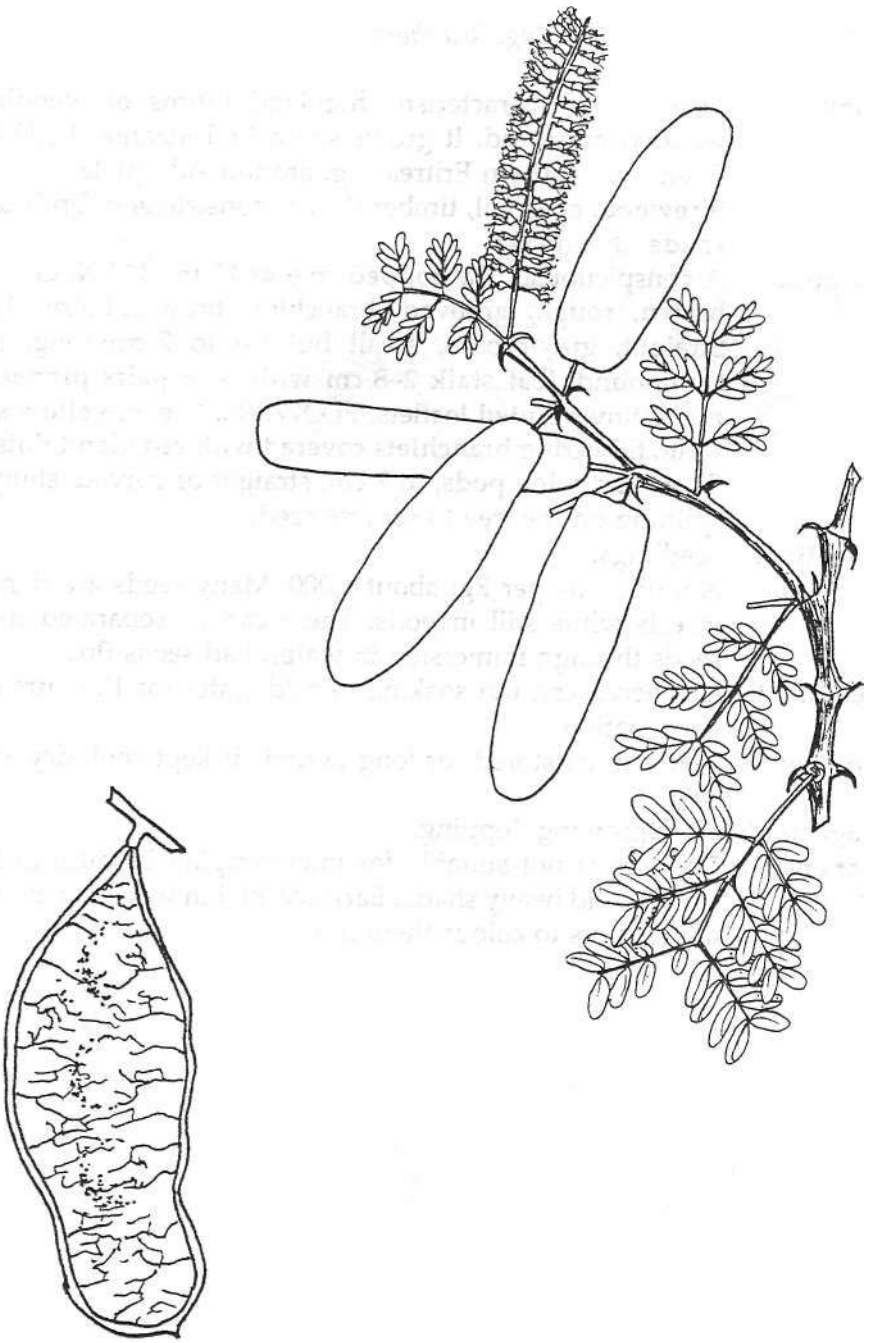
**treatment:** Immerse in hot water, allow to cool and soak for 24 hours.

**storage:**

**Management:**

**Remarks:** Natural regeneration is frequently seen. Gum produced from this species is said to be inferior to that of *Acacia Senegal* both in quality and quantity.

Acacia laeta (A. trentiniani) *Mtmosoideae*



## Acacia lahai *Mimosoideae*

Indigenous

*Tg: Lehai* *Eng: Red thorn*

**Ecology:** One of the characteristic highland thorns of woodland and wooded grassland. It grows south to Tanzania, 1,500-2,000 m. Found in southern Eritrea, e.g. around Adi-quala.

Uses: **Firewood,** charcoal, timber (heavy construction, bridges), posts, **shade,** dye (bark).

**Description:** A conspicuously **flat-topped tree** to 15 m. BARK: Grey to dark brown, rough, grooved, branchlets brown, hairy. THORNS: Straight, grey-brown, small but up to 7 cm long. LEAVES: Compound, **leaf stalk 2-8 cm with 6-15 pairs pinnae** bearing many tiny **pointed** leaflets. FLOWERS: **Cream-yellow spikes to 7 cm,** flowering **branchlets covered with red gland dots.** FRUIT: **Short and wide pods, to 7 cm,** straight or curved, shiny brown, splitting on the tree to set free seed.

**Propagation:** Seedlings.

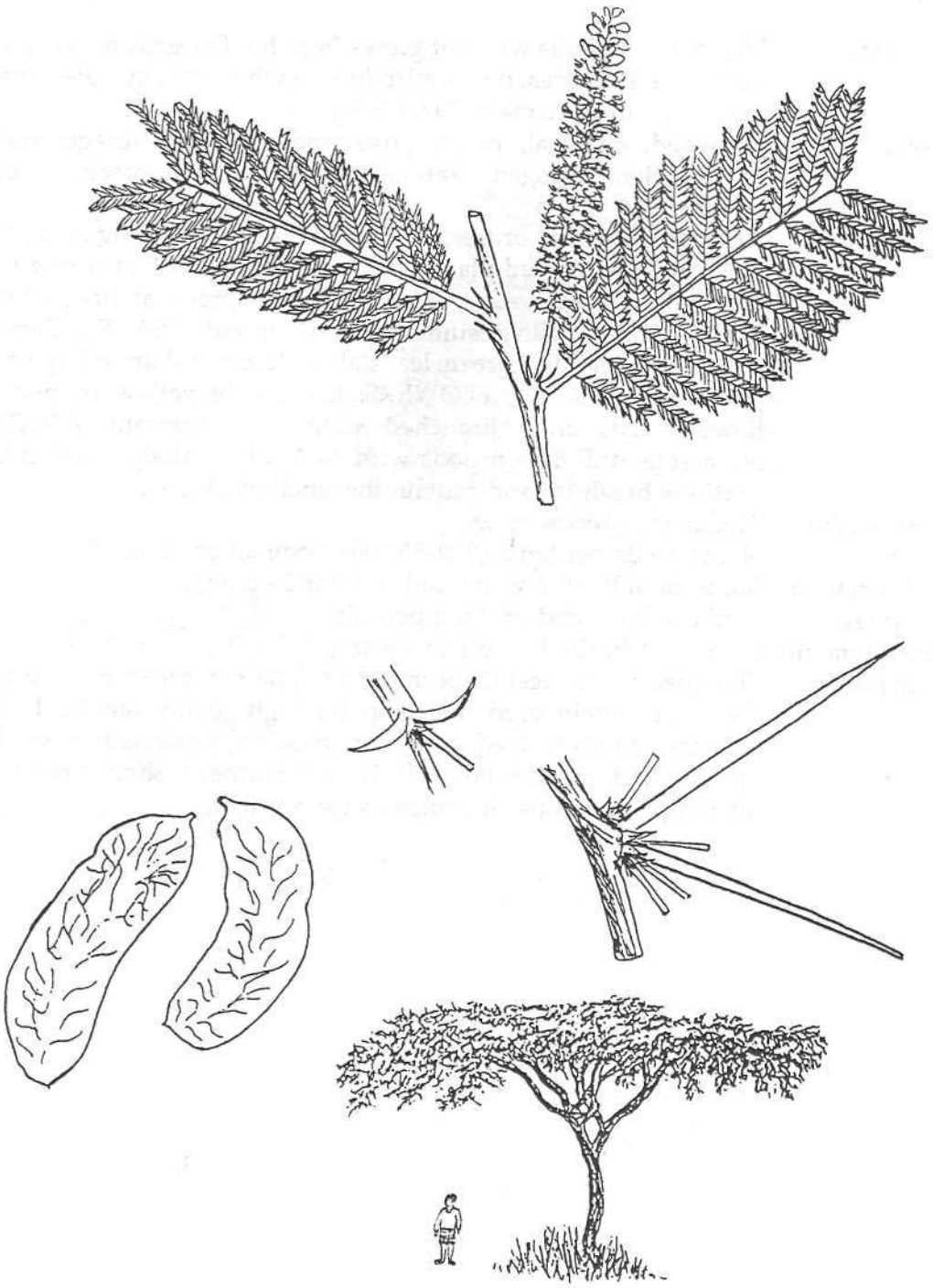
**Seed:** No. of seeds per kg: about 4,000. Many seeds are damaged by insects while still in pods. These can be separated from good seeds through immersion in water: bad seeds float.

**treatment:** Not necessary, but soaking in cold water for 12 hours enhances germination.

**storage:** Seed can be stored for long periods if kept cool, dry and insect free.

**Management:** Slow growing; lopping.

**Remarks:** The tree is not suitable for intercropping because of its broad canopy and heavy shade. Bark crushed in water can be sprinkled on hot pots to colour them red.



## Acacia mearnsii (A. mollissima) *Mimosoideae*

Australia

*Eng: Black wattle*

**Ecology:** Native to Australia where it grows from hot Queensland to cool Tasmania. In Eritrea, it was introduced in the 1940's at Adi-sheka dam site and in Asmara, 2,000-2,300 m.

**Uses:** **Firewood,** charcoal, **poles,** posts, medicine, bee forage, soil conservation, nitrogen fixation, ornamental, windbreak, fibre, tannin.

**Description:** An unarmed shrub or tree, 2-15 m, the trunk providing straight poles in close-planted plantations. Sometimes leans over due to the shallow root system. BARK: Smooth, green at first, later **black,** fissured **with resinous gum** when cut. LEAVES: Compound, feathery **dull green,** leaf stalk to 12 cm and up to 21 pairs pinnae, **leaflets tiny.** FLOWERS: Many **pale yellow** rounded flower heads on a **branched stalk, very fragrant.** FRUIT: Numerous dull brown pods with 3-12 **joints,** straight or bent. **Sections break up** and contain the small black seeds.

**Propagation:** Seedlings, direct sowing.

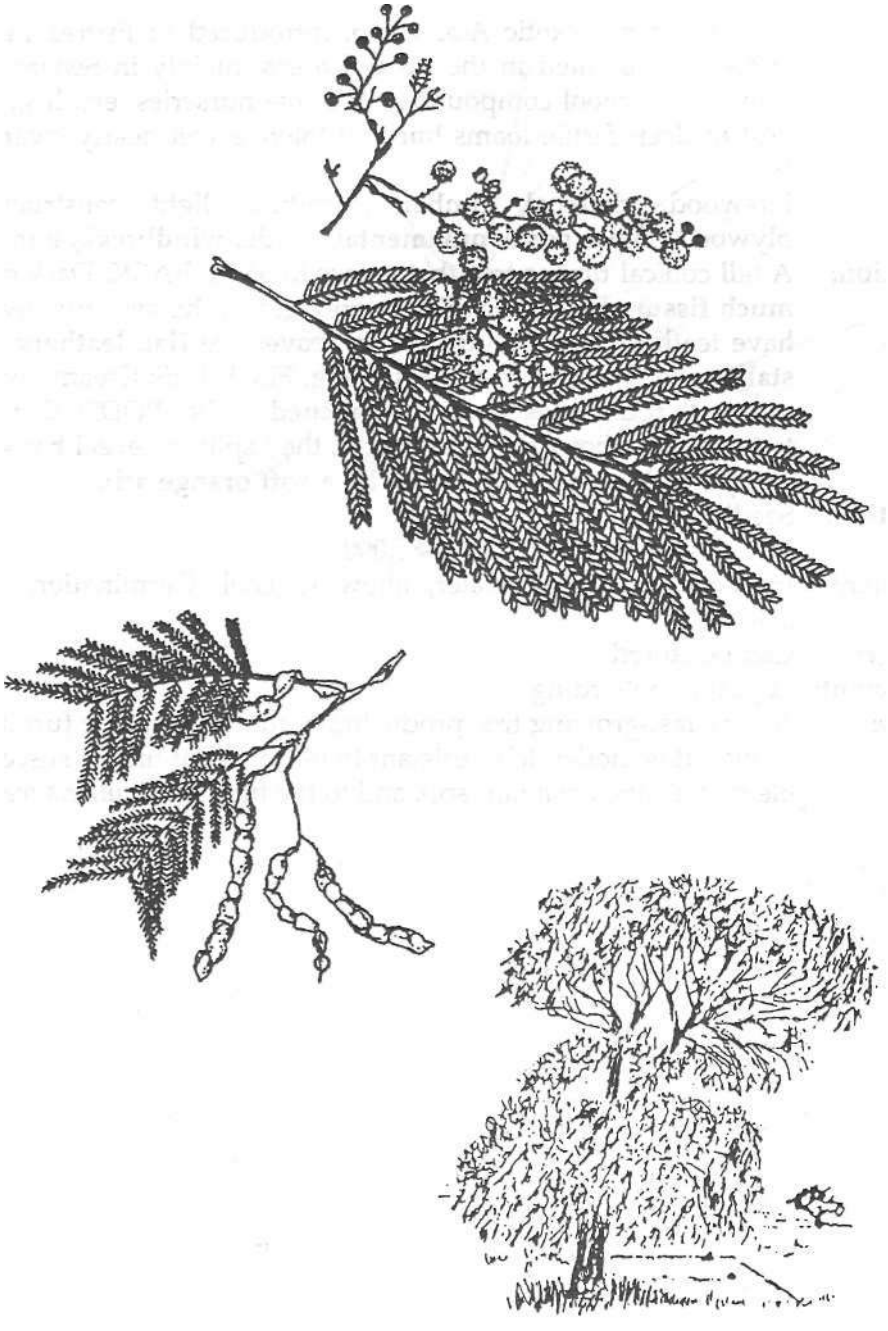
**Seed:** No. of seeds per kg: 50,000-85,000; germination 50-80 %.

**treatment:** Immerse in boiling water and cool for 24 hours.

**storage:** Seed can be stored for long periods.

**Management:** Thin if established by direct sowing.

**Remarks:** This species has recently been renamed *Racosperma mearnsii*. It is the most widely used tree crop for high-quality tannin. Fast growing but short lived; a tree for woodlots. Potentially a weed on farmland and can be difficult to eradicate. It should not be intercropped because it competes for nutrients.



## Acacia melanoxylon *Mimosoideae*

Southern Australia

*Eng: Australian blackwood*

**Ecology:** One of several exotic *Acacia* spp. introduced to Eritrea in the 1980s. It is planted in the upland areas, mainly in Senate and Asmara in school compounds, near tree nurseries, etc. It grows best in deep fertile loams but will tolerate wet nearly swampy soil.

**Uses:** Firewood, charcoal, **timber** (furniture, light construction, plywood), fence posts, **ornamental,** shade, windbreak, gum.

**Description:** A tall conical timber tree that grows to 35 m. BARK: Dark grey, **much fissured.** LEAVES: Dense grey-green, the very first leaves have feathery leaflets, but mature leaves are **flat, leathery leaf stalks,** slightly curved, to 10 cm long. FLOWERS: Creamy white in small round heads on a **branched stalk.** PODS: **Curved, twisted** and about 12 cm in length, they split to reveal **hanging shiny black seeds surrounded by a soft orange aril.**

**Propagation:** Seedlings.

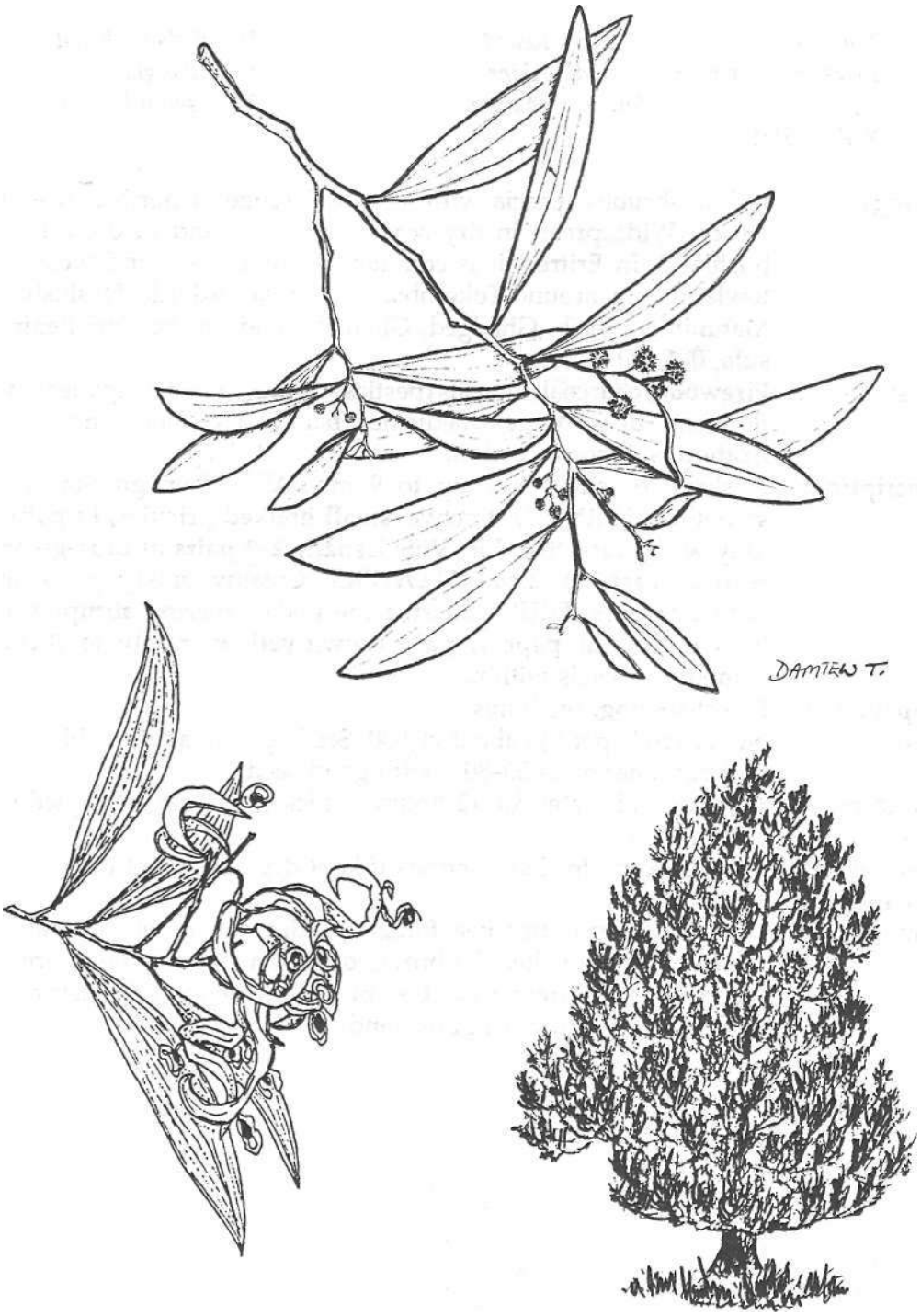
**Seed:** No. of seeds per kg: 55,000-85,000.

**treatment:** Immerse in boiling water, allow to cool. Germination rate: 55-90%.

**storage:** Can be stored.

**Management:** Lopping, pollarding.

**Remarks:** A very fast-growing tree producing hard and valuable furniture timber. It is moderately resistant to termites but highly susceptible to parasitic *Loranthus* spp. and to the fungus *Armillaria mellea.*


DAMIEN T.

## Acacia mellifera *Mimosoideae*

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *Af:* | *Maegherto* | *Ar:* | *Kedad* | *Bl:* | *Kedada, Kitrit* |
| *Eng:* | *Blackthorn, hookthorn* | *Hd:* | *Akter* | *Km:* | *Ghergheja* |
| *Nr:* | *Meghe* | *Sh:* | *Maeger* | *Tg:* | *Tselim kenteb* |
| *Tr:* | *Kedad, Shibota* | | | | |

**Ecology:** A low shrubby Acacia with a natural range in north and east Africa. Widespread in dry scrub with trees and in deciduous bushland. In Eritrea, it is common in the eastern and western lowlands, e.g. around Tokombia, Shambuko, Aderde, Hashishai, Mahmimet, Sheib, Ghedged, Ghahtelai and on the Buri Peninsula, 0-1,000 m.

**Uses:** **Firewood,** charcoal, utensils (pestles), **fodder** (pods, twigs, leaves, flowers), **bee forage,** medicine (bark), live fence, nitrogen fixation, **soil conservation.**

**Description:** A shrub or small tree up to 9 m. BARK: Pale grey-brown, smooth. THORNS: Distinctive, **small hooked prickles, in pairs, grey with black tips.** LEAVES: Usually **2-3 pairs of blue-green leaflets each to 2 cm.** FLOWERS: Creamy spikes to 4 cm attracting bees. FRUIT: Short, wide pods, tapering abruptly at both ends, **flat papery, pale brown-yellow, rarely to 8 cm,** veined, 2-4 seeds within.

**Propagation:** Direct sowing, seedlings.

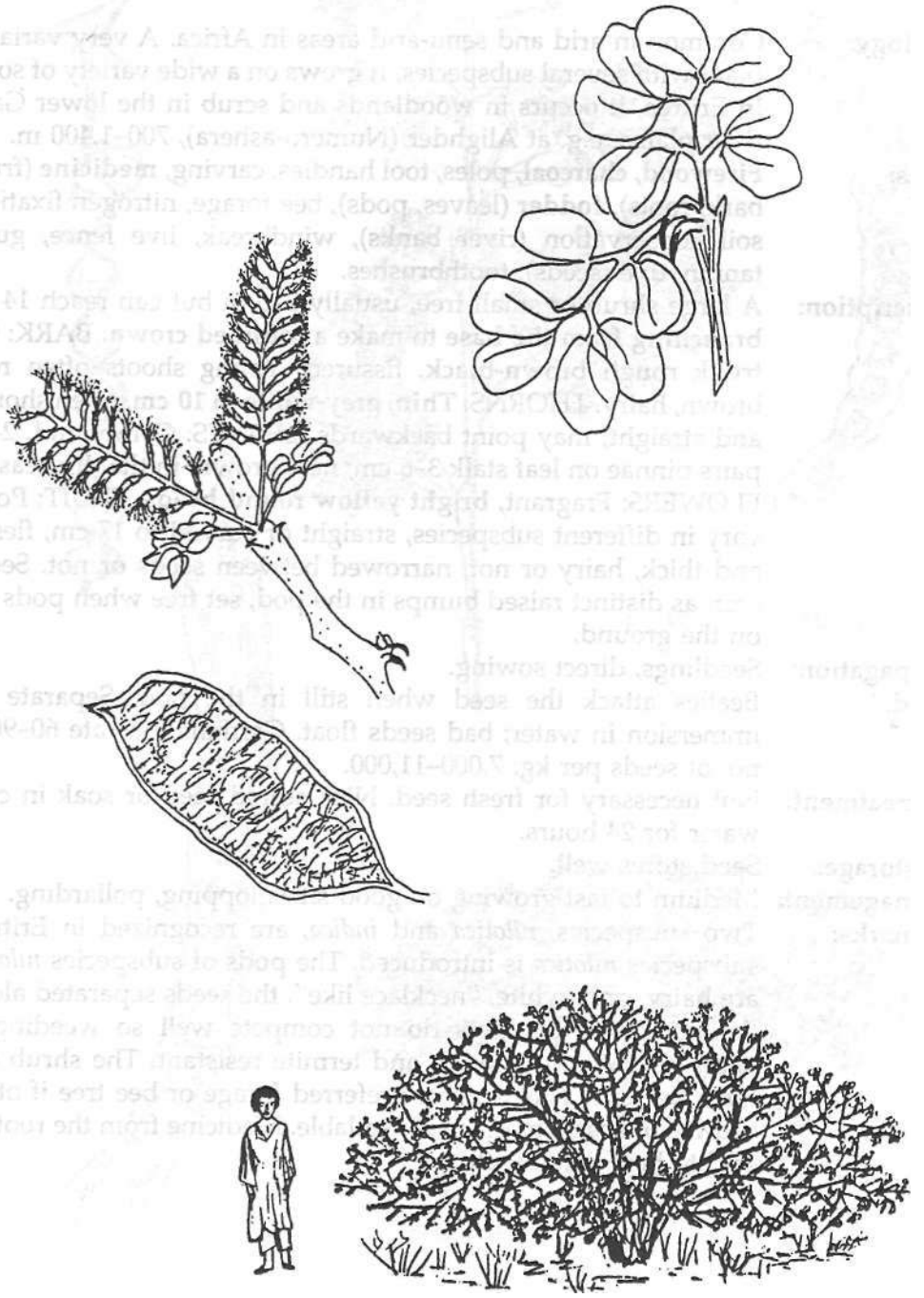
**Seed:** No. of seeds per kg: about 20,000. Seeds germinate in 2-14 days and germination is 50-80% with good seed.

**treatment:** Soak in cold water for 12 hours or nick seed coat at cotyledon end of seed.

**storage:** Can be stored for long periods if kept dry and insect free.

**Management:** Coppicing.

**Remarks:** The flowers produce bee forage yielding an excellent-quality honey. The tree is heavily browsed by game and cattle in areas where few other trees grow. Can make impenetrable thickets and in some areas grows in pure stands.



Indigenous

| | | |
|---|---|---|
| *Ar: Sunt* | *Eng: Egyptian thorn* | *Hd: Eghered* |
| *Km: Kuka* | *Nr: Takendeb* | *Sh: Aflo* |
| *Tg: Ghered* | ***Tr** Ghered* | |

**Ecology:** Common in arid and semi-arid areas in Africa. A very variable plant with several subspecies. It grows on a wide variety of soils. In Eritrea, it occurs in woodlands and scrub in the lower Gash river plains, e.g. at Alighder (Numero-ashera), 700-1,400 m.

Uses: **Firewood, charcoal,** poles, tool handles, carving, **medicine** (fruit, bark, roots), **fodder** (leaves, pods), bee forage, nitrogen fixation, soil conservation (river banks), windbreak, live fence, gum, tannin, dye (seeds), toothbrushes.

**Description:** A large shrub or small tree, usually 2-6 m but can reach 14 m, **branching from the base** to make a **rounded crown.** BARK: On trunk rough **brown-black,** fissured. Young shoots often red-brown, hairy. THORNS: **Thin, grey-white to 10 cm,** often shorter and straight, may point backwards. LEAVES: Compound, 2-11 pairs pinnae on leaf stalk 3-6 cm; new growth in the dry season. FLOWERS: Fragrant, **bright yellow round heads.** FRUIT: Pods, vary in different subspecies, straight or curved to 17 cm, fleshy and thick, hairy or not, narrowed between seeds or not. Seeds seen as distinct raised bumps in the pod, set free when pods rot on the ground.

**Propagation:** Seedlings, direct sowing.

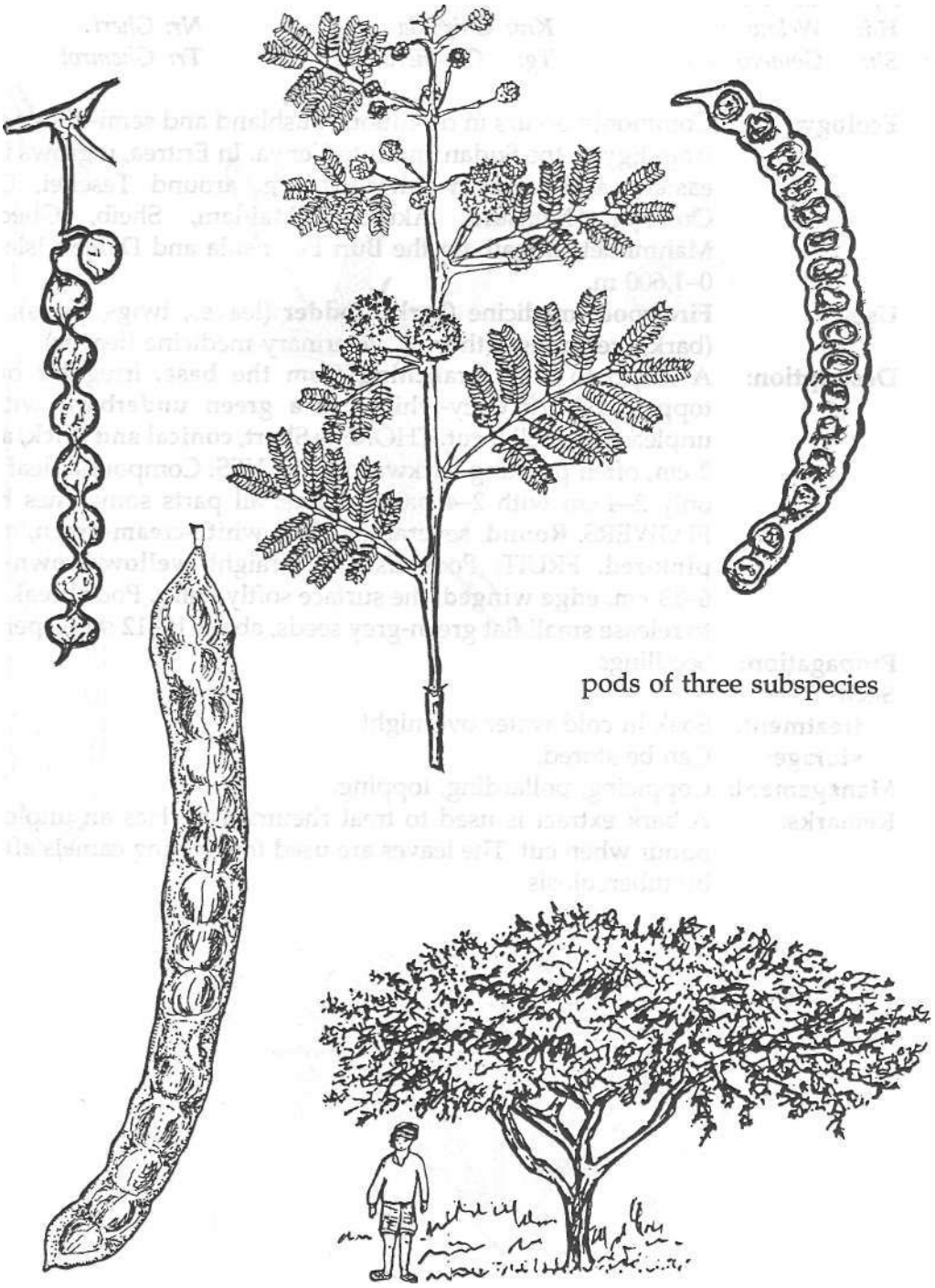
**Seed:** Beetles attack the seed when still in the pod. Separate by immersion in water; bad seeds float. Germination rate 60-90%; no. of seeds per kg: 7,000-11,000.

**treatment:** Not necessary for fresh seed. Nick stored seed or soak in cold water for 24 hours.

**storage:** Seed stores well.

**Management:** Medium to fast-growing on good sites; lopping, pollarding.

**Remarks:** Two subspecies, *nilotica* and *indica*, are recognized in Eritrea: subspecies *nilotica* is introduced. The pods of subspecies *nilotica* are hairy, grey-white, "necklace like", the seeds separated along the pod. Young plants do not compete well so weeding is necessary. Wood is tough and termite resistant. The shrub can form thickets. This is not a preferred forage or bee tree if other browse or acacia blossom is available. Medicine from the roots is said to be a cure for flu.


pods of three subspecies

## Acacia oerfota (A. nubica) *Mimosoideae*

Indigenous

| | | |
|---|---|---|
| *Af: Gomerto* | *Ar: Aud* | *Bl: Gemrota* |
| *Hd: Welow* | *Km: Ghirgida* | *Nr: Gheri* |
| *Sh: Gomero* | *Tg: Ghumero* | *Tr: Ghemrot* |

**Ecology:** Commonly occurs in deciduous bushland and semi-desert scrub from Egypt, the Sudan and into Kenya. In Eritrea, it grows in the eastern and western lowlands, e.g. around Tesenei, Goluj, Omhajer, Mensura, Akurdet, Mai-lam, Sheib, Ghedged, Mahmimet, Dogali, on the Buri Peninsula and Dahlak Islands , 0-1,600 m.

**Uses:** **Firewood,** medicine (bark), **fodder** (leaves, twigs, pods), fibre (bark), vermifuge (thorns), veterinary medicine (leaves).

**Description:** A shrub to 5 m, **branching from the base,** irregular or flat topped. BARK: Grey-white but a **green underbark** with an unpleasant smell if cut. THORNS: Short, **conical and thick, about 2 cm,** often pointing backwards. LEAVES: Compound, leaf stalk only 2-4 cm with 2-4 pairs pinnae, all parts sometimes hairy. FLOWERS: **Round,** several together, **white-cream-green, others pink-red.** FRUIT: Pods usually straight, **yellow-brown-grey, 6-13 cm, edge winged,** the surface softly hairy. Pods break open to release small flat green-grey seeds, about 10-12 seeds per pod.

**Propagation:** Seedlings

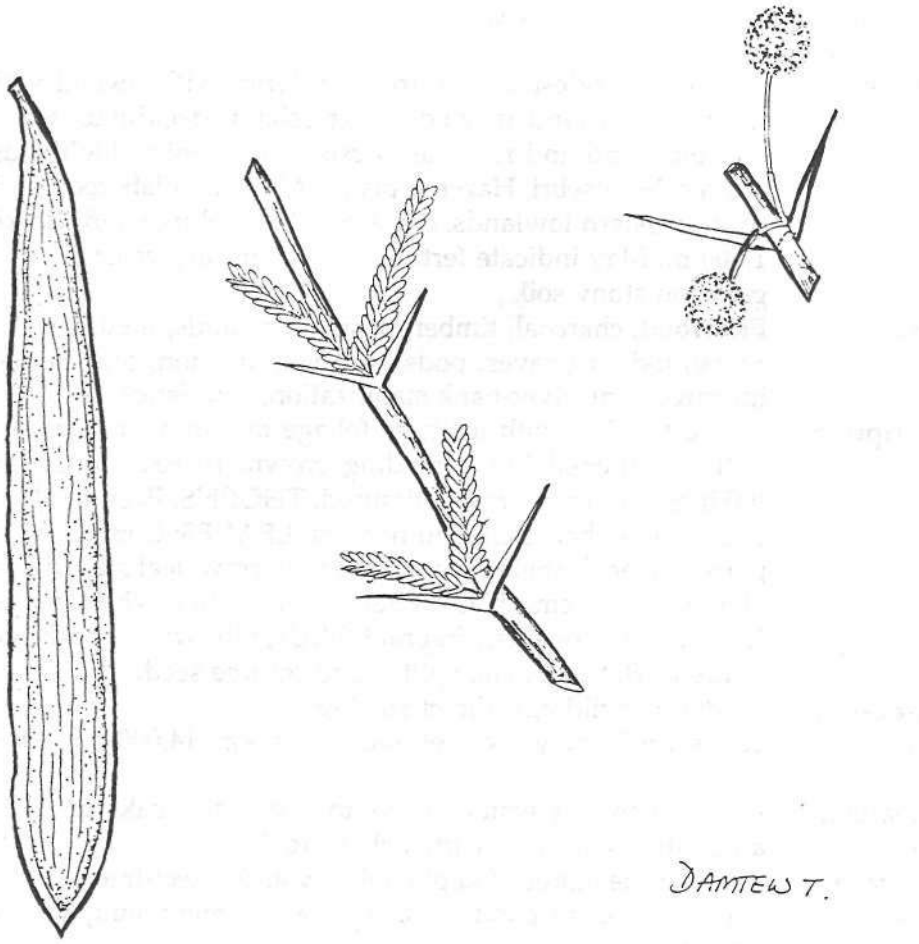
**Seed:**

**treatment:** Soak in cold water overnight.

**storage:** Can be stored.

**Management:** Coppicing, pollarding, lopping.

**Remarks:** A bark extract is used to treat rheumatism. Has an unpleasant odour when cut. The leaves are used for treating camels affected by tuberculosis.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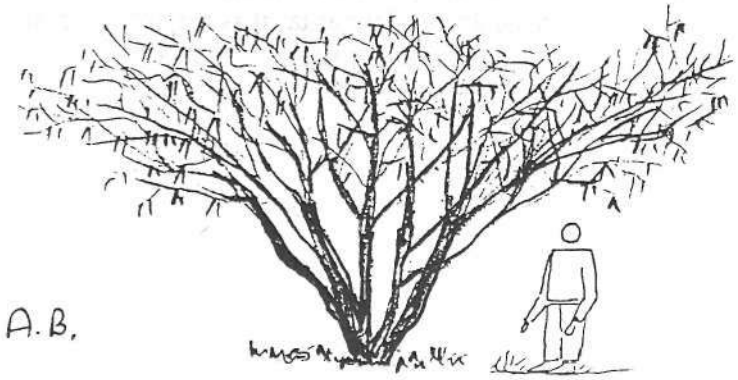
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## Acacia polyacantha subsp. campylacantha *Mimosoideae*

Indigenous

*Ar: Kakamut* *Eng: Falcon's-clazv acacia* *Km:Akika*
*Tg: Ghomoro* *Tr: Chiet*

Ecology: An Acacia widespread in tropical Africa with several varieties. Commonly found in wooded grassland, deciduous woodland and bushland and riverine forests in the central highlands, e.g. around Mai-tsebri, Hazemo plains, Mai-aini, Elabered and in the south-western lowlands, e.g. around Shambuko and Molki, 900-1,500 m. May indicate fertile soil and groundwater but can also grow on stony soil.

**Uses:** **Firewood,** charcoal, timber, posts, **farm tools, medicine** (leaves, roots), fodder (leaves, pods), nitrogen fixation, ornamental, soil improvement, river-bank stabilization, **live** fence.

**Description:** A tree to 25 m with feathery foliage but an open canopy often with a flattened but spreading crown. BARK: Yellow-brown, flaking, later grey-brown, fissured. THORNS: Brown, black tips, usually less than 1 cm and hooked. LEAVES: Compound, 13-40 pairs pinnae, leaflets very small and narrow, leaf stalk hairy with glands, to 20 cm. FLOWERS: Large, cream-white spikes, to 12 cm, 2 or 3 together, fragrant. FRUIT: **Brown, smooth pod, tip pointed, flat to 18 cm,** splitting to set free seed.

**Propagation:** Seedlings, wildings, direct sowing.

**Seed:** Seeds prolifically. No. of seeds per kg: 14,000-16,000. Good germination.

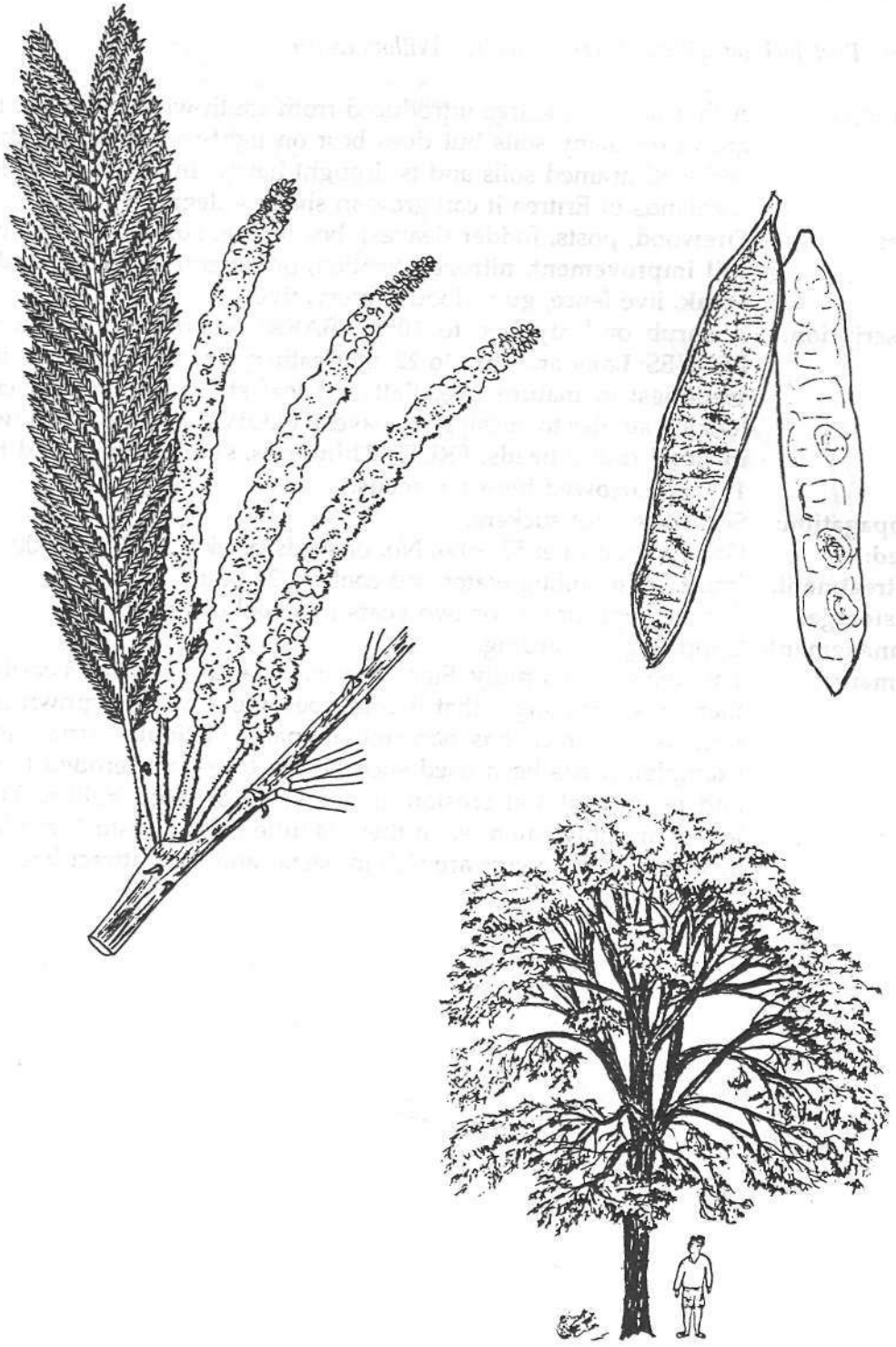
**treatment:** Immerse in hot water, allow to cool and soak for 24 hours, alternatively nicking with a sharp tool.

**storage:** Seed can be stored if kept cool, dry and insect-free.

**Management:** Fast growing on good sites, especially while young; pollarding, coppicing.

**Remarks:** The wood is termite resistant. The tree is host to many insects and pests. In Tanzania, it is regarded as an indicator of suitable soil for growing cotton or tobacco.

Acacia polyacantha subsp. campylacantha *Mimosoideae*



## Acacia saligna *Mimosoideae*

Australia

*Eng: Port Jackson willow, Weeping wattle, Willow wattle*

**Ecology:** A thornless exotic tree introduced from south-west Australia. It grows on many soils but does best on light-to-medium loams and well-drained soils and is drought hardy. Introduced in the highlands of Eritrea it can grow in shallow degraded soils.

**Uses:** **Firewood,** posts, fodder (leaves), bee forage, **soil conservation, soil improvement,** nitrogen fixation, ornamental, shade, **wind-break,** live fence, gum (food preservative).

**Description:** A shrub or leafy tree to 10 m. BARK: Smooth, grey-brown. LEAVES: **Long and thin to 22 cm** (feathery acacia-type leaves in seedlings; in mature tree, flattened leaf stalks become leaves, looking similar to eucalyptus leaves). FLOWERS: **Bright yellow,** in **small round heads.** FRUIT: **Thin pods, straight or curved to 15 cm, narrowed between seeds.**

**Propagation:** Seedlings, root suckers.

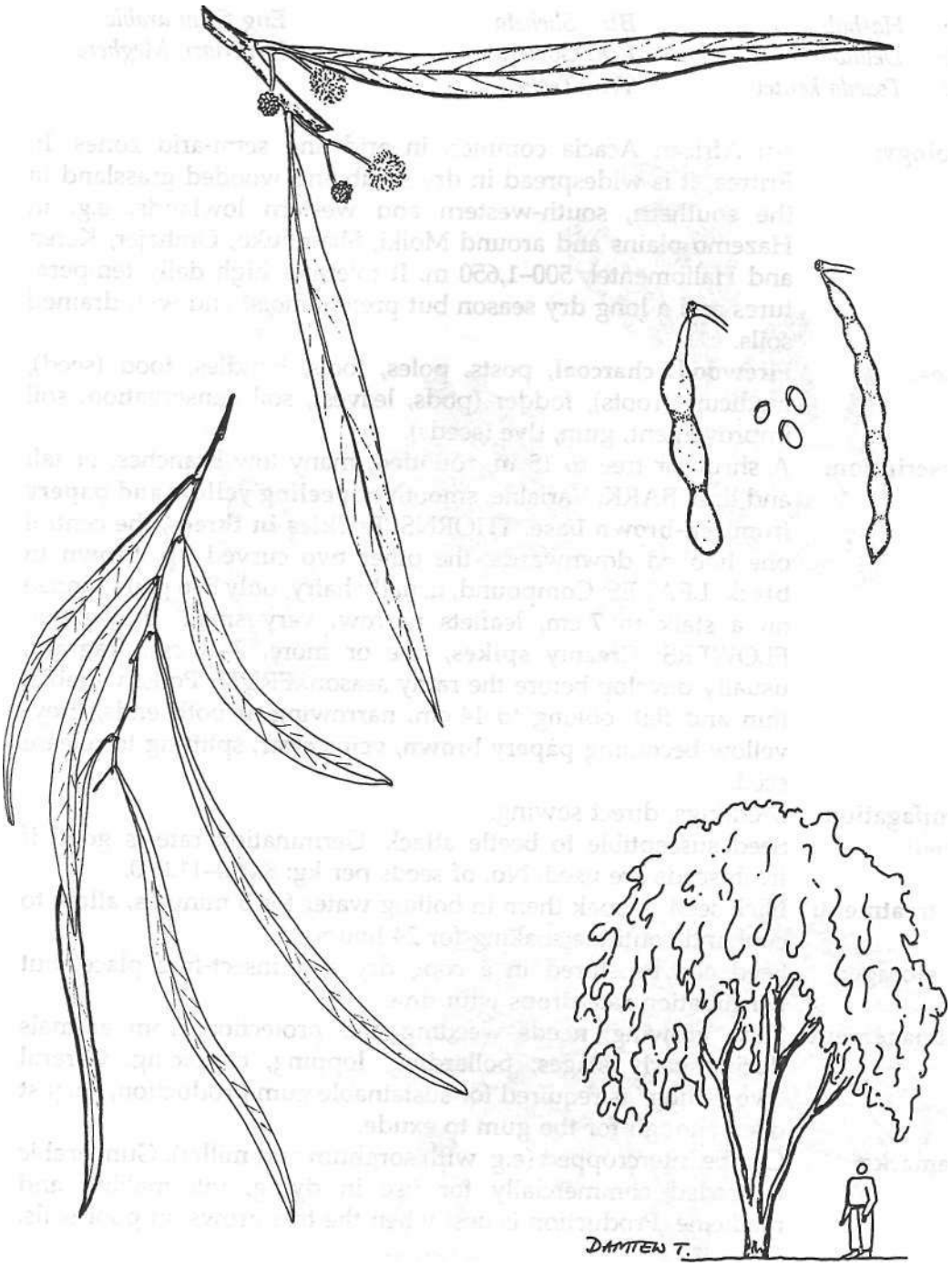
**Seed:** Germination rate: 55-90%. No. of seeds per kg: 14,000-80,000.

**treatment:** Immerse in boiling water and cool for 24 hours.

**storage:** Can be kept for one or two years in a cool dry place.

**Management:** Coppicing, pollarding.

**Remarks:** The tree grows rapidly. Since it is hardy and regenerates easily, there is some danger that it could become a weed if grown on farm land (which has occurred in parts of South Africa, for example). It has been used successfully to reclaim eroded land and to prevent soil erosion on the sides of steep gullies. The leaves are only eaten when there is little other livestock fodder available. The flowers are rich in nectar and thus attract bees.


DAMTEW T.

Indigenous

| | | |
|---|---|---|
| *Ar: Hashab* | *Bl: Shebeta* | *Eng Gum arabic* |
| *Hd: Delaw* | *Km: Gomera* | *Nr: Mari, Meghere* |
| *Tg: Tsaeda kenteb* | *Tr: Teshab* | |

**Ecology:** An African Acacia common in arid and semi-arid zones. In Eritrea, it is widespread in dry scrub and wooded grassland in the southern, south-western and western lowlands, e.g. in Hazemo plains and around Molki, Shambuko, Omhajer, Keren and Halibmentel, 500-1,650 m. It tolerates high daily temperatures and a long dry season but prefers moist and well-drained soils.

**Uses:** **Firewood, charcoal,** posts, poles, tools, handles, food (seed), medicine (roots), fodder (pods, leaves), soil conservation, soil improvement, **gum,** dye (seeds).

**Description:** A shrub or tree to 15 m, rounded, many low branches, or tall and thin. BARK: Variable, smooth or **peeling yellow and papery** from **red-brown base.** THORNS: Prickles **in threes,** the central one hooked downwards, the other two curved up, **brown to black.** LEAVES: Compound, usually hairy, only 3-6 pairs pinnae on a stalk to 7 cm, leaflets narrow, very small, grey-green. FLOWERS: **Creamy spikes,** one or more, 2-10 cm, fragrant, usually develop before the rainy season. FRUIT: Pods, variable, thin and flat, oblong to 14 cm, narrowing at both ends, grey-yellow becoming **papery brown,** veins clear, splitting to release seed.

**Propagation:** Seedlings, direct sowing.

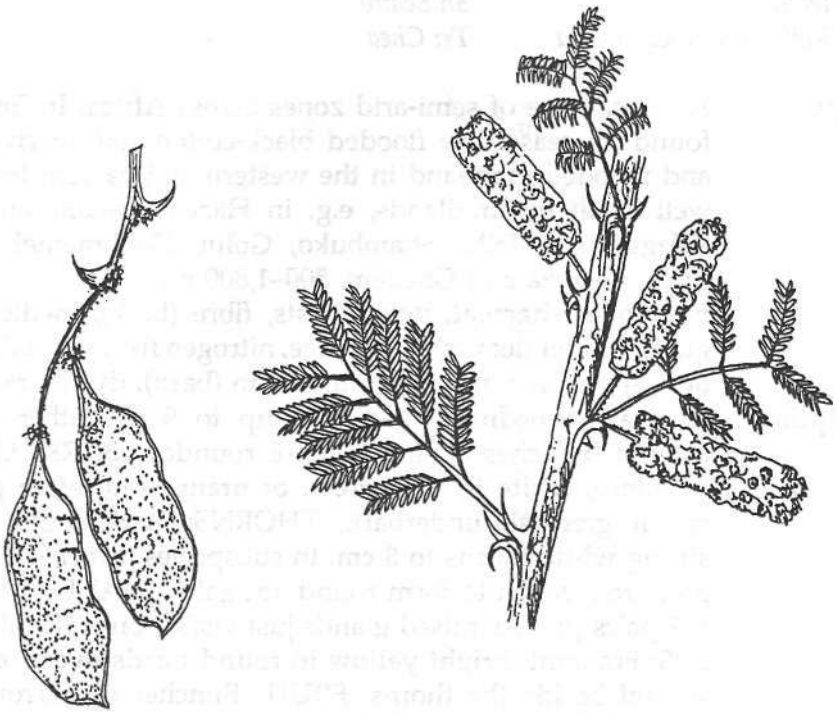
**Seed:** Seed susceptible to beetle attack. Germination rate is good if fresh seeds are used. No. of seeds per kg: 8,000-11,000.

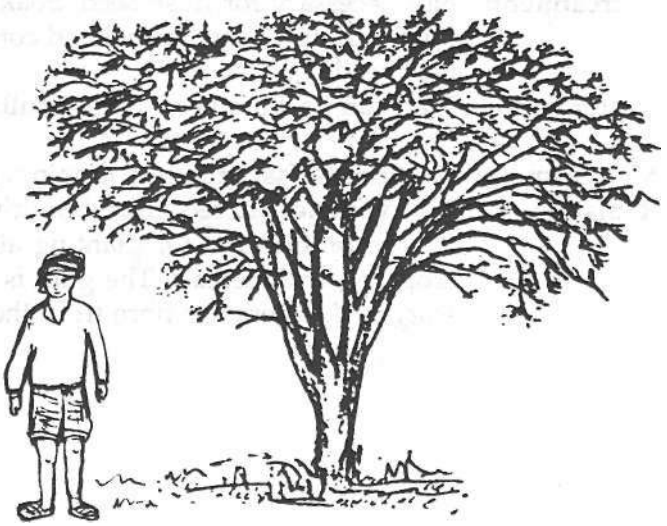
**treatment:** Nick seed or soak them in boiling water for 5 minutes, allow to cool and continue soaking for 24 hours.

**storage:** Seed can be stored in a cool, dry and insect-free place, but germination rate drops with time.

**Management:** Slow growing; needs weeding and protection from animals during early stages; pollarding, lopping, coppicing. Careful "wounding" is required for sustainable gum production, i.e. just deep enough for the gum to exude.

**Remarks:** Can be intercropped (e.g. with sorghum and millet). Gum arabic is traded commercially for use in dying, ink making and medicine. Production is best when the tree grows on poor soils.





Indigenous

*Ar: Suffar abyad, Suffar ahmer*
*Eng: INhite-galled acacia, White whistling thorn*
*Nr: Jelow*
*Tg: Keih chea, Tseada chea*
*Bl: Chea serwa*
*Hd: Botek*
*Km: Etera*
*Sh:Seaito*
*Tr: Chea*

**Ecology:** A typical tree of semi-arid zones across Africa. In Eritrea, it **is** found on seasonally flooded black-cotton soil, in river valleys and wooded grassland in the western and eastern lowlands as well as in the midlands, e.g. in Hazemo plains and around Ailagundet, Molki, Shambuko, Goluj, Halibmentel, Alghaeta plain, Beareza and Ghedem, 500-1,800 m.

**Uses:** **Firewood, charcoal,** poles, posts, fibre (bark), medicine (bark, gum), **fodder** (leaves), bee forage, nitrogen fixation, soil conservation, shade, windbreak, gum, tannin (bark), dye (bark).

**Description:** A small-to-medium-sized tree, up to 9 m, rather thin with layered branches or small, more rounded. BARK: Distinctive, powdery, **white to pale green** or **orange-red,** often peeling to reveal greenish underbark. THORNS: Wide-angled pairs of **strong white thorns to 8 cm.** In subspecies *fistula* the bases of a pair are swollen to form round ant galls. LEAVES: Compound, 3-7 pairs pinnae, raised glands just visible on leaf stalk. FLOWERS: Fragrant, **bright yellow** in **round heads over 1 cm across,** several beside the thorns. FRUIT: Bunches of narrow, curved pods, 7-20 cm, shiny light brown, narrowed between seeds, splitting open on the tree.

**Propagation:** Seedlings, wildings.

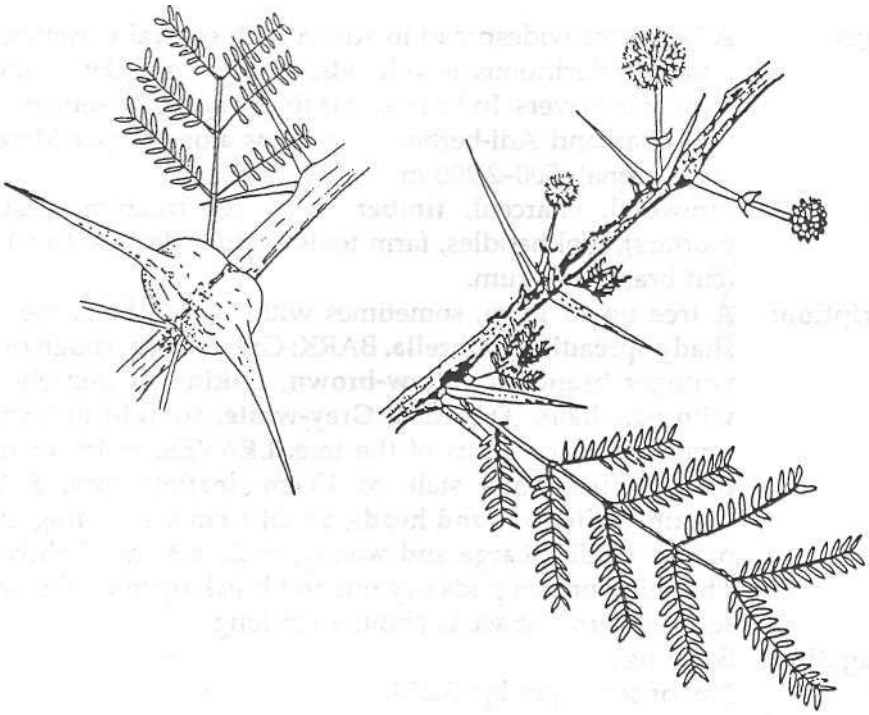
**Seed:** No. of seeds per kg: ± 20,000.

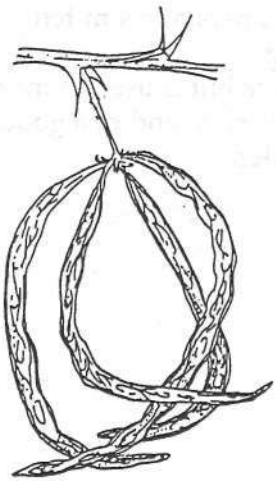
**treatment:** Not necessary for fresh seed. Soak stored seed in boiling water for 5 minutes, allow to cool and continue soaking for 24 hours or nick seed coat.

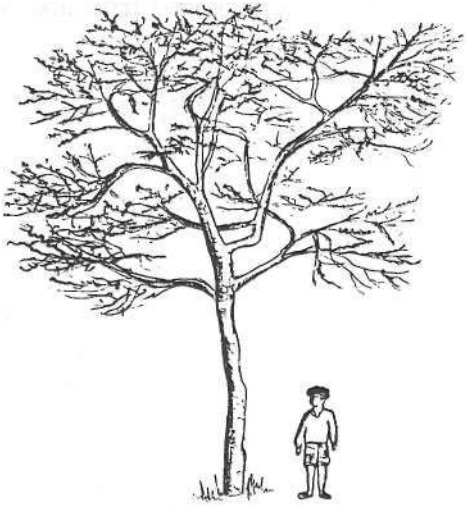
**storage:** Seed can be stored for three months if kept cool, dry and insect free.

**Management:** Medium to fast growing; lopping, pollarding, coppicing.

**Remarks:** Two varieties are recognized in Eritrea: var. *seyal* and var. *fistula.* It is recommended for planting along stream banks and intercropping with cereals. The gum is not as good as that of *Acacia Senegal.* Villagers use fibre from the bark to make ropes.







## Acacia sieberiana *Mimosoideae*

Indigenous

*Bl: Duwa* *Tg: Cheare* *Tr: Dewet*

**Ecology:** A large tree widespread in Africa with several varieties, usually found in deciduous woodlands, wooded grasslands and along margins of rivers. In Eritrea, it is found along Anseba river banks at Tsebab and Adi-berbere as well as along upper Mereb River (at Tsorona), 500-2,200 m.

**Uses:** **Firewood,** charcoal, **timber** (local construction, pestles and mortars), tool handles, farm tools, **fodder** (leaves, fruit), **fences** (cut branches), gum.

**Description:** A tree up to 18 m, sometimes with a wide bole, the **crown a shady spreading umbrella.** BARK: Grey-brown, rough or **papery; younger branches yellow-brown, flaking** or densely covered with pale hairs. THORNS: **Grey-white, straight to 9 cm,** sometimes absent on parts of the tree. LEAVES: Hairy or not, 8-35 pairs pinnae on a stalk to 13 cm, **leaflets tiny.** FLOWERS: **Cream-white in round heads,** about 1 cm across, fragrant, hairy or not. FRUIT: **Large and woody, to 21 x 3 cm,** slightly curved. The shiny brown pods dry out and break open on the ground to set free hard flat seeds about 1 cm long.

**Propagation:** Seedlings.

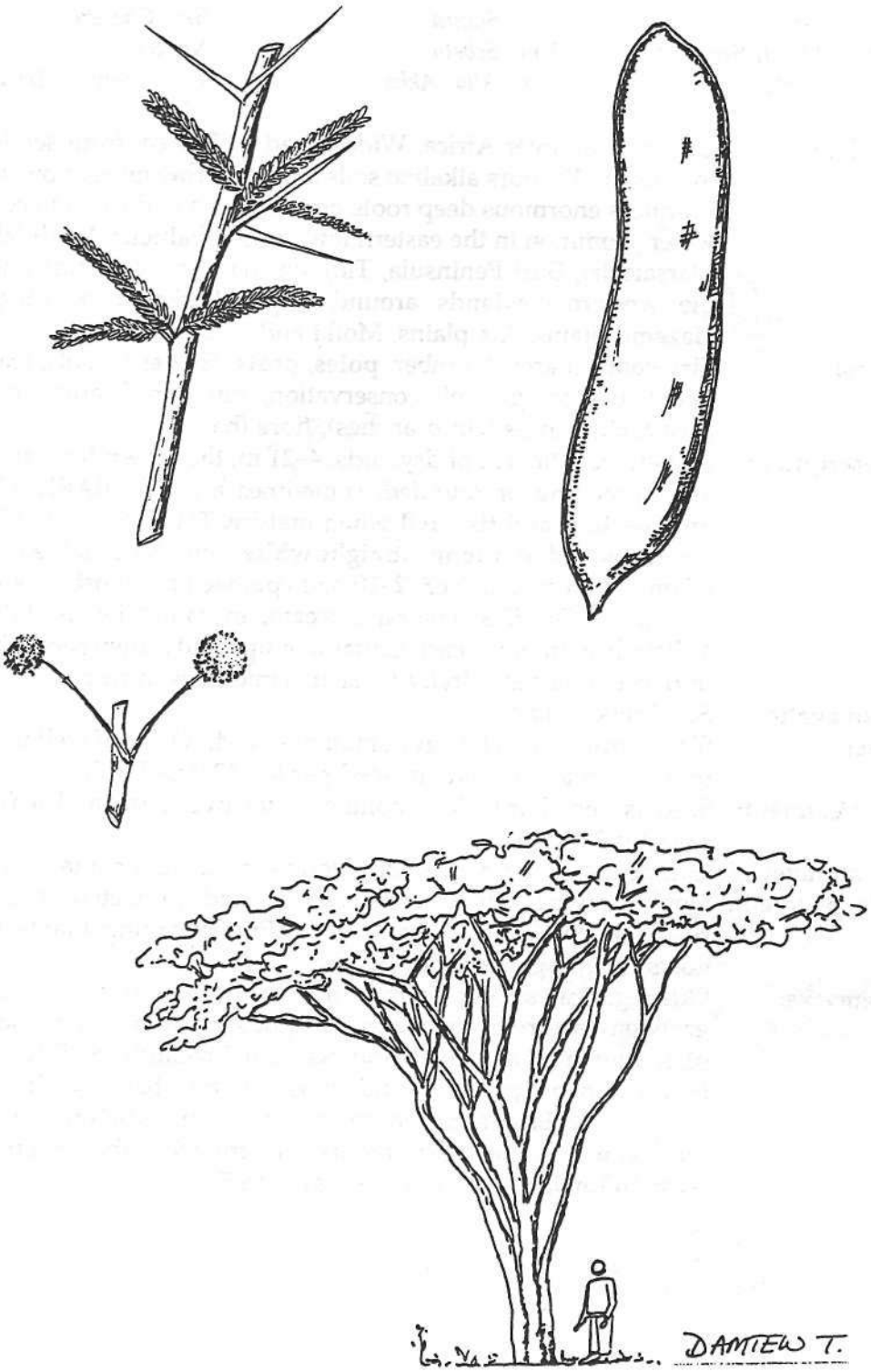
**Seed:** No. of seeds per kg: 3,250.

**treatment:**

**storage:** Can be stored in air-tight containers at room temperature.

**Management:** Lopping, pollarding, coppicing.

**Remarks:** The wood is liable to borer attack but is used to make farm tools, pestles and mortars. The gum is clear and of a good quality. The foliage and fruit are good fodder.


DAMTEW T.

## Acacia tortilis *Mimosoideae*

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| ***Af:*** | *Eebi* | *Ar:* | *Samra* | *Bl:* | *Cheaereba* |
| *Hd:* | *Tewei, Senganet* | *Km:* | *Sebeta* | *Nr:* | *Sae* |
| *Sh:* | *Seaito* | *Tg:* | *Alia, Akba* | *Tr:* | *Towayet, Akba* |

**Ecology:** Common all over Africa. Widespread in Eritrea, from sea level to 1,900 m. Favours alkaline soils and can grow on shallow soils. Produces enormous deep roots penetrating a wide area to collect water. Common in the eastern lowlands (Ghahtelai, Wadi-labka, Marsateclai, Buri Peninsula, Tio), on the Dahlak Islands and in the western lowlands around upper Barka river, Mogolo, Hazemo plains, Ala plains, Molki and Ailagundet.

Uses: **Firewood,** charcoal, timber, **poles, posts, fodder** (shoots, leaves, pods), bee forage, soil conservation, nitrogen fixation, shade (livestock), fences (cut branches), fibre (bark).

**Description:** A characteristic tree of drylands, 4-21 m, the **crown layered, flat and spreading** or rounded; sometimes a shrub. BARK: Grey-**brown-black and fissured when mature.** THORNS: Two kinds: **small hooked** and **long, straight white,** sometimes mixed pairs all on one stem. LEAVES: 2-10 pairs pinnae on a **short stalk** only 2-4 cm. FLOWERS: Fragrant, **cream,** in round heads. FRUIT: Yellow-brown pods, each containing up to 10 brown seeds, hang in dense bunches spirally twisted, sometimes in rings.

**Propagation:** Seedlings, wildings.

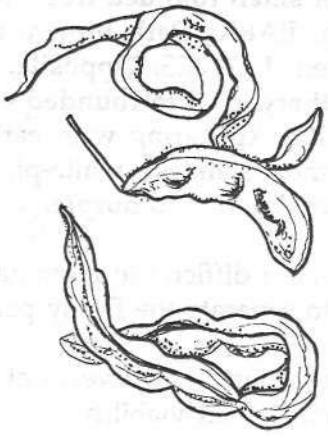
**Seed:** Slow germination, low germination rate (45%), but if well treated may be up to 80%. No. of seed per kg: 12,000-31,000.

**treatment:** Seed is very hard. Pour boiling water over seed and leave to soak for 24 hours.

**storage:** Can be stored for a very long period in air-tight containers.

**Management:** Slow growing but if well weeded and protected it grows relatively fast on dry sandy soils. Protect young plants from goats. Lopping, pollarding.

**Remarks:** Often indicates the tree limit into arid areas. It can be left to grow on pasture or crop land. The pods are an important source of fodder in the eastern and western lowlands of Eritrea. *A. tortilis* subsp. *spirocarpa* and subsp. *tortilis* have so far been identified in Eritrea. Subsp. *spirocarpa* is found scattered all over the country, while subsp. *tortilis* is restricted to the eastern and western lowlands at altitudes less than 700 m.



## Acokanthera schimperi *Apocynaceae*

Indigenous

*Eng: Arrow poison tree* *Sh: Erra, Asraerra* *Tg: Mebtae*
*Tr: Mektee*

**Ecology:** A tree of dry woodland, thickets and grasslands, widespread in east and southern Africa. It prefers rich well-drained forest soil but also grows on black-cotton and poor soils. In Eritrea, it is most frequent in the highlands and in both eastern and western escarpments from 700-2,300 m. In the eastern escarpment, it is found around Dongolo, Embatkala, Mt. Bizen, Dekemhare, Menguda, Mrara, Tselema, the Mereb basin and Elabered.

**Uses:** Spear shafts, **medicine,** arrow poison (white latex from roots, leaf or bark), ornamental, **shade** (livestock).

**Description:** A dense evergreen or **small rounded tree** with a short bole to 5 m, sometimes 10 m. BARK: Dark brown, grooved with age, young twigs flattened. LEAVES: **Opposite, dark shiny green above, stiff and leathery, oval to rounded 4-7 cm, tip pointed and sharp.** FLOWERS: Appearing with early rains, in dense, **fragrant clusters,** almost stalkless, white-pink, tubular. FRUIT: **Oval berries to 1.5 cm, yellow to purple.**

**Propagation:** Seedlings, wildings.

**Seed:** Produces much seed, but difficult to germinate.

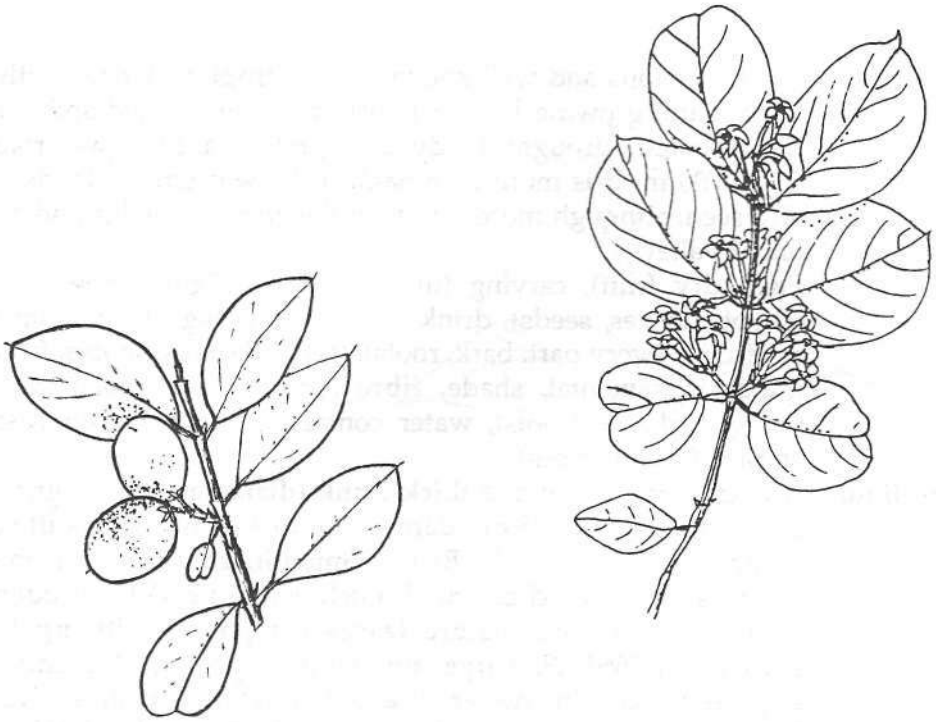
**treatment:** Soak in cold water to separate the fleshy part of the fruit from the seeds.

**storage:** Seeds can be stored for up to two years at room temperature without loosing much of their viability.

**Management:** Slow growing. Coppicing.

**Remarks:** Children eat the ripe purple fruit, as do birds and monkeys.

Acokanthera schimperi *Apocynaceae*



## Adansonia digitata *Bombacaceae*

Indigenous

| | | |
|---|---|---|
| *Ar: Tebeldi* | *Bl: Dim* | *Eng: Baobab* |
| *Km: Asa* | *Nr: Dari* | *Tg: Duma* |
| *Tr: Himeret* | | |

**Ecology:** A conspicuous and well-known tree in tropical Africa south of the Sahara, growing best in moist and well-drained soils. It is deep rooted, drought hardy and prefers a high watertable, 500-1,700 m. It is more dominant in the western lowlands and also seen, although more rarely, in the Hazemo plains and Maihabar valley.

**Uses:** Fuel (dry fruit), carving (utensils, floats, light canoes), **food** (shoots, leaves, seeds), drink (fruit pulp is high in vitamin C), **medicine** (every part: bark, roots), fodder (leaves, shoots, fruits), mulch, ornamental, shade, **fibre** (young bark, roots), tannin (bark), red dye (roots), water containers, dishes (fruit cases), storage (hollow trees).

**Description:** A deciduous tree with a **thick trunk (diameter to 8 m,** girth to 20 m and height to 25 m). **Bare** for up to 9 months, the stiff bare branches resemble roots. BARK: **Smooth, grey** to 10 cm thick; young spongy wood can hold much water. LEAVES: Seedlings have simple leaves, **mature leaves compound with up to 9 leaflets.** FLOWERS: **Large and white,** opening at night; the unpleasant-smelling nectar attracts pollinating fruit bats. FRUIT: Hairy, **yellow-brown capsules, 15-22 cm, hang on long stalks** on the bare tree. Many seeds in white-pink, dry, edible pulp that contains tartaric acid.

**Propagation:** Seedlings.

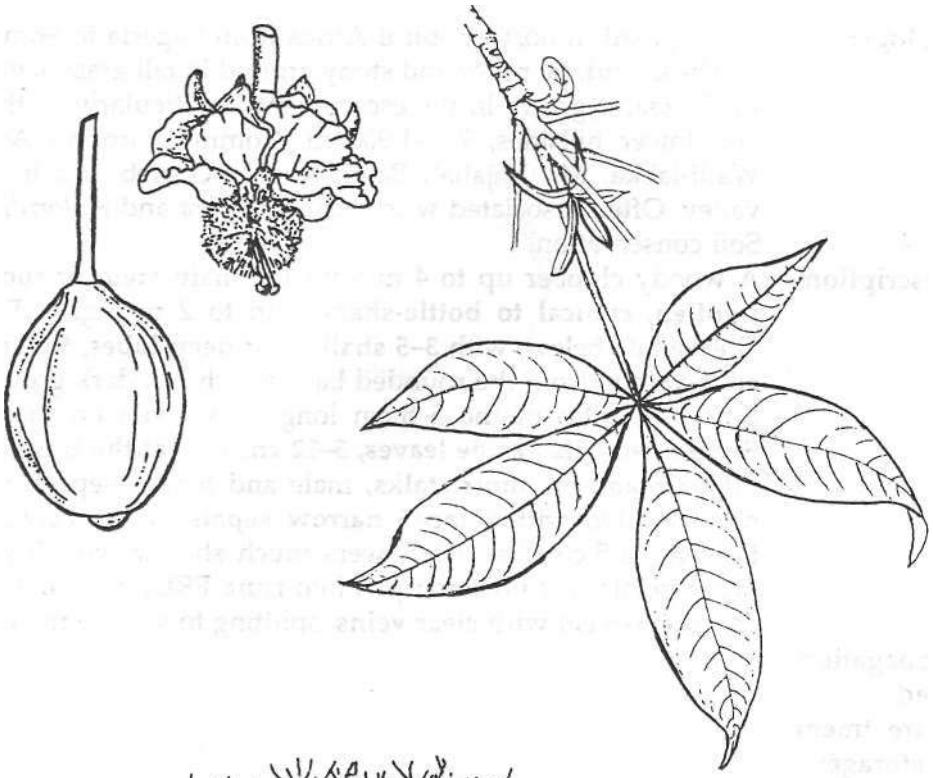
**Seed:** Seed collection is done in November-January. Poor seed germination. No. of seeds per kg: 1,500-2,500.

**treatment:** Immerse seeds in boiling water, pour out the water, leave to cool.

**storage:** Seed can be stored for a long time if kept cool and dry.

**Management:** Lopping, pollarding; fairly fast growing if undisturbed.

**Remarks:** The baobab is one of the longest living trees—up to 3,000 years—and old trees are often communal meeting places. Where baobabs are common, as in the Sahel, every part of the tree is used for some purpose. Hollow trunks can store large quantities of water. The soft fire-resistant wood is used to make utensils. The inner bark of young trees is cut to extract strong durable fibres used to make baskets and rope. The bark regenerates and can be cut again in a few years.



. «v;

## Adenia venenata *Passifloraceae*

Indigenous

*Tg: Jakara* *Tr: Esit wulad*

**Ecology:** Widespread in north tropical Africa from Nigeria to Somalia in dry bushland, on rocky and stony ground in tall grass savannah. In Eritrea, it grows in the escarpments, particularly in the mid and lower hillsides, 700-1,900 m. Common around Adobha, Wadi-labka, Mt. Enjahat, Begu, Kuruh, Gheleb and in Felket valley. Often associated with *Acacia mellifera* and *A. tortilis.*

**Uses:** Soil conservation.

**Description:** A woody climber up to 4 m with the **main stem or rootstock swollen, conical to bottle-shaped** up to 2 m high. LEAVES: Grey-white below, with **3-5 shallow or deep lobes, tips rounded,** 5-veined from the rounded base which has dark grey **gland dots** at the tip of the 5-8 cm long stalk, even on the blade. **Simple tendrils beside leaves, 5-12 cm, curl at the tips.** FLOWERS: **Cream, on short stalks,** male and female separate, parts often hidden within the **5 narrow sepals** of the calyx. Male flowers to 5 cm. Female flowers much shorter with 5 yellow-green petals. 1-2 flowers ripen into fruit. FRUIT: A **long, tough capsule 3-8 cm with clear veins,** splitting to set free many seed.

**Propagation:** Cuttings

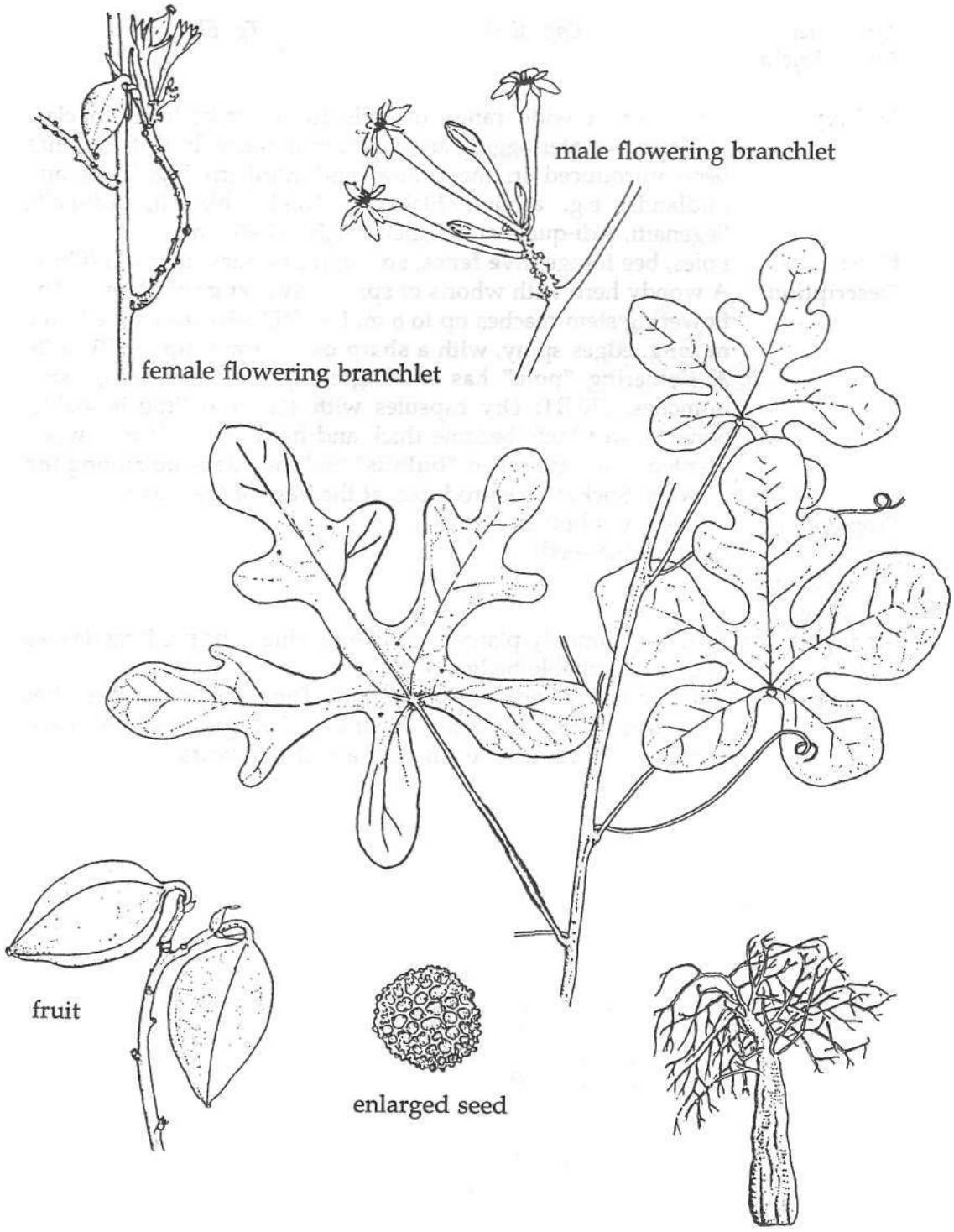
**Seed:**

**treatment:**

**storage:**

**Management:**

**Remarks:** This plant is said to be very poisonous. Even touching it may be dangerous as the dust from the young shoots may come in contact with the saliva later on. In Somalia it is planted for medicinal purposes.


male flowering branchlet
female flowering branchlet
fruit
enlarged seed

## Agave sisalana *Agavaceae*

Mexico

*Af: Yaa* *Eng: sisal* *Tg: Ekaz*
*Tr: Anjeba*

**Ecology:** Grows on a wide range of soils from sandy loam to clay, withstands waterlogging and is drought hardy. In Eritrea, it has been introduced in the central and northern highlands and midlands, e.g. around Elabered, Nakfa, Nefasit, Adi-keih, Segenaiti, Adi-quala and Tselema, 1,300-2,400 m.

**Uses:** Poles, bee forage, **live fence, strong ropes,** sacking, mats (fibre).

**Description:** A woody herb with whorls of spiny leaves at ground level. The flowering stem reaches up to 6 m. LEAVES: **Sword shaped, to 2 m long,** edges spiny, with a **sharp dark brown tip.** FLOWERS: **A flowering "pole" has small green-yellow flowers** on side branches. FRUIT: Dry capsules with seed but little is viable. Some flower buds become thick and hard and will root when planted. They are called **"bulbils"** and may **develop among the flowers.** Suckers are produced at the base of the leaves.

**Propagation:** Suckers and bulbils.

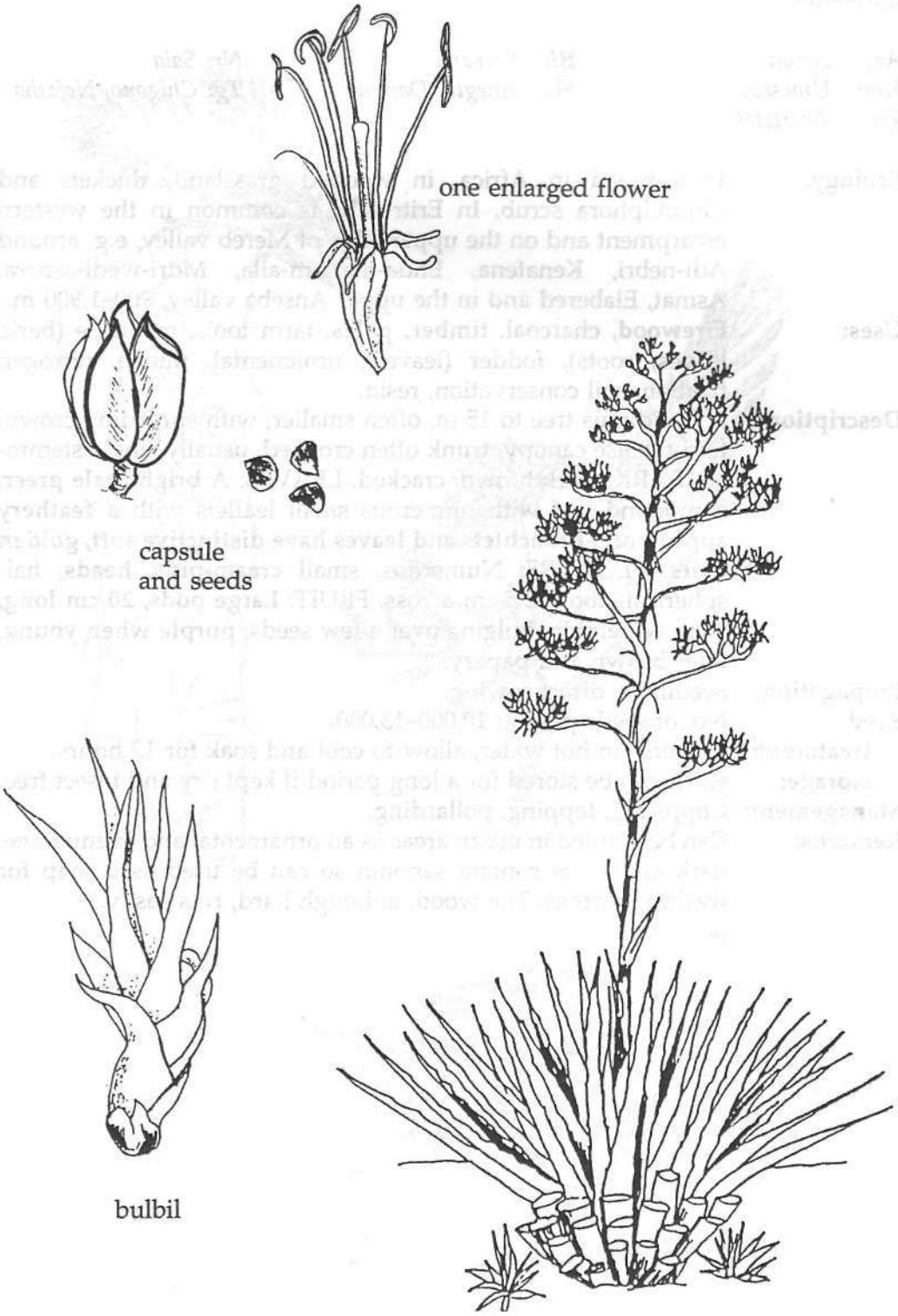
**Seed:** Little viable seed.

**treatment:**

**storage:**

**Management:** Sisal is commonly planted for live fencing. Cut the large leaves to grow a suitable hedge.

**Remarks:** Drought hardy and termite resistant. The whole plant dies after flowering, which normally occurs at the age of seven years. Leaves for fibres can be cut after about two years.


one enlarged flower
capsule
and seeds
bulbil

## Albizia amara *Mimosoideae*

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *Ar:* | *Arrad* | ***Bl:*** | *Sebkan* | *Nr:* | *Sala* |
| *Km:* | *Umesela* | *Sh:* | *Anegto, Danigto* | *Tg:* | *Chigono, Nefasha* |
| *Tr:* | *Abertetet* | | | | |

**Ecology:** Widespread in Africa, in wooded grassland, thickets and Commiphora scrub. In Eritrea, it is common in the western escarpment and on the upper edge of Mereb valley, e.g. around Adi-nebri, Kenafena, Enda-mariam-aila, Mdri-wedi-sebera, Asmat, Elabered and in the upper Anseba valley, 900-1,900 m.

**Uses:** **Firewood,** charcoal, **timber, poles,** farm tools, medicine (bark, leaves, roots), fodder (leaves), ornamental, mulch, nitrogen fixation, soil conservation, resin.

**Description:** A deciduous tree to 15 m, often smaller, with spreading crown, fairly dense canopy, trunk often crooked, usually single stemmed. BARK: Dark brown, cracked. LEAVES: A **bright pale green** compound leaf with numerous small leaflets with a **feathery** appearance. **Branchlets and leaves have distinctive soft, golden hairs.** FLOWERS: Numerous, small **cream-pink heads,** half spherical, about 2.5 cm across. FRUIT: **Large pods, 20 cm long, 3 cm wide,** thin, bulging over a few seeds; **purple when young, later brown and papery.**

**Propagation:** Seedlings, direct sowing.

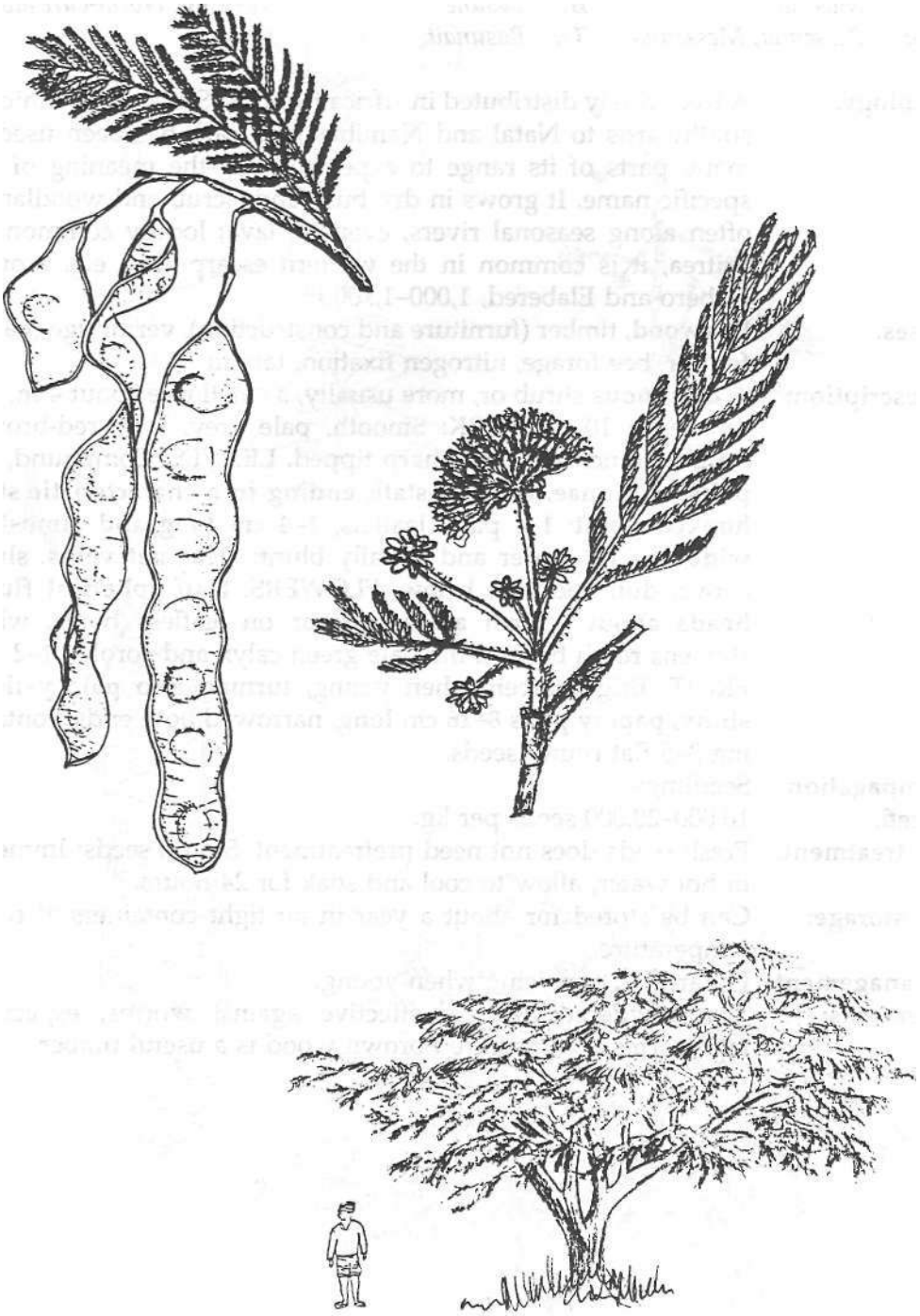
**Seed:** No. of seeds per kg: 10,000-13,000.

**treatment:** Immerse in hot water, allow to cool and soak for 12 hours,

**storage:** seeds can be stored for a long period if kept dry and insect free.

**Management:** Coppicing, lopping, pollarding.

**Remarks:** Can be planted in urban areas as an ornamental and avenue tree. Bark and roots contain saponin so can be used as a soap for washing clothes. The wood, although hard, rots easily.



## Albizia anthelmintica *Mimosoideae*

Indigenous

*Ar: Masaka* *Bl: Basune* *Eng: Worm-cure albizia*
*Tg: Bessenna, Messenna* *Tr: Basunait*

**Ecology:** A tree widely distributed in Africa from the Sudan and Ethiopia southwards to Natal and Namibia. The bark has been used in many parts of its range to expel worms—the meaning of the specific name. It grows in dry bushland, scrub and woodlands, often along seasonal rivers, even on lava; locally common. In Eritrea, it is common in the western escarpment, e.g. around Habero and Elabered, 1,000-1,700 m.

**Uses:** **Firewood,** timber (furniture and construction), vermifuge (bark), **fodder,** bee forage, nitrogen fixation, tannin.

**Description:** A **deciduous** shrub or, more usually, a small tree about 4 m, but can reach 10 m. BARK: Smooth, pale grey, later red-brown, rough. Branchlets often sharp tipped. LEAVES: Compound, **2-4 pairs of pinnae, the leaf stalk ending in a characteristic stiff, hooked point;** 1-4 pairs leaflets, **1-4 cm long and almost as wide,** the tip wider and usually blunt; clear **net veins,** shiny above, dull and pale below. FLOWERS: **Half spherical fluffy heads about 2.5 cm across** appear on leafless twigs, white stamens reach beyond the pale green calyx and corolla, 1-2 cm. FRUIT: Bright green when young, turning into **pale yellow, shiny, papery pods 8-16 cm long,** narrowed both ends, containing 3-5 flat round seeds.

**Propagation:** Seedlings.

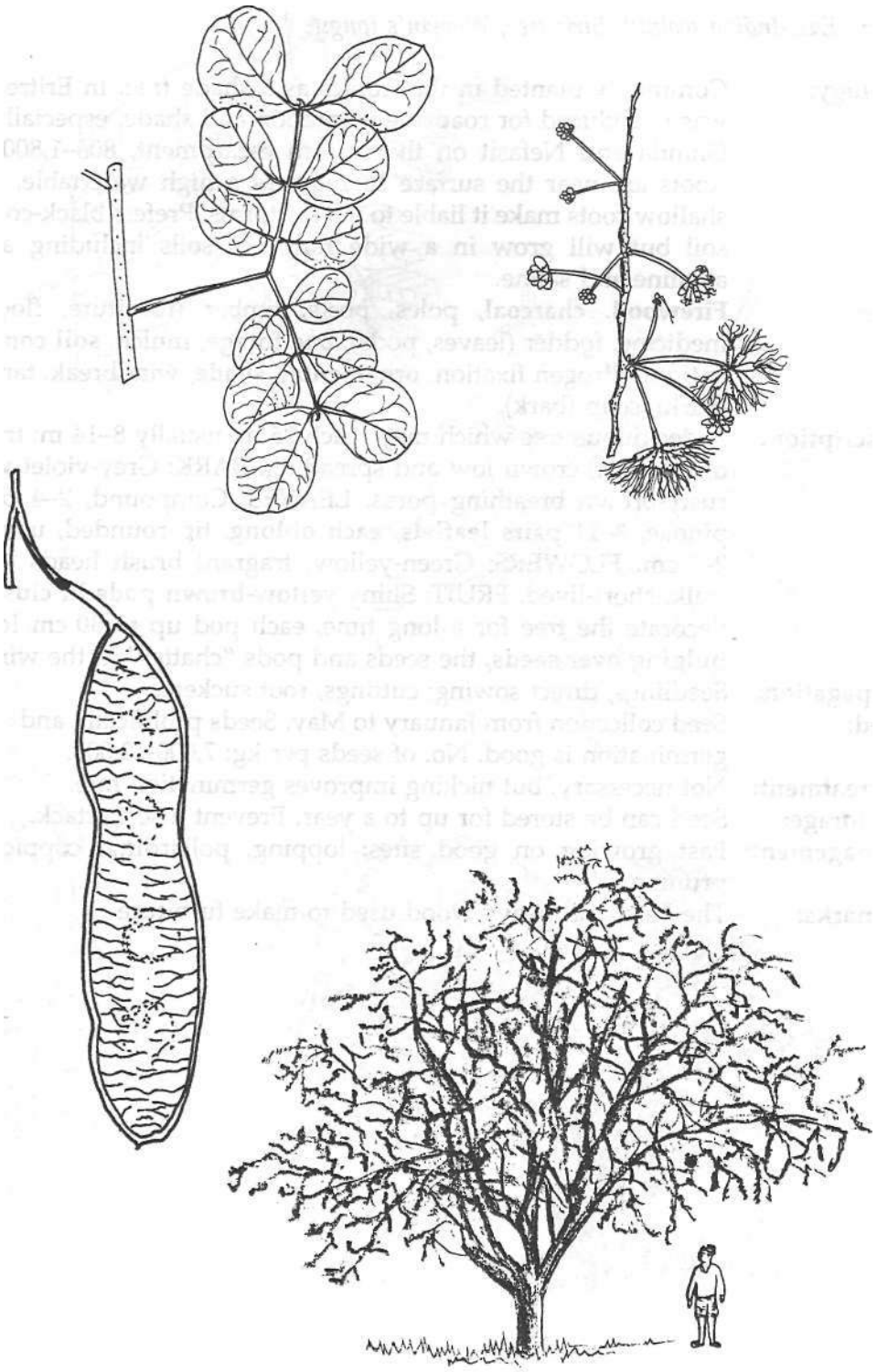
**Seed:** 10,000-20,000 seeds per kg.

**treatment:** Fresh seeds does not need pretreatment. Stored seeds: Immerse in hot water, allow to cool and soak for 24 hours.

**storage:** Can be stored for about a year in air-tight containers at room temperature.

**Management:** Pollarding, coppicing when young.

**Remarks:** The powdered bark is effective against worms, especially tapeworms. The hard red-brown wood is a useful timber.



## Albizia lebbeck *Mimosoideae*

Tropical Asia (India, Burma, Andaman Islands)

*Eng: East-Indian walnut, Siris tree, Woman's tongue*

**Ecology:** Commonly planted in the tropics as a shade tree. In Eritrea, it was introduced for roadside plantation and shade, especially in Ghinda and Nefasit on the eastern escarpment, 800-1,800 m. Roots are near the surface so requires a high watertable. The shallow roots make it liable to fall in storms. Prefers black-cotton soil but will grow in a wide range of soils including acid, alkaline and saline.

**Uses:** **Firewood, charcoal,** poles, posts, timber (furniture, floors), medicine, fodder (leaves, pods), **bee forage,** mulch, **soil conservation,** nitrogen fixation, **ornamental, shade,** windbreak, tannin (bark), soap (bark).

**Description:** A deciduous tree which may reach 25 m, usually 8-14 m; trunk often short, crown low and spreading. BARK: Grey-violet with rusty-brown breathing pores. LEAVES: Compound, 2-4 pairs pinnae, **3-11 pairs leaflets, each oblong,** tip rounded, usually 2-3 cm. FLOWERS: Green-yellow, fragrant brush heads on a stalk, short-lived. FRUIT: Shiny **yellow-brown pods in clusters** decorate the tree for a long time, each pod up **to 30 cm long, bulging over seeds,** the seeds and pods "chatter" in the wind.

**Propagation:** Seedlings, direct sowing; cuttings, root suckers.

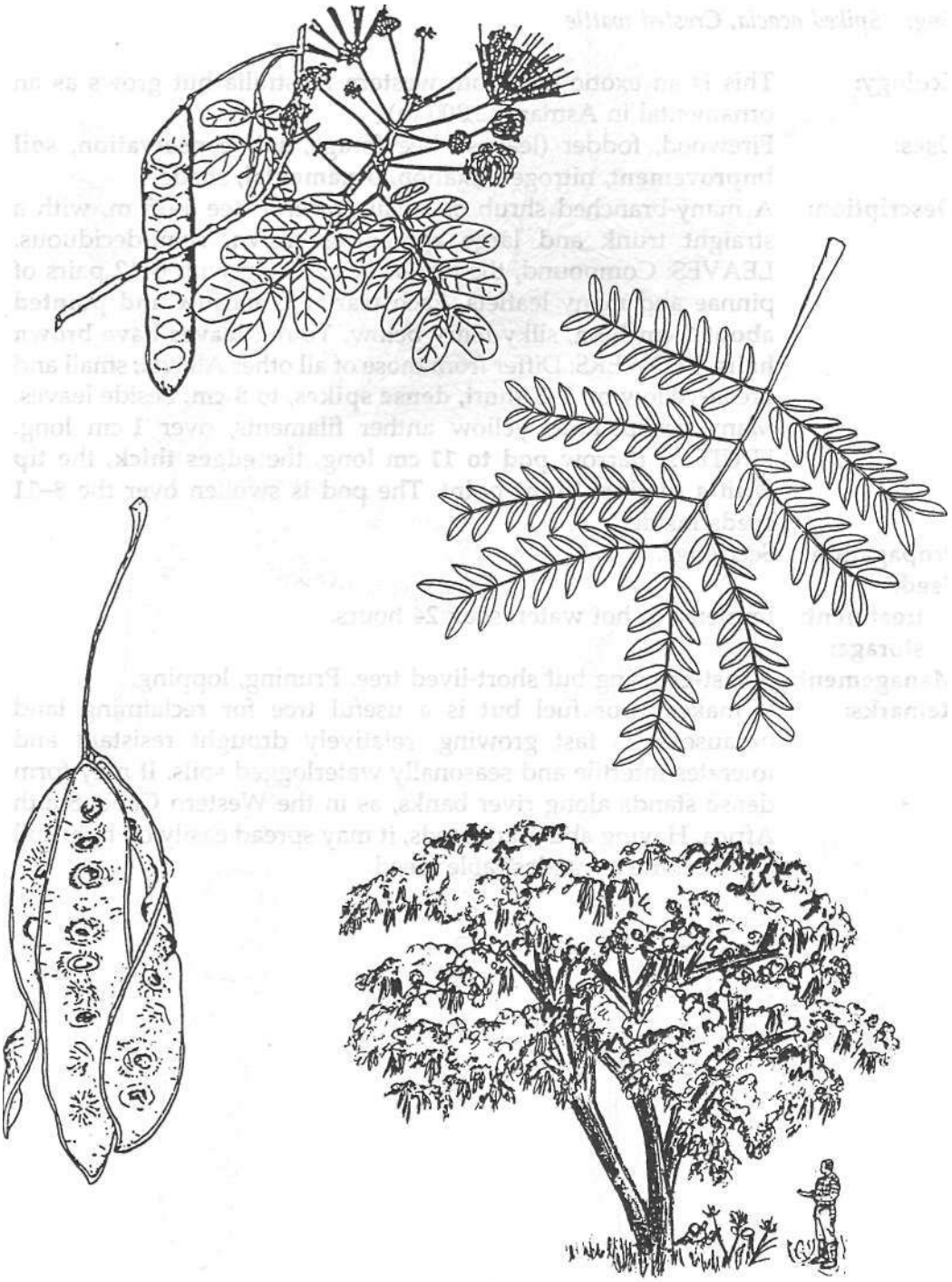
**Seed:** Seed collection from January to May. Seeds prolifically and seed germination is good. No. of seeds per kg: 7,000-12,000.

**treatment:** Not necessary, but nicking improves germination rate.

**storage:** Seed can be stored for up to a year. Prevent insect attack.

**Management:** Fast growing on good sites; lopping, pollarding, coppicing, pruning.

**Remarks:** The hard and heavy wood used to make furniture.



# Albizia lophantha *Mimosoideae*

Australia

*Eng: Spiked acacia, Crested wattle*

**Ecology:** This is an exotic tree from western Australia but grows as an ornamental in Asmara (2,300 m).

**Uses:** Firewood, fodder (leaves), bee forage, **soil conservation, soil improvement,** nitrogen fixation, **ornamental,** shade.

**Description:** A many-branched shrub or small graceful tree 4-15 m, with a straight trunk and large **spreading crown,** semi-deciduous. LEAVES: Compound, the leaf stalk to 20 cm with 6-12 pairs of pinnae and many leaflets. Each **leaflet is** narrow and **pointed about 1 cm long,** silky hairy below. **Young leaves have brown hairs.** FLOWERS: Differ from those of all other Albizia; small and green-yellow on 1-3 **short, dense spikes, to 8 cm,** beside leaves. Many conspicuous yellow anther filaments, over 1 cm long. FRUIT: A narrow **pod to 11 cm** long, the **edges thick,** the **tip with a distinct blunt point.** The pod is swollen over the **8-11 seeds** inside.

**Propagation:** Seedlings.

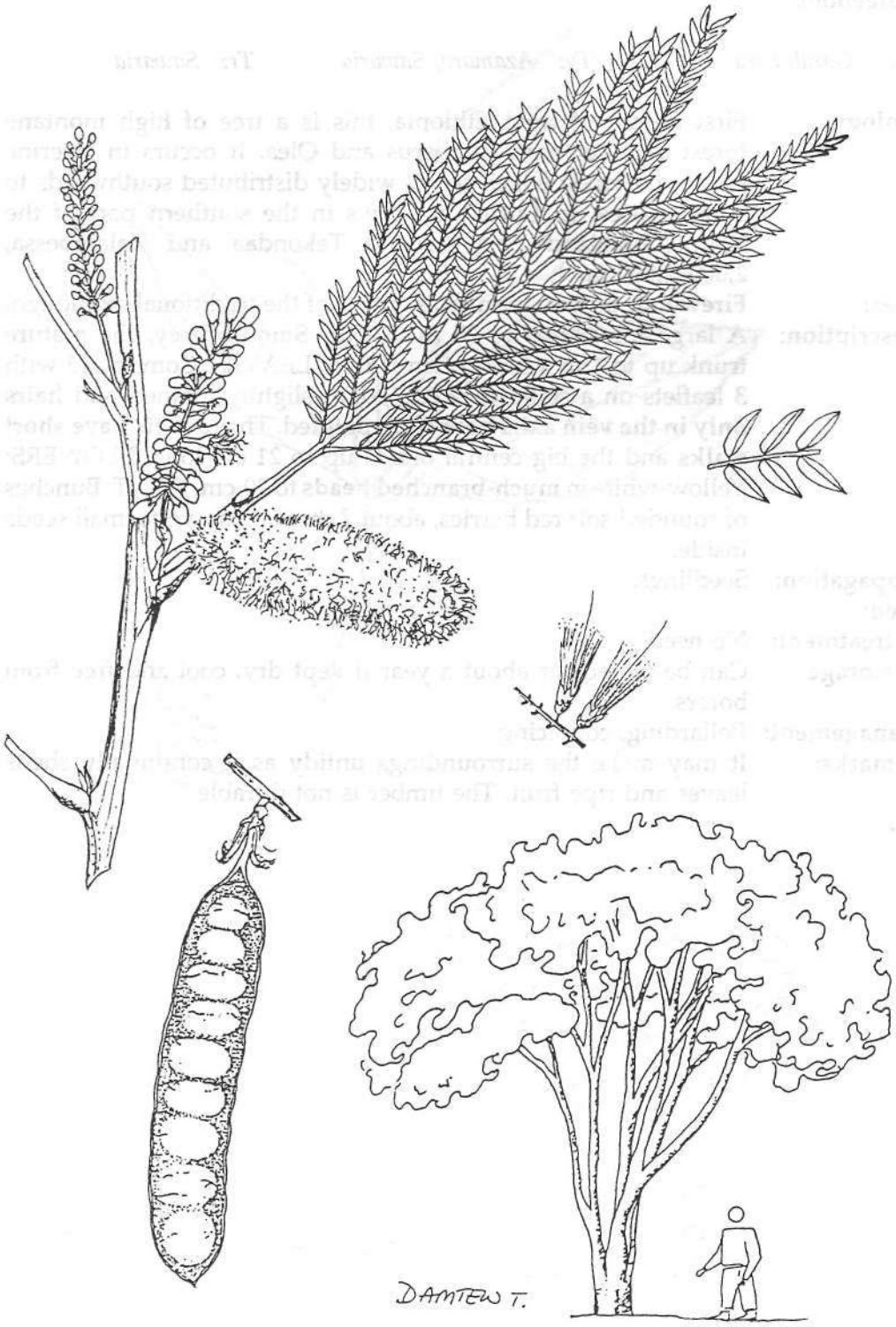
**Seed:**

**treatment:** Immerse in hot water, soak 24 hours.

**storage:**

**Management:** A fast-growing but short-lived tree. Pruning, lopping.

**Remarks:** It makes poor fuel but is a useful tree for reclaiming land because it is fast growing, relatively drought resistant and tolerates infertile and seasonally waterlogged soils. It may form dense stands along river banks, as in the Western Cape, South Africa. Having abundant seeds, it may spread easily on light soil and become an undesirable weed.


DAMTEW T.

## Allophylus abyssinicus *Sapindaceae*

Indigenous

*Sh: Garab hara* *Tg: Azamaro, Samaria* *Tr: Sawaria*

**Ecology:** First described from Ethiopia, this is a tree of high montane forest together with Juniperus and Olea. It occurs in riverine forests on forest edges and is widely distributed southwards to South Africa. In Eritrea, it grows in the southern part of the central highlands, e.g. around Tekondaa and Zalambessa, 2,000-2,800 m.

**Uses:** **Firewood,** timber, farm tools, yokes of the traditional ox plough.

**Description:** A large forest tree to 25 m. BARK: **Smooth grey,** the mature trunk up to 1 m across, often **fluted.** LEAVES: Compound with 3 leaflets on a stalk to 12 cm, edges slightly toothed and **hairs only in the vein axils below,** tip pointed. The **leaflets have short stalks** and the big central one is up to 21 cm long. FLOWERS: Yellow-white in **much-branched heads** to 20 cm. FRUIT: Bunches of rounded soft red berries, about 7 mm across, very small seeds inside.

**Propagation:** Seedlings.

**Seed:**

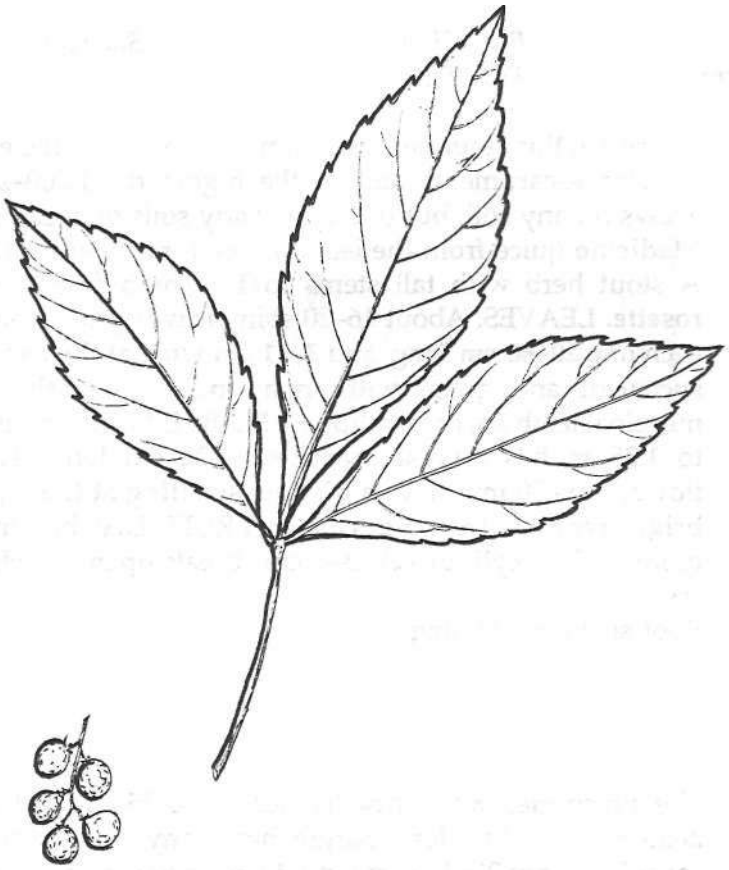
**treatment:** No need.

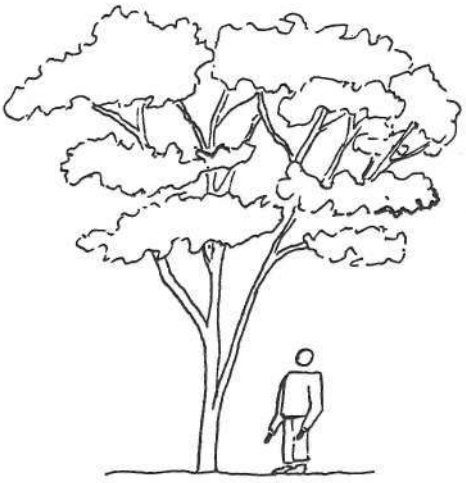
**storage:** Can be stored for about a year if kept dry, cool and free from borers.

**Management:** Pollarding, coppicing.

**Remarks:** It may make the surroundings untidy as it continually sheds leaves and ripe fruit. The timber is not durable.

AUophylus abyssinicus *Sapindaceae*





DAMTEW T.

## Aloe macrocarpa *Aloaceae*

Indigenous

| | | |
|---|---|---|
| *Ar: Sabbar* | *Bl: Chebir* | *Sh: Ura* |
| *Tg: Sanda-ere* | *Tr: Tsebir* | |

**Ecology:** In Eritrea, this stout herb is common throughout the eastern and western escarpments and in the highlands, 1,000-2,700 m. It grows on any soil, but often on sandy soils or rocky sites.

**Uses:** **Medicine** (juice from the leaves), **bee forage,** soil conservation.

**Description:** A stout herb with tall stems to 1 m high from a **basal leaf rosette.** LEAVES: About 16-20 spiny leaves grow from the base, each **one 20-60 cm long** and **3-11 cm wide at the base.** They are succulent and green with **many pale spots;** the numerous marginal teeth are brown-tipped. FLOWERS: The big flower stalk to 1.25 m has several branches, 4-22 cm long. The tubular flowers, 19-30 mm have a **distinct swelling at the base** and are **bright red, but free edges paler.** FRUIT: Dry, brown capsules, more or less **cylindrical, 2-4 cm, break open** to release small seeds.

**Propagation:** Root suckers, seedlings.

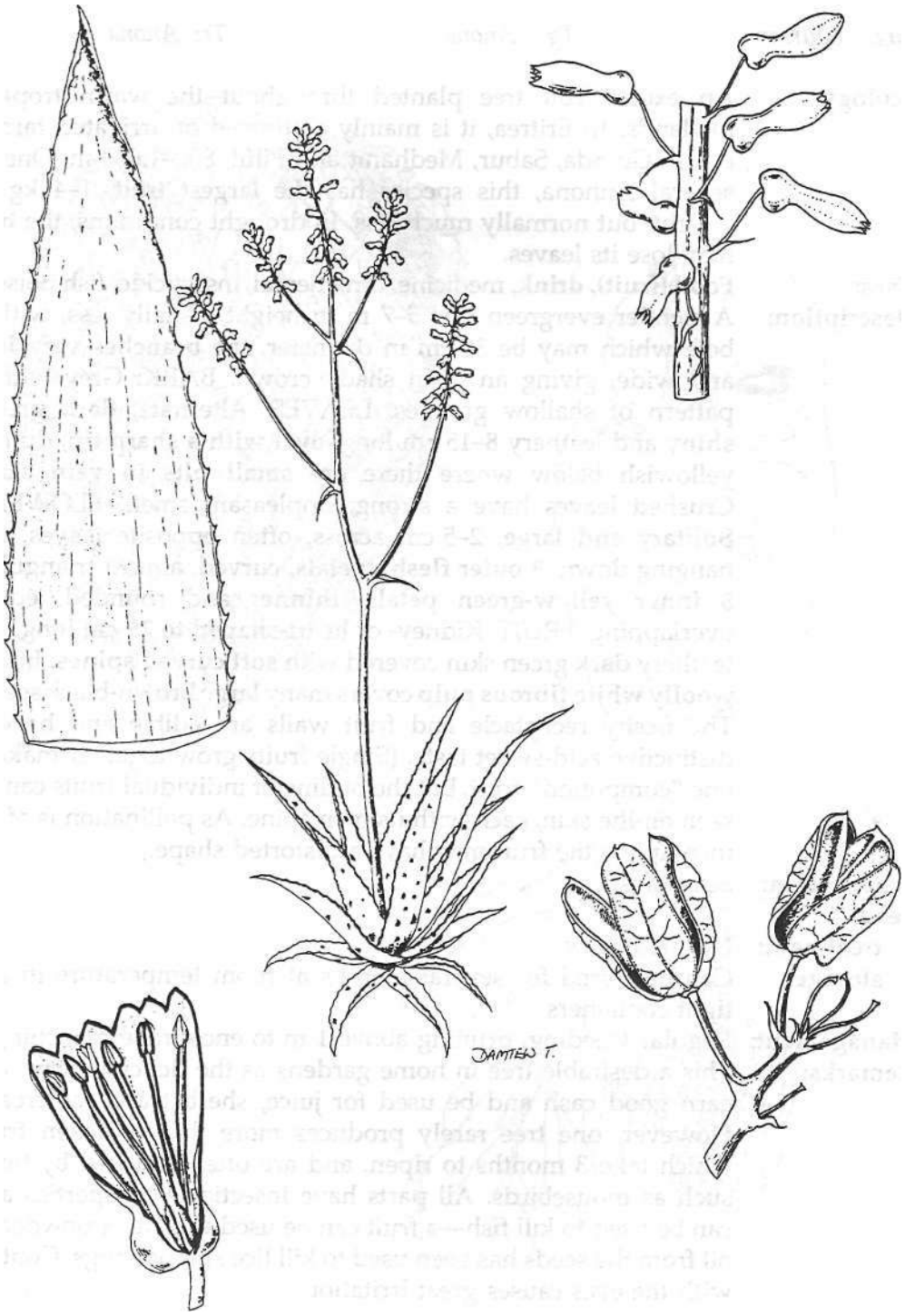
**Seeds:**

**treatment:**

**storage:**

**Management:**

**Remarks:** The subspecies *macrocarpa* has leaves to 35 cm and the flower head to 1 m. The leaf margin has many small teeth and the capsule is only 25-31 mm long. Plants growing at high altitudes are generally smaller.


DAMIEN T.

## Annona muricata *Annonaceae*

West Indies, Tropical America

***Eng:*** *Soursop* *Tg:* *Anona* *Tr:* *Anona*

**Ecology:** An exotic fruit tree planted throughout the warm tropical lowlands. In Eritrea, it is mainly cultivated on irrigated farms, e.g. in Ghinda, Sabur, Medhanit and Filfil, 800-1,600 m. One of several Annona, this species has the largest fruit, 1-4 kg in weight, but normally much less. In drought conditions, the tree may lose its leaves.

**Uses:** **Food (fruit), drink,** medicine, ornamental, insecticide, fish poison.

**Description:** A slender evergreen tree 5-7 m in height, usually less, with a bole which may be 30 cm in diameter, the **branches very low** and wide, giving an open shady crown. BARK: Grey with a pattern of shallow grooves. LEAVES: Alternate, **dark green, shiny** and leathery 8-15 cm long, **oval with a sharp tip,** dull or yellowish below where there are **small pits in vein axils.** Crushed leaves have a strong, unpleasant smell. FLOWERS: **Solitary and large,** 2-5 cm across, often opposite leaves and hanging down, **3 outer fleshy petals,** curved, almost triangular, **3 inner yellow-green petals, thinner** and rounded, edges overlapping. FRUIT: Kidney- or **heart-shaped to 25 cm long,** the leathery dark green skin covered with **soft curved spines.** Inside **woolly white fibrous pulp** covers many large brown-black seeds. The fleshy receptacle and fruit walls are edible and have a distinctive acid-sweet taste. (Single fruits grow together making one "compound" fruit, but the outline of individual fruits can be seen on the skin, each with its own spine. As pollination is often incomplete the fruit may have a distorted shape.)

**Propagation:** Seedlings.

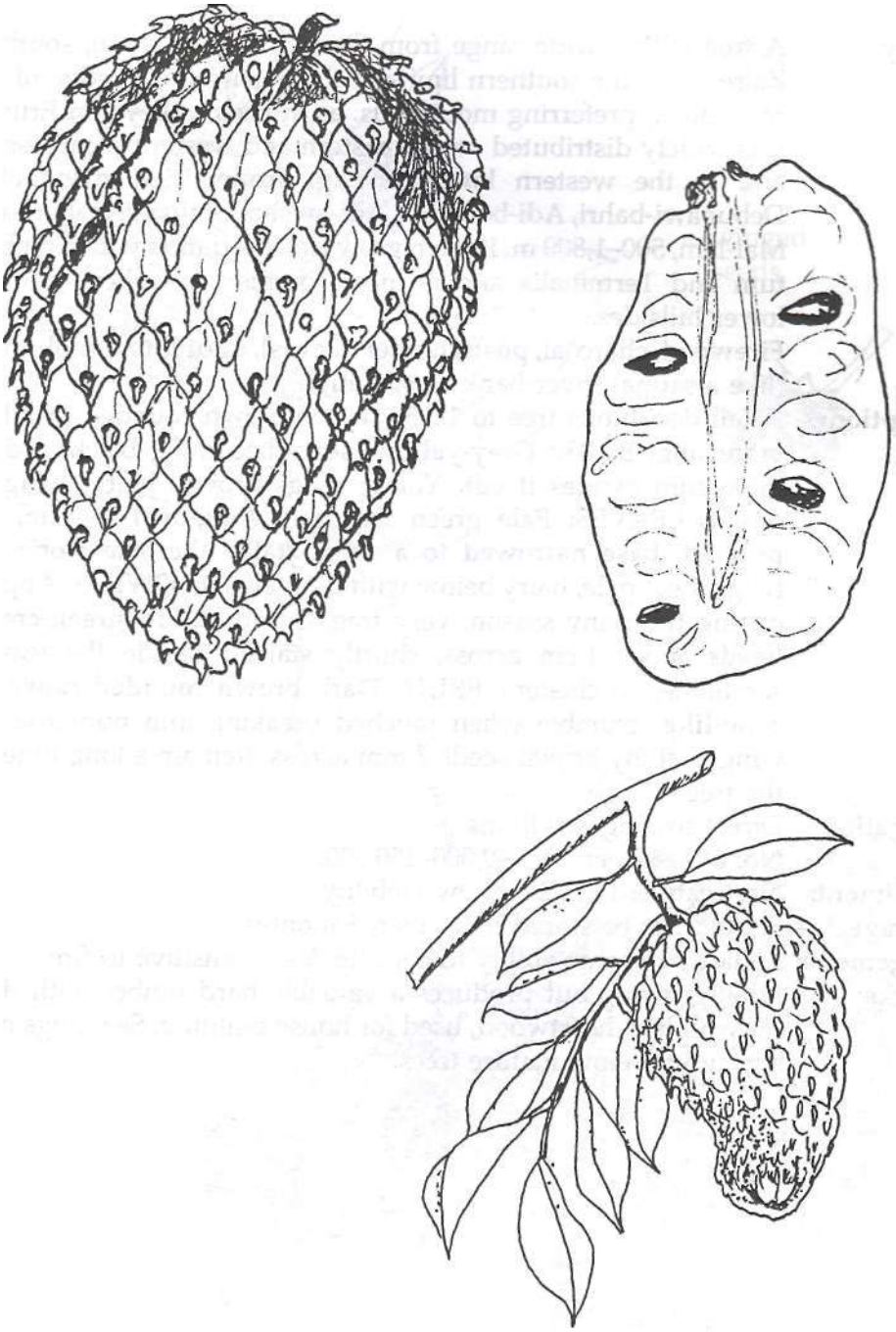
**Seed:**

**treatment:** Not necessary.

**storage:** Can be stored for several months at room temperature in air-tight containers.

**Management:** Regular weeding, pruning above 1 m to encourage branching.

**Remarks:** This a desirable tree in home gardens as the delicious fruit can earn good cash and be used for juice, sherbet and ice cream. However, one tree rarely produces more than a dozen fruit, which take 3 months to ripen, and are often attacked by birds such as mousebirds. All parts have insecticidal properties and can be used to kill fish—a fruit can be used as bait. A powder or oil from the seeds has been used to kill lice and bedbugs. Contact with the eyes causes great irritation.



## Anogeissus leiocarpus (A. schimperi) *Combretaceae*

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *Ar:* | *Shahab* | *Bl:* | *Kirkira* | *Km:* | *Bela* |
| *Sh:* | *Hanse* | *Tg:* | *Hanse* | *Tr:* | *Kirkire* |

**Ecology:** *A* tree with a wide range from Senegal to the Sudan, south to Zaire, from the southern limits of the Sahara to the edge of the rain forest, preferring moist soils, as in river valleys. In Eritrea, it is widely distributed on the eastern and western escarpments and in the western lowlands, e.g. around Semenawi-bahri, Debubawi-bahri, Adi-berebere, Adi-awsha, Omhajer, Habero and Mai-lam, 500-1,800 m. It often grows in association with Combretum and Terminalia and is most common in valleys and on lower hillsides.

**Uses:** **Firewood,** charcoal, **posts,** fodder (leaves), traditional smoke bath (like a sauna), river-bank stabilization.

**Description:** A tall deciduous tree to 12-30 m, the crown rounded and low branching. BARK: **Grey-yellow, scaly** becoming black; a dark pink gum exudes if cut. Young twigs brown, hairy, hanging down. LEAVES: Pale green and soft, **long-oval 4-7 cm, tip pointed, base narrowed to a short stalk,** alternate along the twigs. Leaf pale, hairy below with 4-8 veins. FLOWERS: Appear during the rainy season; very fragrant, in **yellow-green-cream heads** about 1 cm across, shortly stalked beside the leaves, sometimes in clusters. FRUIT: **Dark brown rounded capsules, cone-like,** crumble when touched breaking into numerous 2-winged shiny brown seeds 7 mm across. Remain a long time on the tree.

**Propagation:** Direct sowing, seedlings.

**Seed:** No. of seed per kg: 140,000-150,000.

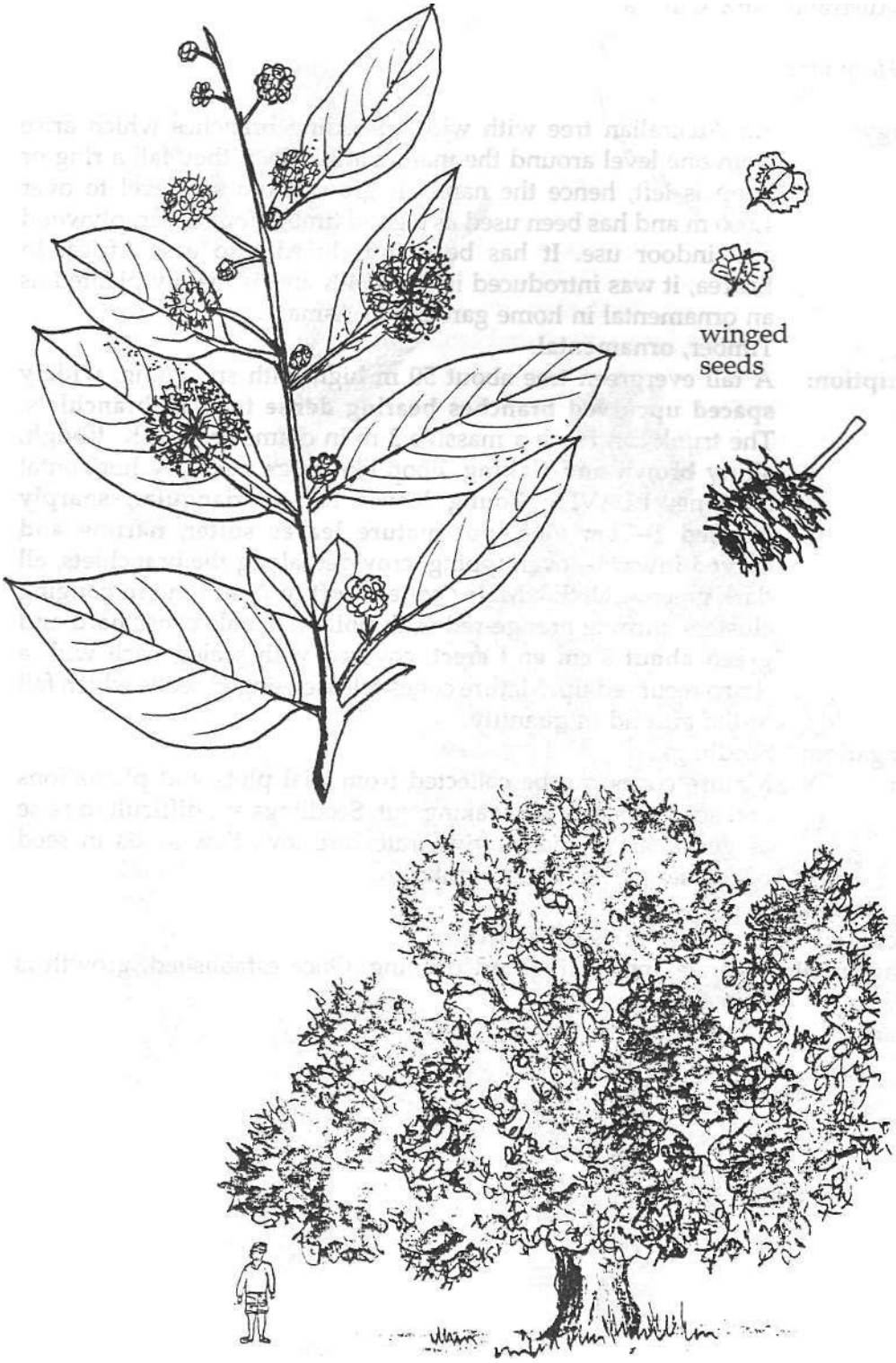
**treatment:** No treatment needed. Low viability.

**storage:** Should not be stored more than 6 months.

**Management:** Pollarding, some ability to coppice. Very sensitive to fire.

**Remarks:** Slow growing but produces a valuable hard timber with dark brown-black heartwood, used for house building. Seedlings may spring up below mature trees.

Anogeissus leiocarpus (A. schimperi) *Combretaceae*



## Araucaria cunninghamii *Araucariaceae*

N.E. Australia, New Guinea

*Eng: Hoop pine*

**Ecology:** An Australian tree with wide-spreading branches which arise from one level around the main trunk. When they fall a ring or hoop is left, hence the name. It grows from sea level to over 1,000 m and has been used as a good timber for veneer, plywood and indoor use. It has been introduced into east Africa. In Eritrea, it was introduced in the 1940s and is mainly planted as **an** ornamental in home gardens in Asmara.

**Uses:** Timber, **ornamental.**

**Description:** A tall evergreen tree about 50 m high with spreading, **widely spaced upcurved branches bearing dense tufts of branchlets.** The trunk can reach a massive 3 m in diameter. BARK: **Rough, shiny brown and flaking,** hoop-like rings made by horizontal cracking. LEAVES: **Young leaves rather triangular, sharply pointed** 1-2 cm long, but **mature leaves softer, narrow and curved inwards,** overlapping, crowded along the branchlets, all dark green. CONES: **Male "cones" soft to 7** cm **long** in hanging clusters, turning **orange-red with pollen;** female cones **hard and green about 8 cm and erect,** covered with scales, each with a sharp recurved tip. Mature cones release winged seeds which fall to the ground in quantity.

**Propagation:** Seedlings.

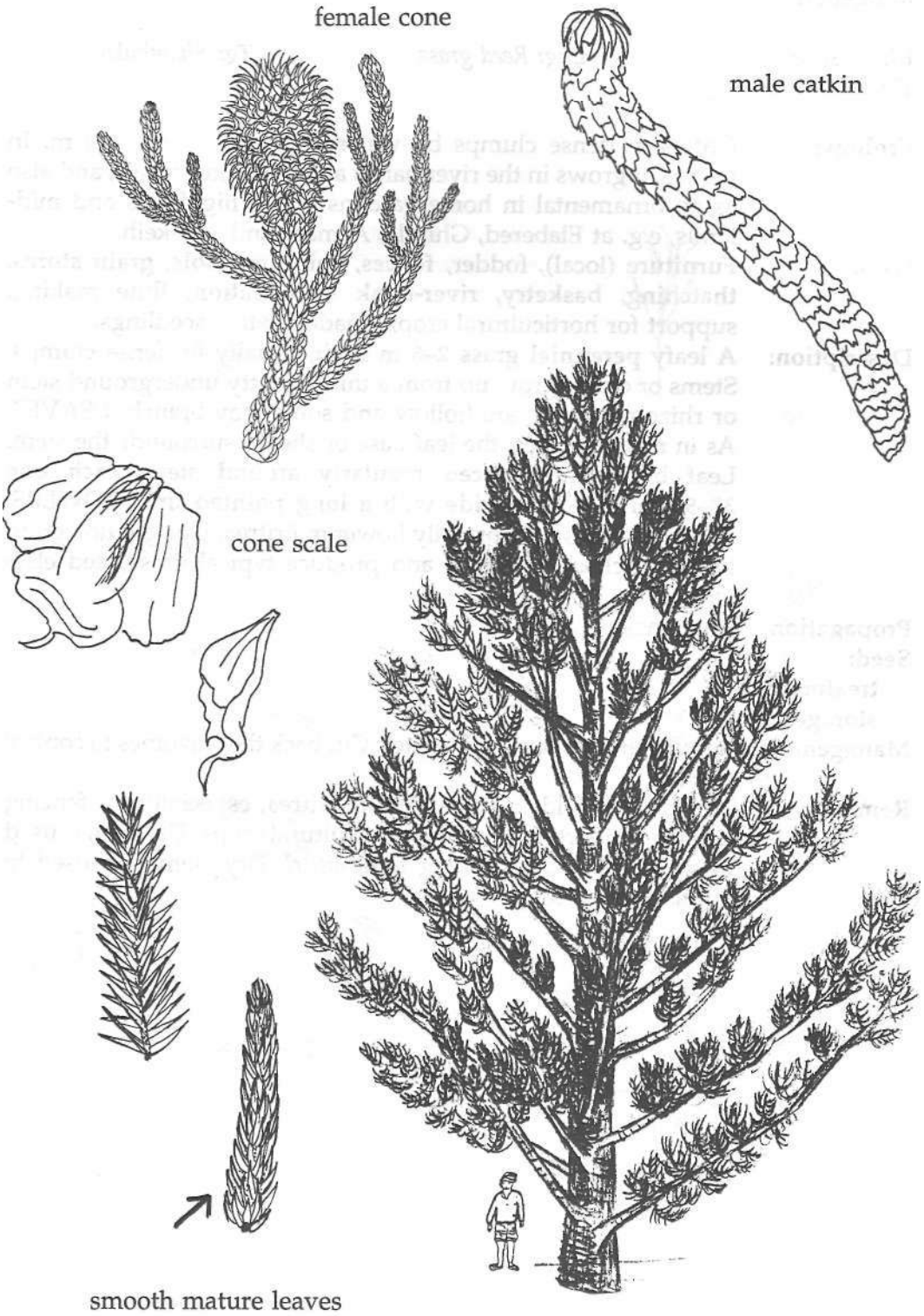
**Seed:** Mature cones can be collected from trial plots and plantations and seed collected by shaking out. Seedlings are difficult to raise as germination and survival rates are low. Sow seeds in seed beds and transplant into pots.

**treatment:**

**storage:** Sow as soon as collected.

**Management:** Tolerates pollarding and pruning. Once established, growth is very fast.

**Remarks:**


female cone
male catkin
cone scale
smooth mature leaves

## Arundo donax *Gramineae*

Indigenous

*Bl: Selsel* *Eng: Reed grass* *Tg: Shambuko*
*Tr: Shelshel*

**Ecology:** Grows in dense clumps by water courses, up to 2,400 m. In Eritrea, it grows in the river banks and irrigation canals, and also as an ornamental in home gardens in the highlands and midlands, e.g. at Elabered, Ghinda, Asmara and Adi-keih.

**Uses:** **Furniture** (local), fodder, **fences, spinning tools, grain stores, thatching, basketry, river-bank stabilization,** flute making, support for horticultural crops, shade for tree seedlings.

**Description:** A leafy **perennial grass 2-6 m high,** usually in dense clumps. Stems or culms grow up from a thick, knotty underground stem or rhizome. Stems are hollow and some may branch. LEAVES: As in many grasses, the leaf base or sheath surrounds the stem. Leaf blades are **spaced regularly** around stem, **each one 30-50 cm x 5-7 cm wide** with a **long pointed tip.** FLOWERS: This grass does not normally flower in Eritrea. Upright flowering heads reach up to 60 cm and produce typical grass seed elsewhere.

**Propagation:** Rhizomes.

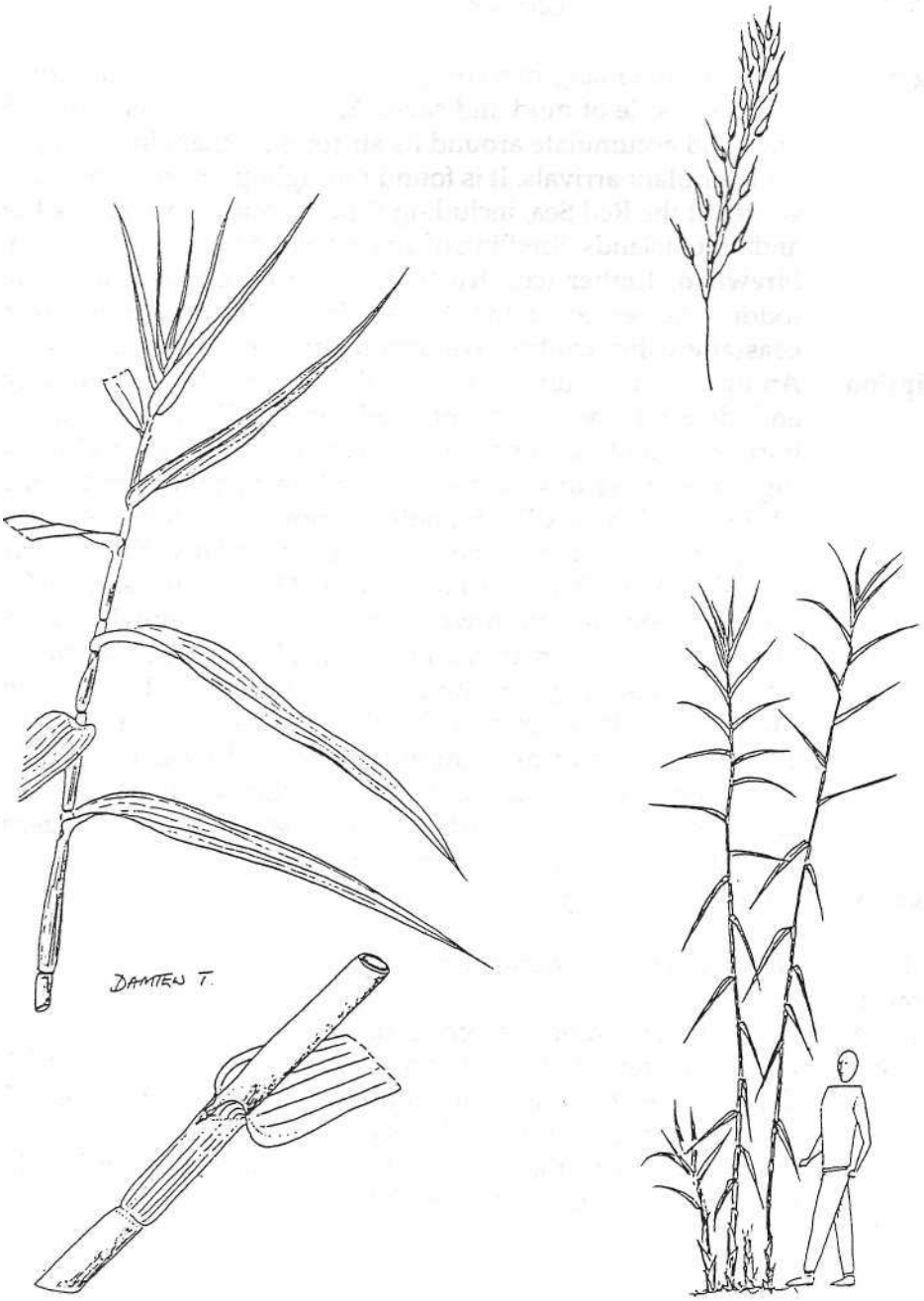
**Seed:**

**treatment:**

**storage:**

**Management:** It multiplies on favourable sites. Cut back the rhizomes to control growth.

**Remarks:** The grass is widely cultivated in Eritrea, especially for fencing and for supporting climbing horticultural crops. The stem is used to make the local spinning tool, *meftel.* Dry stems are used to build grain stores.


DAMTEN T.

## Avicennia manna *Verbenaceae*

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *Af:* | *Takaito* | *Ar:* | *Shorn* | *Eng:* | *Mangrove* |
| *Sh:* | *Tekai* | *Tr:* | *Ghondel* | | |

**Ecology:** A tree of the mangrove complex, often dominant, found on the landward side of mud and sand. Also a pioneer in swamps. Silt and mud accumulate around its air roots so changing conditions for later plant arrivals. It is found throughout most of the muddy shores of the Red Sea, including Eritrea around the Dahlak Kebir and other islands. Seedling often root along the high-water mark.

**Uses:** **Firewood, timber** (construction), fence posts, medicine (gum), fodder (leaves for camels), **fish feed and breeding habitat, coastal erosion control,** windbreak, dry fencing (branches).

**Description:** An evergreen shrub or tree, usually 3-5 m, with thick branches and dense foliage to a **rounded crown.** From the extensive horizontal underground root system, a forest of **special breathing roots grows upwards emerging like fingers from the mud, 20-50 cm high.** BARK: **Smooth or powdery, yellow-green.** A resin exudes when cut. Young branches angular with short white hairs. LEAVES: Opposite, **long-oval, 4-11 cm, thick and stiff,** the tip usually pointed, narrowed to a **short stalk, grey-white below, but dark olive-green above.** FLOWERS: Very small and **fragrant, white-cream-orange** (turning black), rather fleshy, in **dense rounded heads** on branched stalks to 3 cm, square in section. They have a **pungent scent** and are visited by ants. FRUIT: A **grey oval capsule,** flat and pointed, somewhat hairy, 1.2 cm across, splitting into 2 parts to release seeds. **The seeds germinate on the tree** before the fruit falls.

**Propagation:** Root suckers, layering, seedlings.

**Seed:**

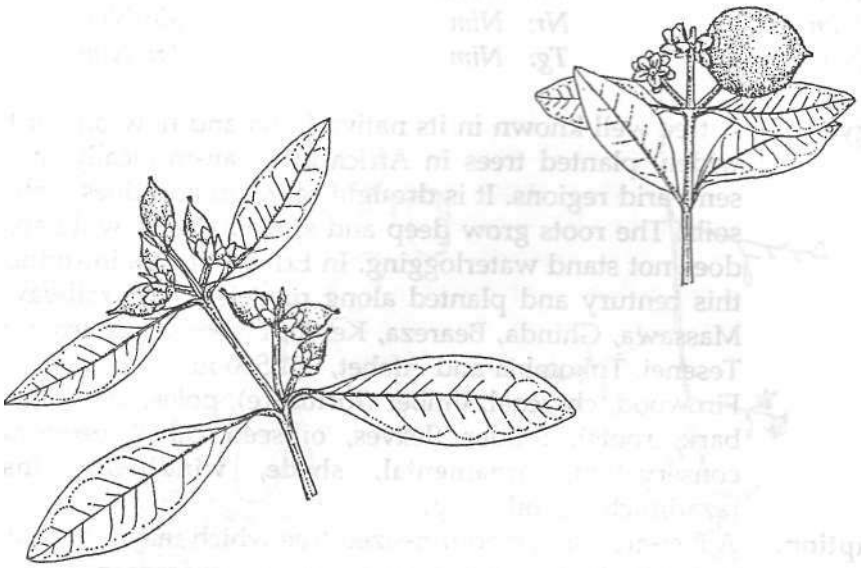
**treatment:** No treatment recommended.

**storage:**

**Management:** Natural regeneration is very profuse.

**Remarks:** Leaves falling into the sea serve as fish feed. The wood is fairly dense and even-grained and suitable for poles, canoes, etc. The bitter aromatic resin from the bark has medicinal uses. The gum is used as a treatment for snake bite and is also said to help delivery of the placenta after childbirth.

Avicennia marina *Verbenaceae*



## Azadirachta indica *Meliaceae*

North-east India, Burma

| | | |
|---|---|---|
| *Ar: Nim* | *Bl: Nima* | *Hd:Nim* |
| *Km: Nim* | *Nr: Nim* | *Sh: Nim* |
| *Eng: Neem* | *Tg: Nim* | *Tr: Nim* |

**Ecology:** A tree well known in its native India and now one of the most widely planted trees in Africa and pan-tropically in arid and semi-arid regions. It is drought resistant and does well on poor soils. The roots grow deep and spread over a wide area, but it does not stand waterlogging. In Eritrea, it was introduced early this century and planted along roadsides and railway lines in Massawa, Ghinda, Beareza, Keren, Elabered, Akurdet, Barentu, Tesenei, Tokombia and Afabet, 0-1,500 m.

**Uses:** Firewood, charcoal, timber (furniture), poles, **medicine** (leaves, bark, roots), fodder (leaves, oil-seed cake), bee-forage, soil conservation, **ornamental, shade, windbreak, insecticide** (azadirachtin), oil, soap.

**Description:** A fast-growing, medium-sized tree which may reach 20 m, with a **dense, leafy,** oval-shaped **canopy, evergreen** except in the driest areas. BARK: Pale grey-brown, grooved. LEAVES: Glossy green, crowded at the ends of branches; **compound to 40 cm long,** each **leaflet curved and long, pointed,** the **edge roughly saw-toothed,** leaf blades unequal, a **smaller leaflet at the leaf tip.** FLOWERS: Small, fragrant, cream-white, hanging in long graceful sprays. FRUIT: **Oval yellow berries when ripe, 2 cm long, thin skinned with oily pulp,** usually 1 or 2 seeds.

**Propagation:** Seedlings, wildings, direct sowing.

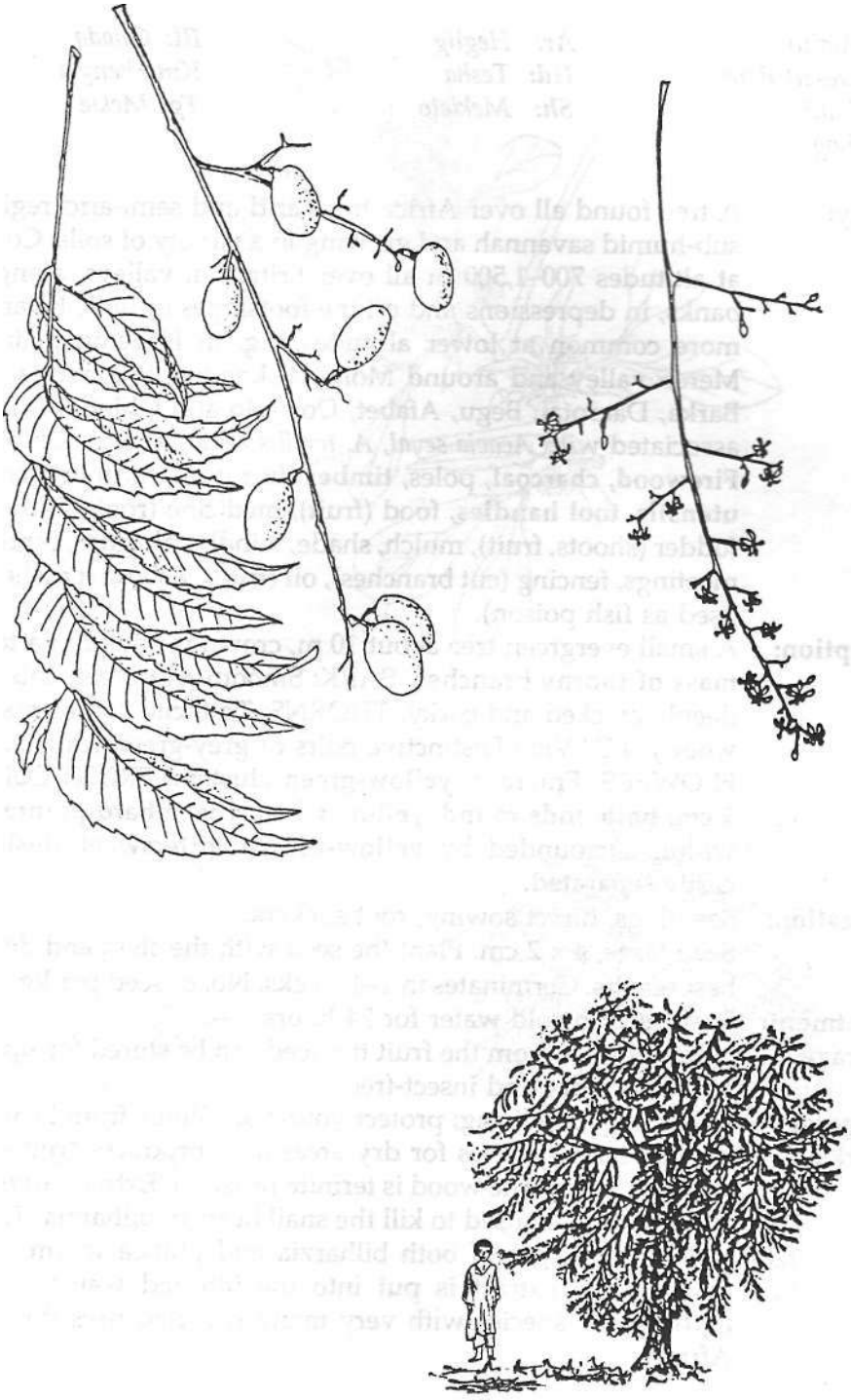
**Seed:** No. of seeds per kg: ±5,000.

**treatment:** Not necessary. Germination can be increased by removing the fruit pulp.

**storage:** Seed should not be stored as it loses viability quickly.

**Management:** Fast growing after the first year; lopping, pollarding. Should be weeded during establishment.

**Remarks:** The wood is tough and resistant to decay and termites. Leaf powder mixed in water makes an effective fumigant against seed borers in grain stores. A major use is for shelterbelts.



## Balanites aegyptiaca *Balanitaceae*

Indigenous

| | | |
|---|---|---|
| *Af: Alaito* | *Ar: Heglig* | *Bl: Guada* |
| *Eng: Desert date* | *Hd: Tesha* | *Ktn:Shengla* |
| *Nr: Inditi* | *Sh: Mekieto* | *Tg: Mekie* |
| *Tr: Kog* | | |

**Ecology:** A tree found all over Africa from arid and semi-arid regions to sub-humid savannah and growing in a variety of soils. Common at altitudes 700-1,500 m all over Eritrea in valleys, along river banks, in depressions and on the footslopes of hills. Balanites is more common at lower altitudes, e.g. in Hazemo plains and Mereb valley and around Molki, Tokombia, Shambuko, upper Barka, Daerotai, Begu, Afabet, Dongolo and Ghinda. It is often associated with *Acacia seyal, A. tortilis* and *Capparis decidua.*

**Uses:** **Firewood, charcoal,** poles, **timber** (furniture, farm implements), **utensils, tool handles,** food (fruit), medicine (roots, fruit, bark), fodder (shoots, fruit), mulch, shade, windbreak, gum, ceremonial meetings, fencing (cut branches), oil (fruit), fishing (crushed fruit used as fish poison).

**Description:** A small evergreen tree about 10 m, crown rounded in a **tangled mass of thorny branches.** BARK: Smooth and green, later dark, deeply cracked and corky. THORNS: To 8 **cm,** soft at first, then **woody.** LEAVES: Distinctive pairs of grey-green leaflets, ovate. FLOWERS: Fragrant, **yellow-green** clusters. FRUIT: Oblong **to 5 cm, both ends round, yellow when ripe, a hard pointed seed** within surrounded by **yellow-brown bittersweet flesh,** seed easily separated.

**Propagation:** Seedlings, direct sowing, root suckers.

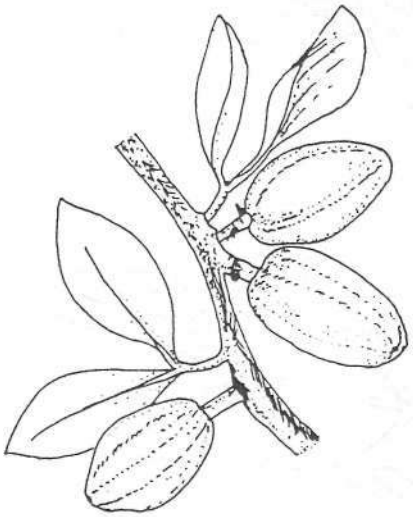
**Seed:** Seed large, 4 x 2 cm. Plant the seed with the stem end down for best results. Germinates in 1-4 weeks. No. of seed per kg: ±1,000.

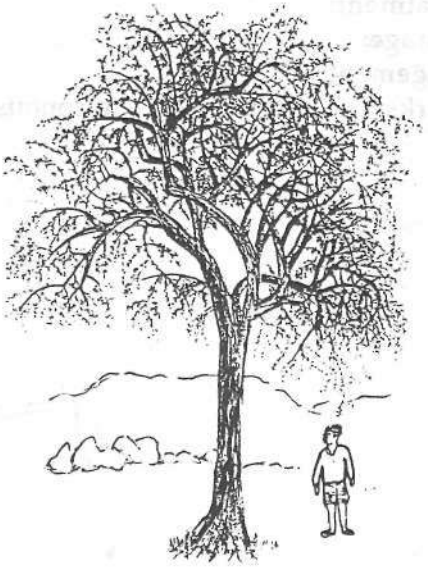
**treatment:** Soak seed in cold water for 24 hours.

**storage:** After removal from the fruit the seed can be stored for up to one year. Store dry and insect-free.

**Management:** Pollarding, coppicing; protect young seedlings from browsing.

**Remarks:** An important species for dry areas as it produces fruit even in very dry years. The wood is termite resistant. Extracts of the fruit and bark can be used to kill the snail hosts of bilharzia. The free-swimming stages of both bilharzia and guinea worm are also killed if the extract is put into the infected water. A useful agroforestry species with very many reported uses throughout Africa.





## Barbeya oleoides *Barbeyaceae*

Indigenous

*Tg: Hirmi-tel* *Tr: Leisham*

**Ecology:** A small tree of bushland and evergreen scrub, locally dominant on eroded bushland, granite slopes and even red clay. There is a single species found only in Arabia and north-east Africa. It-grows in the central highlands of Eritrea, e.g. in Semenawi-bahri (Anagule, Maaldi), Debubawi-bahri (Seled, Adi-roso) and Rora-mensa, 1,700-2,200 m, often in association with *Olea africana, Rhus natalensis, Rhus abyssinica* and *Euclea schimperi.*

**Uses:** **Firewood,** charcoal, poles (construction), fence posts.

**Description:** A shrub or a small tree 3-10 m tall, much branched and rather resembling an olive tree; **branches more or less drooping or arched. BARK: Pale and smooth when young,** grey and rough on older trees. LEAVES: **Oblong to long oval, to 6 cm,** with a short tip, **shiny above** but dense **curly white hairs below.** FLOWERS: Male and female flowers separate. Male flowers **densely rust-brown, hairy in stalkless heads,** female similar but a bit larger. FRUIT: A **dry compressed** fruit, 1 cm long with the **bright green persistent membraneous calyx 1-2 cm around it,** on a stalk 1-2 cm long.

**Propagation:** Seedlings, wildings.

**Seed:**

**treatment:**

**storage:**

**Management:**

**Remarks:** This plant is poisonous to goats.

## Becium grandiflorum *Lamiaceae*

Indigenous

*Sh: Tabeb* *Tg: Tahbeb* *Tr: Iskee*

**Ecology:** This aromatic plant is only found in the Ethiopian and Eritrean highlands. It grows on rocky slopes, in montane bushland and eroded pastures. It may form pure stands but is often seen with *Rumex* spp. It is common in the upper midlands and highlands around Asmara, Halai, Segenaiti, Bogos and Rora-habab, 1,700-2,600 m.

**Uses:** Medicine (ointment from crushed leaves), **fodder** (leaves), bee forage, soil conservation and **traditional** use **(Meskel fire).**

**Description:** A woody shrub 0.4-1.0 m tall. BARK: Pale brown. LEAVES: Pale green, long oval 2-7 cm, the edge slightly toothed. They may be hairy or sticky and have a strong smell when crushed. Base narrowed to a short stalk. FLOWERS: **Short dense flower heads** with up to 16 whorls of flowers; the head later grows to 20 cm long. Each flower 1-2 cm, **pale pink marked with blue-velvet lines,** the stamens hanging out of the corolla tube. Flowers best after rain. FRUIT: 4 nutlets each about 3 mm long.

**Propagation:** Seedlings.

**Seeds:**

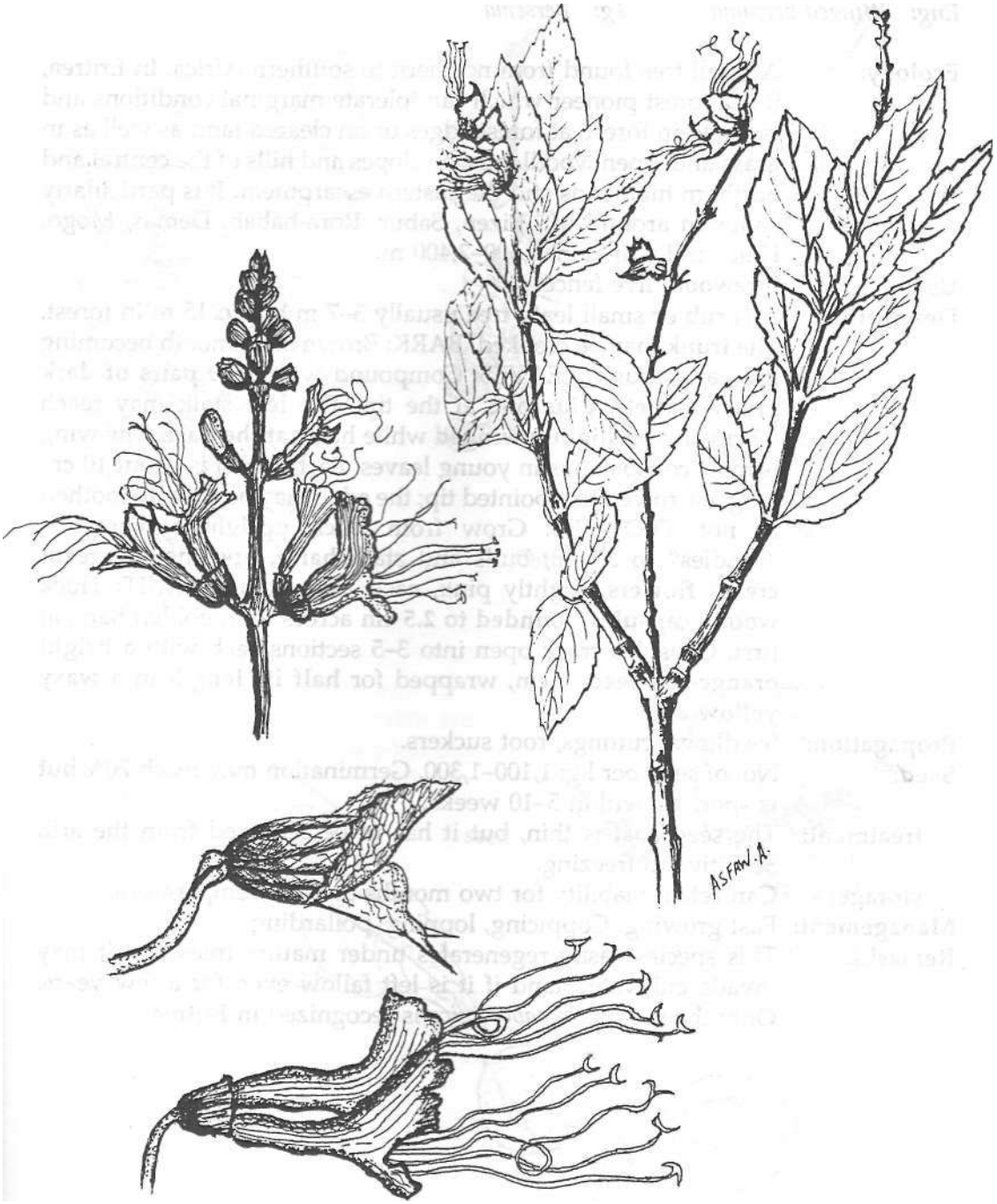
**treatment:** Not necessary

**storage:** Can be stored for a year if kept cool and well dried in air-tight containers.

**Management:** Fast growing.

**Remarks:** Crushed and squeezed leaves produce a strong smell and are used as ointment. Branches are used in making *hoye,* a traditional fire which is burnt on Meskel day.

Becium grandiflorum *Lamiaceae*



## Bersama abyssinica subsp. abyssinica *Melianthaceae*

Indigenous

***Eng:*** *Winged bersama* *Tg:* *Bersema*

**Ecology:** A small tree found from northern to southern Africa. In Eritrea, it is a forest pioneer which can tolerate marginal conditions and is found in forest, at forest edges or on cleared land as well as in grassland, open woodlands, on slopes and hills of the central and northern highlands and the eastern escarpment. It is particularly common around Mt. Bizen, Sabur, Rora-habab, Demas, Mogo, Halai and Adi-keih, 1,600-2,400 m.

**Uses:** **Firewood,** live fence.

**Description:** A shrub or small leafy tree usually 3-7 m but to 15 m in forest. The trunk may be crooked. BARK: Brown and smooth becoming grey and rough. LEAVES: Compound with **5-10 pairs of dark green leaflets, plus one** at the tip. The leaf stalk may reach 60 cm and be **slightly winged** while **hairy at the base.** The wing is most conspicuous in young leaves. Each leaflet is about 10 cm long, narrowed to a pointed tip; the edge may be slightly toothed or not. FLOWERS: Grow from **thick upright spikes,** like "candles" **to** 35 **cm;** buds and stalk **hairy,** opening to **green-cream flowers,** slightly pink, each 2 cm across. FRUIT: Thick **woody capsules, rounded to 2.5 cm** across with golden hairs at first. Capsules crack open into 3-5 sections each with a **bright orange-red seed, 1 cm,** wrapped for **half its length** in a **waxy yellow aril.**

**Propagation:** Seedlings, cuttings, root suckers.

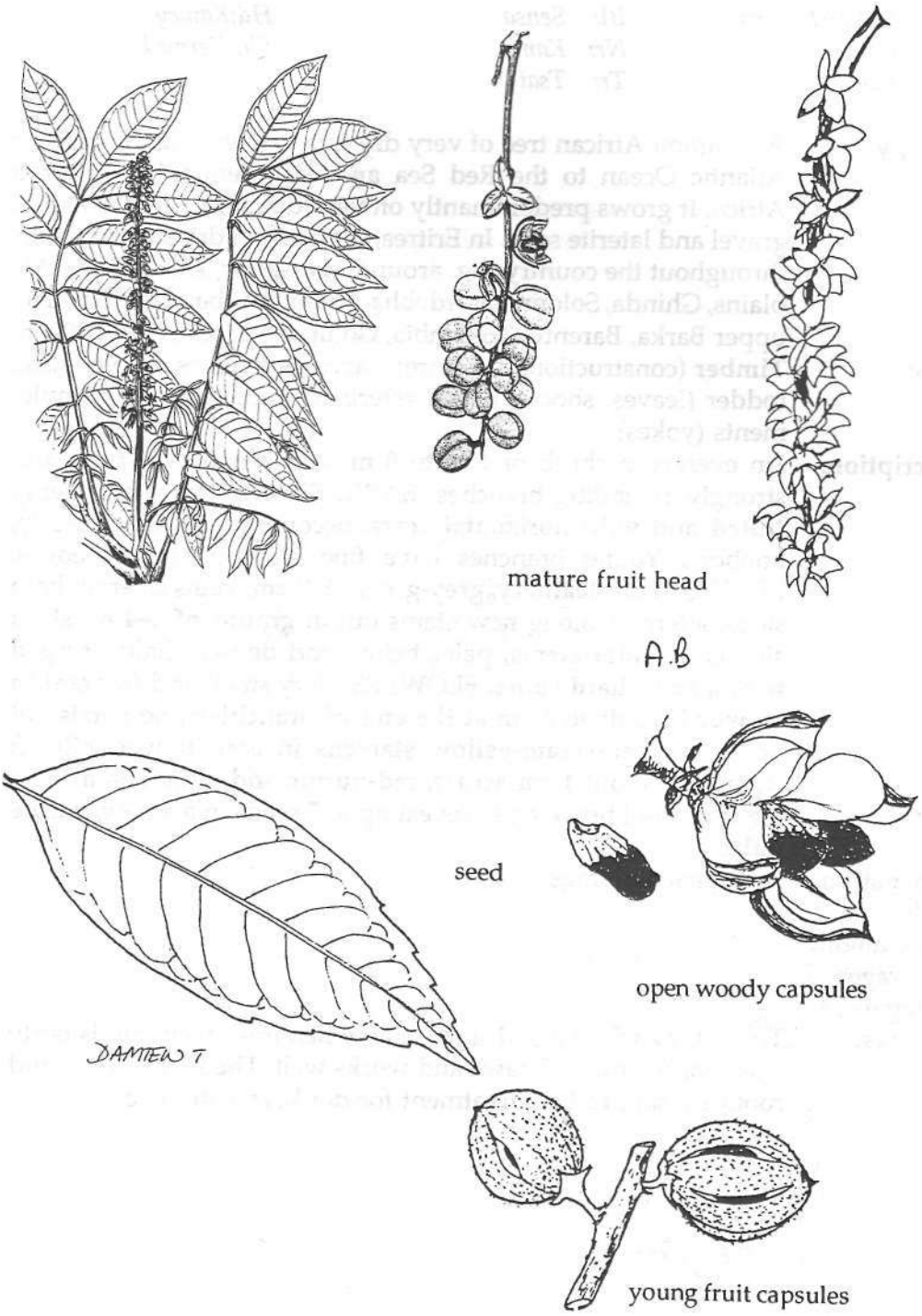
**Seed:** No. of seed per kg: 1,100-1,300. Germination may reach 70% but is sporadic within 5-10 weeks.

**treatment:** The seed coat is thin, but it has to be removed from the aril. Sensitive to freezing.

**storage:** Can retain viability for two months at room temperature.

**Management:** Fast growing. Coppicing, lopping, pollarding.

**Remarks:** This species easily regenerates under mature trees and it may invade cultivated land if it is left fallow even for a few years. Only the subspecies *abyssinica* is recognized in Eritrea.


mature fruit head
A.B
seed
open woody capsules
DAMTEW T
young fruit capsules

## Boscia angustifolia *Capparidaceae*

Indigenous

| | | |
|---|---|---|
| *Ar: Shajeret Almarfin* | *Bl: Sensa* | *Hd:Kamey* |
| *Km: Juna* | *Nr: Kamb* | *Sh: Kermedo* |
| *Tg: Kermed* | ***Tr:** Tsai* | |

**Ecology:** A common African tree of very dry types of woodland from the Atlantic Ocean to the Red Sea and east, central to southern Africa. It grows predominantly on very dry sites, on hills and in gravel and laterite soils. In Eritrea, it grows on dry sites and hills throughout the country, e.g. around Mai-seraw, Dekemhare, Ala plains, Ghinda, Solomuna, Adobha, Hidai, Adi-berebere, Mehlab, upper Barka, Barentu, Tokombia, Goluj and Molki, 700-2,000 m.

**Uses:** **Timber** (construction, furniture), carvings (crosses, afro-combs), fodder (leaves, shoots, bark), veterinary medicine, farm implements (yokes).

**Description:** An evergreen shrub or tree to 8 m with a **massive trunk** and strongly ascending branches. BARK: **Silver-grey, often deeply fluted and with horizontal scars,** becoming grey-black, scaly, knobbly. Young branches have fine hairs on raised edges. LEAVES: **Stiff, leathery, grey-green, 2-7 cm,** veins clear on both sides, alternate along new stems but in **groups of 2-4 on short shoots of older stems,** paler below and densely hairy, **tipped with a short hard spine.** FLOWERS: Very small and **fragrant in crowded heads to 6 cm at the end of branchlets,** no petals but up to 8 **green-cream-yellow stamens** in each flower. FRUIT: **Rounded, about 1 cm across, red-purple** and pitted, on a stalk, the **thin shell** breaking to reveal up to 7 seeds in a **sticky, edible pulp.**

**Propagation:** Seedlings, wildings.

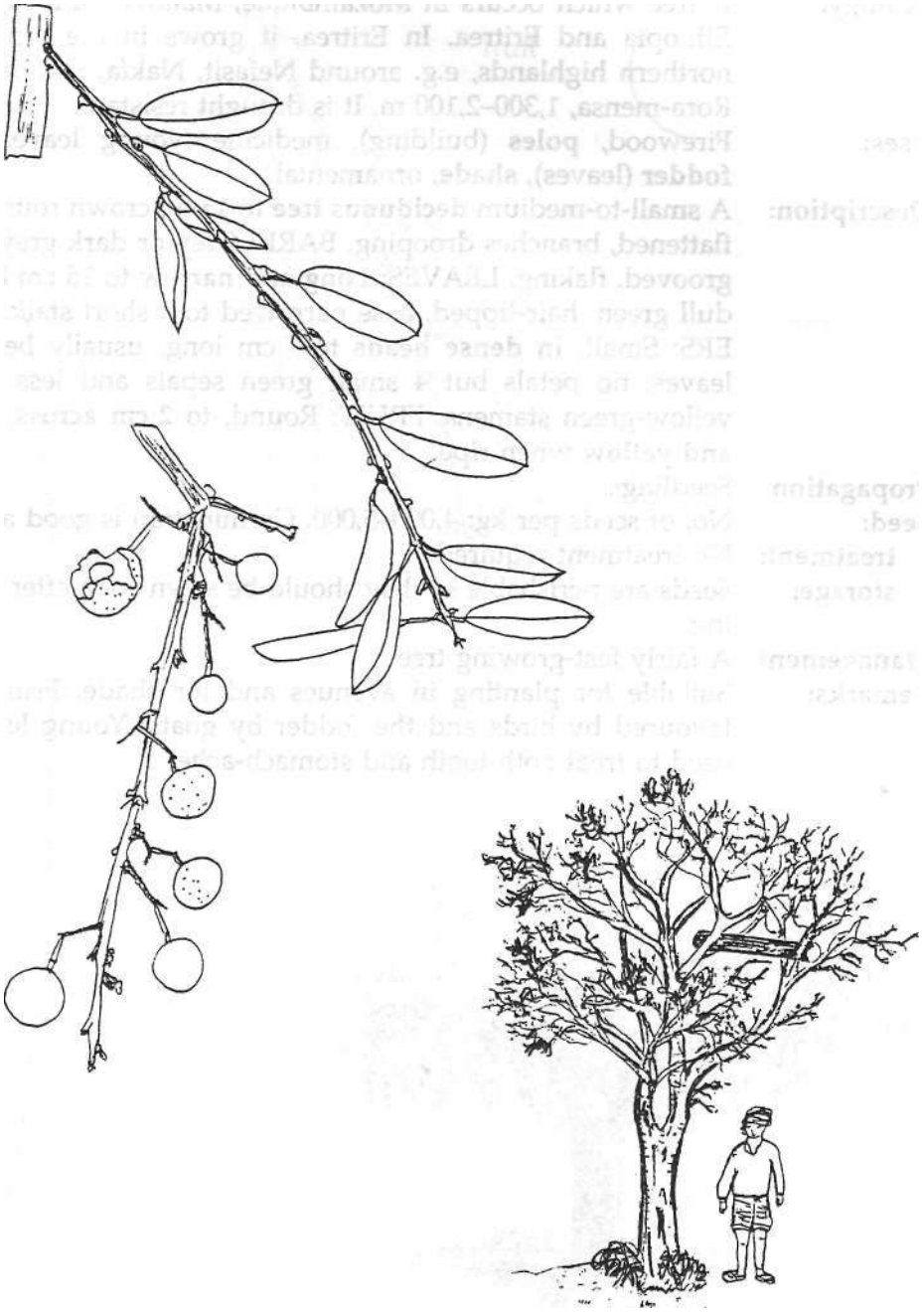
**Seed:**

**treatment:**

**storage:**

**Management:**

**Remarks:** The yellow-white wood smells bad when freshly cut but is fairly heavy and hard and saws and works well. The leaves, bark and roots are said to be a treatment for donkeys with fever.



## Boscia salicifolia *Capparidaceae*

Indigenous

*Sh: Egrabo* *Tg: Oba* *Tr: Meret*

**Ecology:** *A* tree which occurs in Mozambique, Malawi, Zambia, Kenya, Ethiopia and Eritrea. In Eritrea, it grows in the central and northern highlands, e.g. around Nefasit, Nakfa, Shindewa and Rora-mensa, 1,300-2,100 m. It is drought resistant.

**Uses:** Firewood, **poles** (building), medicine (young leaves, bark), **fodder** (leaves), **shade,** ornamental.

**Description:** A small-to-medium **deciduous tree** to 15 m; crown rounded but flattened, branches drooping. BARK: Grey or dark grey, rough, grooved, flaking. LEAVES: **Long and narrow** to 15 cm by 3 cm, dull green, hair-tipped, base narrowed to a short stalk. FLOWERS: Small, **in dense heads** to 7 cm long, usually beside the leaves; no petals but 4 small green sepals and less than 16 yellow-green stamens. FRUIT: Round, to **2 cm across, smooth and yellow** when ripe.

**Propagation:** Seedlings.

**Seed:** No. of seeds per kg: 4,000-5,000. Germination is good and fast.

**treatment:** No treatment required.

**storage:** Seeds are perishable so they should be sown soon after harvesting.

**Management:** A fairly fast-growing tree.

**Remarks:** Suitable for planting in avenues and for shade. Fruits much favoured by birds and the fodder by goats. Young leaves are used to treat both tooth and stomach-ache.


×1
fruit

## Boscia senegalensis *Capparidaceae*

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *Bl:* | *Hamta* | *Hd:* | *Teham* | *Km:* | *Goda* |
| *Nr:* | *Kushi* | *Tg:* | *Hamta* | *Tr:* | *Hamta* |

**Ecology:** A tree typical of semi-arid Africa from Senegal to Ethiopia. In Eritrea, it grows in the western lowlands, e.g. around Tokombia, Tekeze valley, Shambuko, upper and lower Barka, Hidai valley, Mai-lam, Hagaz and lower Anseba valley in rocky, clay, stony and lateritic soils. Prefers sandy-clay plains.

**Uses:** Firewood (smoky), poles, food (seed in emergencies), **fodder** (leaves browsed by sheep and goats), water purification (bark that is dried and ground into powder).

**Description:** A small evergreen tree or a shrub reaching a height of 4 m. BARK: Dark grey to black. LEAVES: Alternate, **tough and hard but the surface covered with hairs,** darker above than below, to 12 cm long, **oval, the tip blunt or notched and with a tiny point, lateral veins prominent and looped in** bows, with a clear vein network in between. FLOWERS: Greenish-white to yellow green, unpleasant scent, in short dense heads. FRUIT: **Globose, 1-2 cm in diameter** in small heads. Surface of fruits rough and **hairy, green then brown-yellow** when ripe, containing 1-2 large seeds.

**Propagation:** Seedlings, wildings.

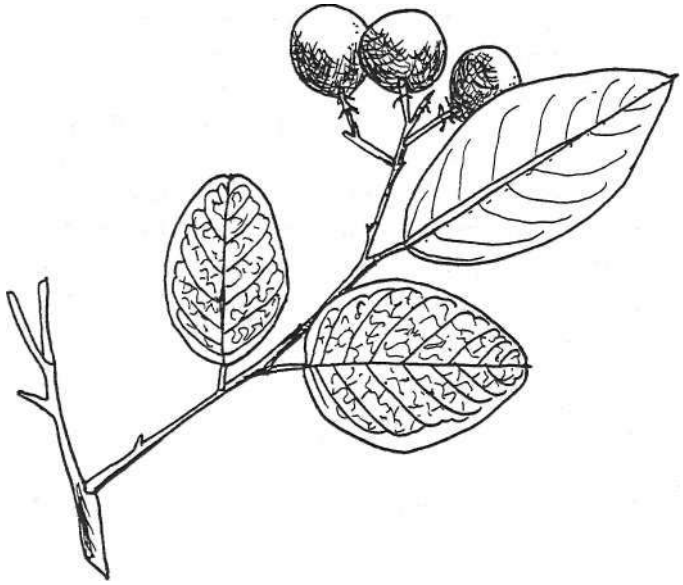
**Seed:** No. of seed per kg: 2,500-3,500.

**treatment:**

**storage:**

**Management:** It is often better to protect natural regeneration rather than planting this species.

**Remarks:** During famine seeds can be washed several times to remove the bitter taste, soaked in water for 7 days then dried to be prepared in the same way as lentils. They can also be ground into flour. The seeds have also been roasted and used as a substitute for coffee.



## Boswellia papyrifera *Burseraceae*

Indigenous

| | | |
|---|---|---|
| *Ar: Tarak tarak* | *Bl: Wal wal* | *Hd:Lawloiv* |
| *Eng: Bitter frankincense* | *Km: Imela* | *Nr: Lawlan* |
| *Tg: Meker* | TV: *Wal wal* | |

**Ecology:** Found in dry Acacia-Commiphora woodland and wooded grassland in north Africa, Arabia and Somalia. In Eritrea, the tree is dominant on steep rocky slopes of the western escarpments, e.g. around Arewai, Tsebab, Jengeren, Meshalit, Shelalo, Augaro, Badime, the Tekeze river, Zaide-kolom and Berakit, 1,100-1,900 m.

**Uses:** Fodder, live hedge, **incense** (resin).

**Description:** A deciduous tree to 4-12 m or more, with thick branches tipped with clusters of leaves, the crown rounded. BARK: **Smooth, pale yellow-brown, peeling off in large papery pieces.** A cut looks red-brown and a **fragrant milky resin** drips out. LEAVES: **Large and compound on a stalk to 45 cm, 6-8 pairs leaflets** plus one at the tip, each oval, 4-8 cm, **densely hairy below,** the edge sharp or round-toothed, sometimes double-toothed. FLOWERS: Sweet smelling, develop on **loose heads** at the ends of thick branchlets, appearing before the new leaves. The red flower stalk, to 35 cm, bears the **white-pink flowers with 5 petals and 10 yellow stamens.** FRUIT: **Red** capsules about 2 cm long, 3-sided with 3 hard seeds inside.

**Propagation:** Seedlings, cuttings. The cuttings should be taken shortly before the trees shed their leaves.

**Seed:**

**treatment:** No treatment required.

**storage:**

**Management:**

**Remarks:** Harvesting of resin can take place between October and March. The resin-gum droplets are scraped off the bark. This first cutting is thrown away and a second cutting taken weeks later is only of low quality. A third cutting produces quality frankincense. A few tons of frankincense are produced annually in the southern Arabian peninsula alone for rituals and health use. B. *sacra* of Saudi Arabia and Somalia has better-quality frankincense. B. *carteri* provides the resin for the frankincense of commerce, but B. *papyrifera* has a very similar resin and is used as frankincense in Eritrea.


fruit capsule

## Bougainvillea spectabilis *Nyctaginaceae*

Eastern Brazil

*Tg: Fyori*

**Ecology:** A vigorous forest creeper from South America. Named after the French navigator Bougainville, it is one of the best-known ornamental plants of the tropics and subtropics. It will not flower where the night temperature is too low and requires well-drained soils, but is drought resistant. It loves warmth and thrives best in places exposed to full sun. In Eritrea, it was introduced by the Italians during the colonial period and is mainly cultivated as an ornamental in urban centres such as Asmara, Keren, Ghinda, Dekemhare and Mendefera, up to 2,400 m.

**Uses:** Ornamental, windbreak, live fence.

**Description:** A perennial climber, shrub or tree if not pruned, with **strongly hooked thorns beside leaves.** BARK: Grey-brown. LEAVES: Widely oval to about 10 cm, alternate on the stems, soft, smooth and shiny, darker above, tip pointed, narrowed at the base to **a** stalk about 1 cm; **colourful leaf-shaped bracts, about 5 cm long.** The bract bends away from the midrib which supports one small flower; **3 bracts together make the showy whorls** which may be very dense on the plant. FLOWERS: Narrowly tubular, about 2 cm, in 5 parts with 7-8 stamens within. FRUIT: The long thin ovary becomes a hard fruit but seeds are of little importance as vegetative reproduction is usual.

**Propagation:** Cuttings from mature plants. Plant in deep pits before rain for a good start.

**Seed:**

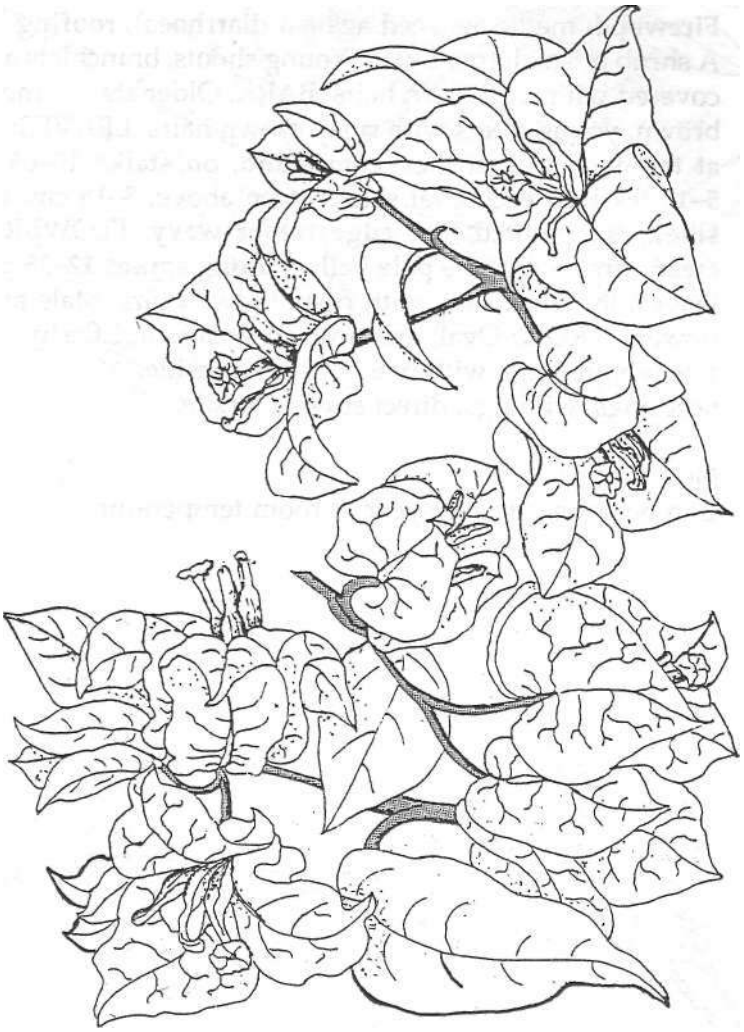
**treatment:**

**storage:**

**Management:** Pruning. Cut back all fleshy water shoots with attached bark to improve flowering. Bougainvillea can form hedges and completely cover walls of buildings, etc. As a climber it can cover large trees. It must be severely pruned to make a neat hedge. Many varieties have been developed for different colours and shape of the bracts.

**Remarks:**

Bougainvillea spectabilis *Nyctaginaceae*



## Brucea antidysenterica *Simaroubaceae*

Indigenous

*Tg: Anderguhila*

**Ecology:** A tree of montane evergreen forests or margins or grassy clearings; widespread in tropical Africa. In Eritrea it grows in wooded areas of the central highlands, 1,800-2,600 m, e.g. in upper Anseba valley, around Embaderho, Afdeyu, Weki, Adi-tekelezan, near Senate and at Adi-keih.

**Uses:** **Firewood,** medicine (seed against diarrhoea), **roofing material.**

**Description:** A shrub or small tree 1-9 m. Young shoots, branchlets and leaves covered with red-brown hairs. BARK: Older stems smooth grey-brown, young stems with rusty brown hairs. LEAVES: Crowded at the ends of branches, **compound, on stalks 10-65 cm with 5-13 leaflets,** each oval shiny green above, 3-18 cm, **base one-sided,** tip pointed, **the edge rather wavy.** FLOWERS: **Small, cream-green, anthers pale yellow along spikes 12-35 cm beside leaves,** the thick stalk with rusty brown hairs. Male and female flowers. FRUIT: Oval, green when young and fleshy, red when ripe, about 1 cm, with one hard seed inside.

**Propagation:** Seedlings, wildings, direct sowing at site.

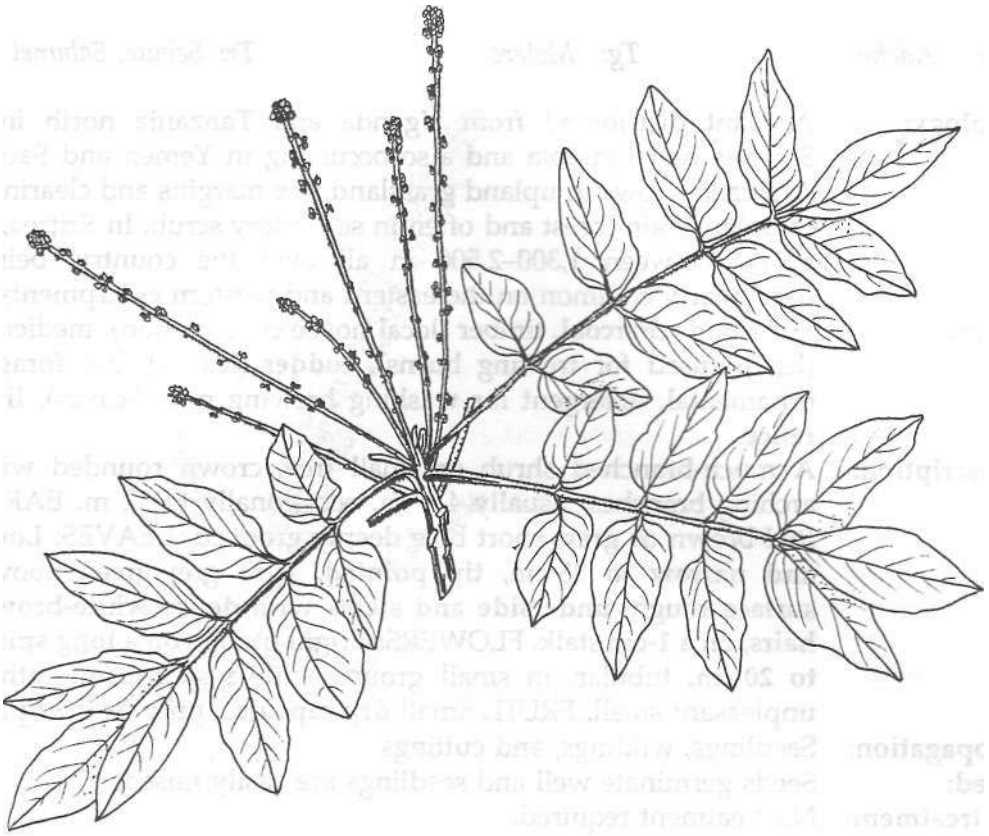
**Seeds:**

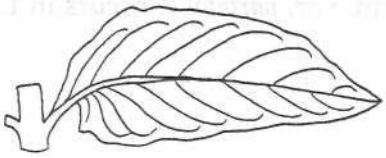
**treatment:** None.

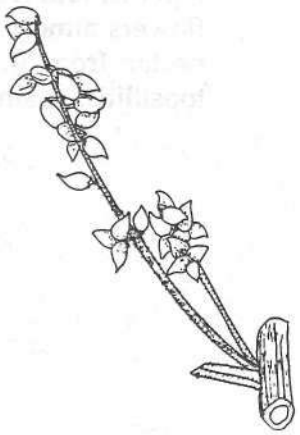
**storage:** Can be stored up to a year at room temperature.

**Management:**

**Remark:**







## Buddleia polystachya *Loganiaceae*

Indigenous

*Sh: Adahur* *Tg: Metere* *Tr: Sebute, Sabunet*

**Ecology:** A plant distributed from Uganda and Tanzania north into Somalia and Ethiopia and also occurring in Yemen and Saudi Arabia. It grows in upland grassland, the margins and clearings of upland rain forest and often in secondary scrub. In Eritrea, it grows between 1,300-2,500 m all over the country, being particularly common on the eastern and western escarpments.

**Uses:** **Firewood, charcoal,** timber (local house construction), medicine (leaves used for treating burns), fodder (leaves), bee forage, ornamental, detergent for washing brewing pots (leaves), **live fence.**

**Description:** A much-branched shrub or small tree, crown rounded with arching branches, usually 4r-5 m, occasionally to 12 m. BARK: Red-brown or grey, short bole deeply grooved. LEAVES: **Long and narrow to 15 cm, tip pointed,** light grey-green above, surface rough, **underside and** stems with **dense white-brown hairs,** on a 1-cm stalk. FLOWERS: Bright orange **on a long spike to 20 cm,** tubular, in small groups with a sharp and rather unpleasant smell. FRUIT: Small dry capsules, open at the tip.

**Propagation:** Seedlings, wildings, and cuttings.

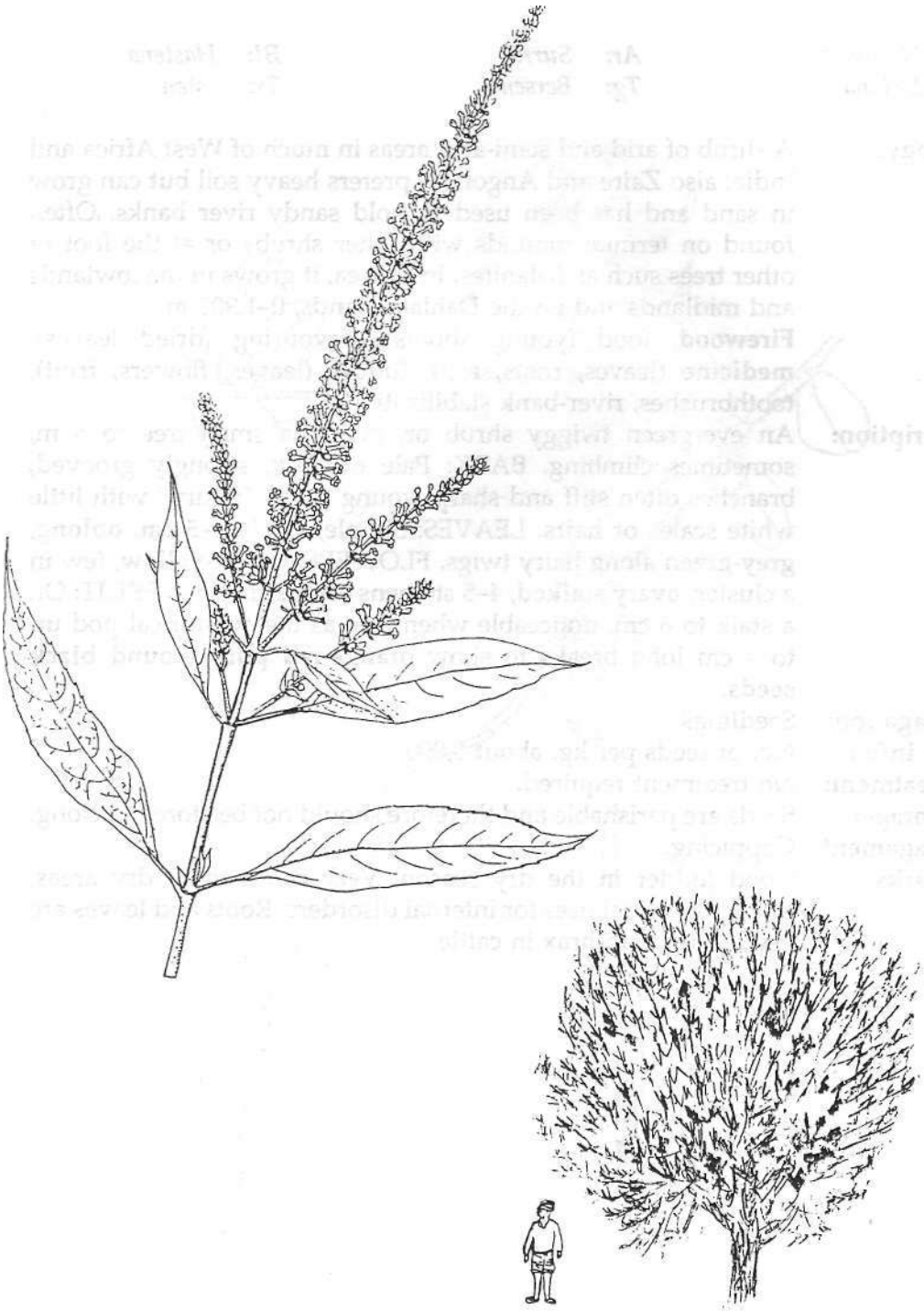
**Seed:** Seeds germinate well and seedlings are easily raised.

**treatment:** No treatment required.

**storage:**

**Management:** Lopping, coppicing, and pollarding.

**Remarks:** The dry wood can be used to start fires by rubbing sticks together and it is a popular fuel. An attractive ornamental which flowers almost all the year round. Bees collect both pollen and nectar from it. The plant has been used as a medicine for tonsillitis. A small-leaved form, var. *parvifolia,* occurs in Eritrea.



## Cadaba farinosa *Capparidaceae*

Indigenous

| | | |
|---|---|---|
| *Af: Numhele* | *Ar: Surrih* | *Bl: Hastena* |
| *Sh: Debina* | *Tg: Bersenai* | *Tr: Asten* |

**Ecology:** *A* shrub of arid and semi-arid areas in much of West Africa and India; also Zaire and Angola. It prefers heavy soil but can grow in sand and has been used to hold sandy river banks. Often found on termite mounds with other shrubs or at the foot of other trees such as Balanites. In Eritrea, it grows in the lowlands and midlands and on the Dahlak Islands, 0-1,900 m.

**Uses:** **Firewood,** food (young shoots), flavouring (dried leaves), **medicine** (leaves, roots, ash), fodder (leaves, flowers, fruit), toothbrushes, river-bank stabilization.

**Description:** An evergreen twiggy shrub or, rarely, a small tree to 5 m, sometimes climbing. BARK: Pale or dark, strongly grooved, branches often stiff and sharp, young twigs "floury" with little white scales or hairs. LEAVES: Simple, small, **2-5 cm, oblong, grey-green** along hairy twigs. FLOWERS: **Green-yellow,** few in a cluster, **ovary stalked,** 4-5 stamens each 2 cm long. FRUIT: On a stalk to 6 cm, noticeable when ripe as the cylindrical pod up to 4 cm long breaks to show **orange-red pulp around black seeds.**

**Propagation:** Seedlings.

**Seed info.:** No. of seeds per kg: about 8,000.

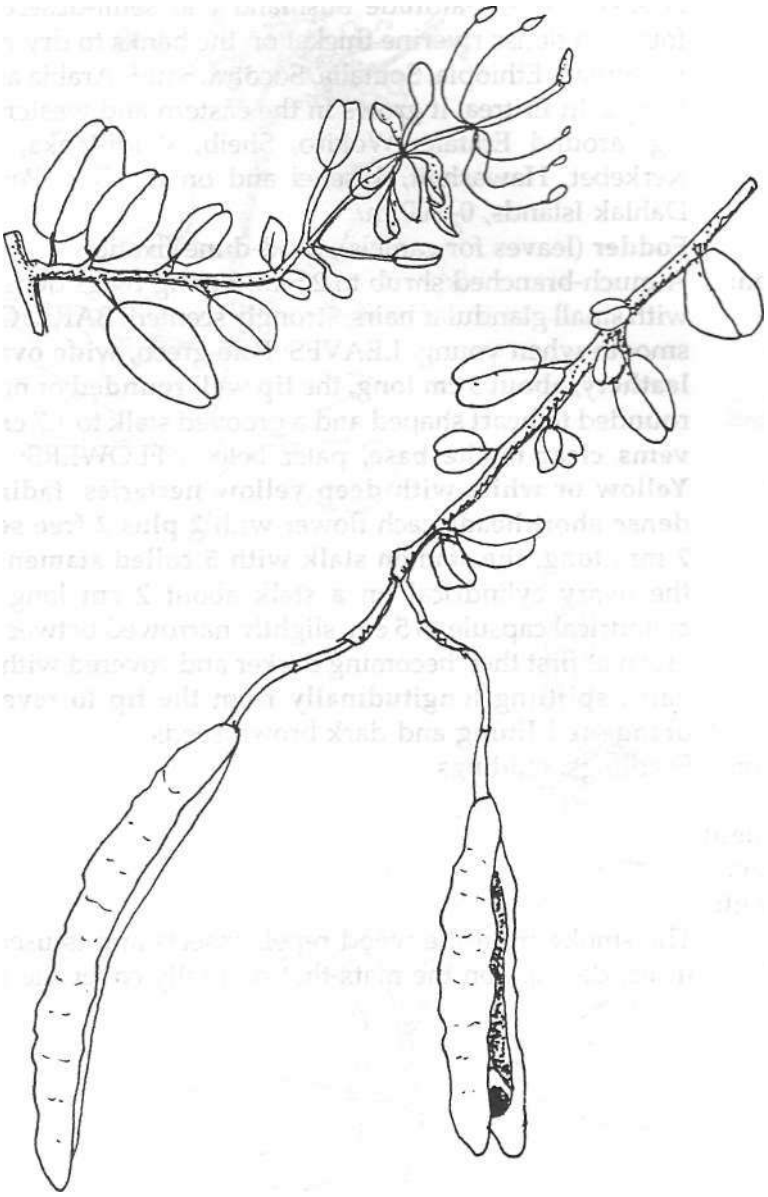
**treatment:** No treatment required.

**storage:** Seeds are perishable and therefore should not be stored for long.

**Management:** Coppicing.

**Remarks:** Good fodder in the dry season. Very common in dry areas. Many medicinal uses for internal disorders. Roots and leaves are used to treat anthrax in cattle.

Cadaba farinosa *Capparidaceae*



## Cadaba rotundifolia *Capparidaceae*

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *Af:* | *Anagali* | *Ar:* | *Kurmut, Algaseb* | *Hd:* | *Ukurmut* |
| *Nr:* | *Kulmet* | *Sh:* | *Arangele* | TV: | *Lacheb, Kulmet* |

**Ecology:** A shrub of low-altitude bushland and semi-desert scrub, also found in dense riverine thicket on the banks to dry river beds in the Sudan, Ethiopia, Somalia, Socotra, Saudi Arabia and northern Kenya. In Eritrea, it grows in the eastern and western lowlands, e.g. around Erafale, Wokiro, Sheib, Wadi-labka, Mahmimet, Kerkebet, Hawashait, Tesenei and on the Buri Peninsula and Dahlak Islands, 0-800 **m.**

**Uses:** **Fodder** (leaves for camels), sand-dune fixation.

**Description:** A much-branched shrub to 2.5 m. Young twigs densely covered with small glandular hairs, strongly scented. BARK: Grey-brown, smooth when young. LEAVES: Pale green, **wide oval to round, leathery, about 3 cm long,** the **tip well rounded** or notched, base rounded to heart shaped and a grooved stalk to 1.7 cm, **2-3 pairs veins clear to the base,** paler below. FLOWERS: (No petals) **Yellow or white with deep yellow nectaries, fading pink, in dense short heads** each flower with **2 plus 2 free sepals about 7 mm long, the stamen stalk with 5 coiled stamens to 16 mm** the ovary cylindrical on a stalk about 2 cm long. FRUIT: A cylindrical capsule to 5 cm, slightly narrowed between the seeds, green at first then becoming darker and covered with tiny rough hairs, **splitting longitudinally from the tip to reveal a bright orange-red lining** and dark brown seeds.

**Propagation:** Seedlings, wildings.

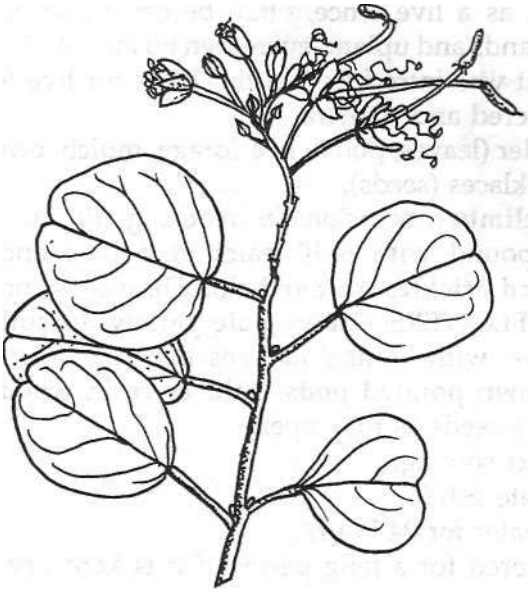
**Seed:**

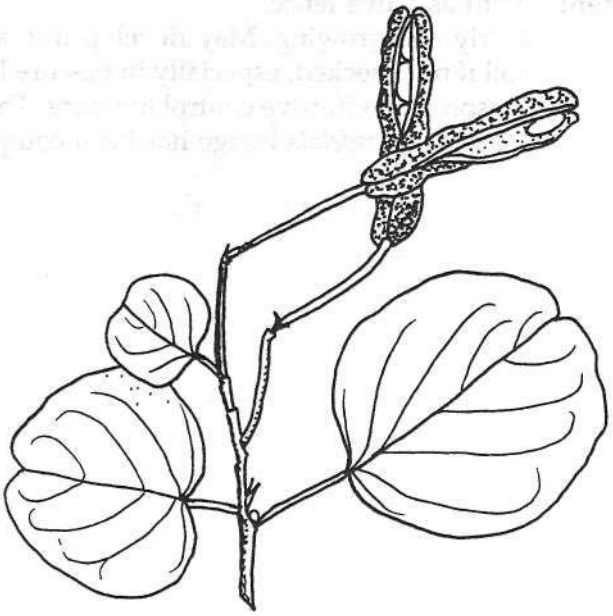
**treatment**

**storage:**

**Management:**

**Remarks:** The smoke from the wood repels insects and is used to reduce insect damage on the mats that normally cover the *agnet* hut.





## Caesalpinia decapetala *Caesalpinioideae*

Tropical and subtropical Asia

*Eng: Mauritius thorn, Mysore thorn*

**Ecology:** Widely grown as a live fence, often becoming naturalized in wooded grasslands and upland evergreen bushlands, 1,600-2,100 m. In Eritrea, it was introduced in the 1930s for live fencing in Segenaiti, Elabered and Asmara.

**Uses:** Medicine, fodder (leaves, pods), **bee forage,** mulch, **ornamental, live fence,** necklaces (seeds).

**Description:** A shrub or **climber** occasionally reaching 10 m. LEAVES: Feathery compound with 6-10 pairs of pinnae and **oblong leaflets. Hooked prickles** scattered along branches and even on the leaf stalk. FLOWERS: Showy **pale yellow, in spikes** to 30 cm, 2 cm across with orange stamens hanging down. FRUIT: Clusters of **brown pointed pods, held erect on woody stalks,** scattering many seeds as they open.

**Propagation:** Seedlings, direct sowing.

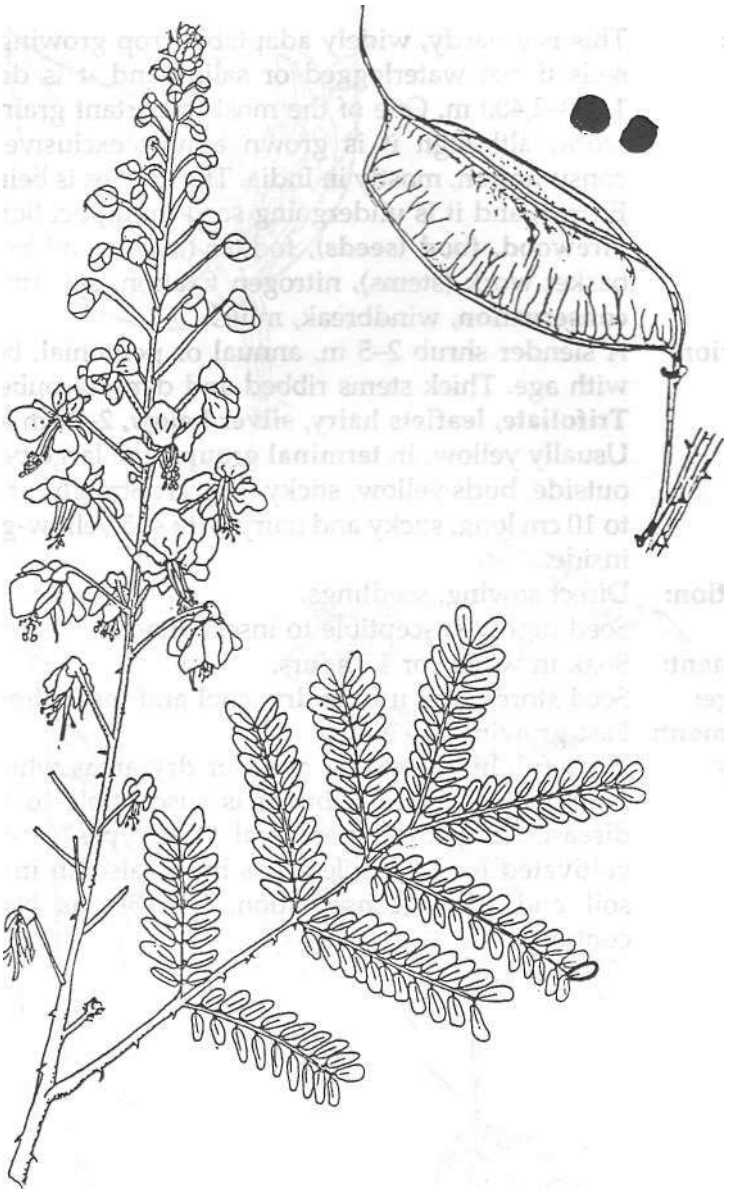
**Seed:** Germination rate ±60%.

**treatment:** Soak in cold water for 24 hours.

**storage:** Seed can be stored for a long period if it is kept dry and free from insects.

**Management:** Trim as a live fence.

**Remarks:** Fairly fast growing. May develop into a serious weed in good soil if not checked, especially in pasture land. Burning in the dry season is an effective control measure. The thorns are so effective that a *C. decapetala* hedge has been compared to barbed wire.



## Cajanus cajan *Papilionoideae*

Probably north-eastern Africa

***Eng:*** *Pigeon pea*

**Ecology:** This is a hardy, widely adaptable crop growing on a variety of soils if not waterlogged or saline and it is drought resistant, 1,000-2,400 m. One of the most important grain legumes in the world although it is grown almost exclusively for domestic consumption, mostly in India. The species is being introduced to Eritrea, and it is undergoing seed multiplication.

**Uses:** **Firewood, food (seeds),** fodder (leaves and pods), bee forage, basket work (stems), nitrogen fixation, soil **improvement, soil conservation,** windbreak, mulch.

**Description:** A slender shrub 2-5 m, annual or perennial, becoming woody with age. Thick stems ribbed and densely pubescent. LEAVES: **Trifoliate, leaflets hairy, silver below,** 2-8 cm long. FLOWERS: Usually yellow, **in terminal groups,** the large petal has red lines outside, buds yellow, sticky. FRUIT: Straight or upcurved pods, to 10 cm long, sticky and hairy with 4-5 yellow-green-grey **seeds** inside.

**Propagation:** Direct sowing, seedlings.

**Seed:** Seed highly susceptible to insect attack.

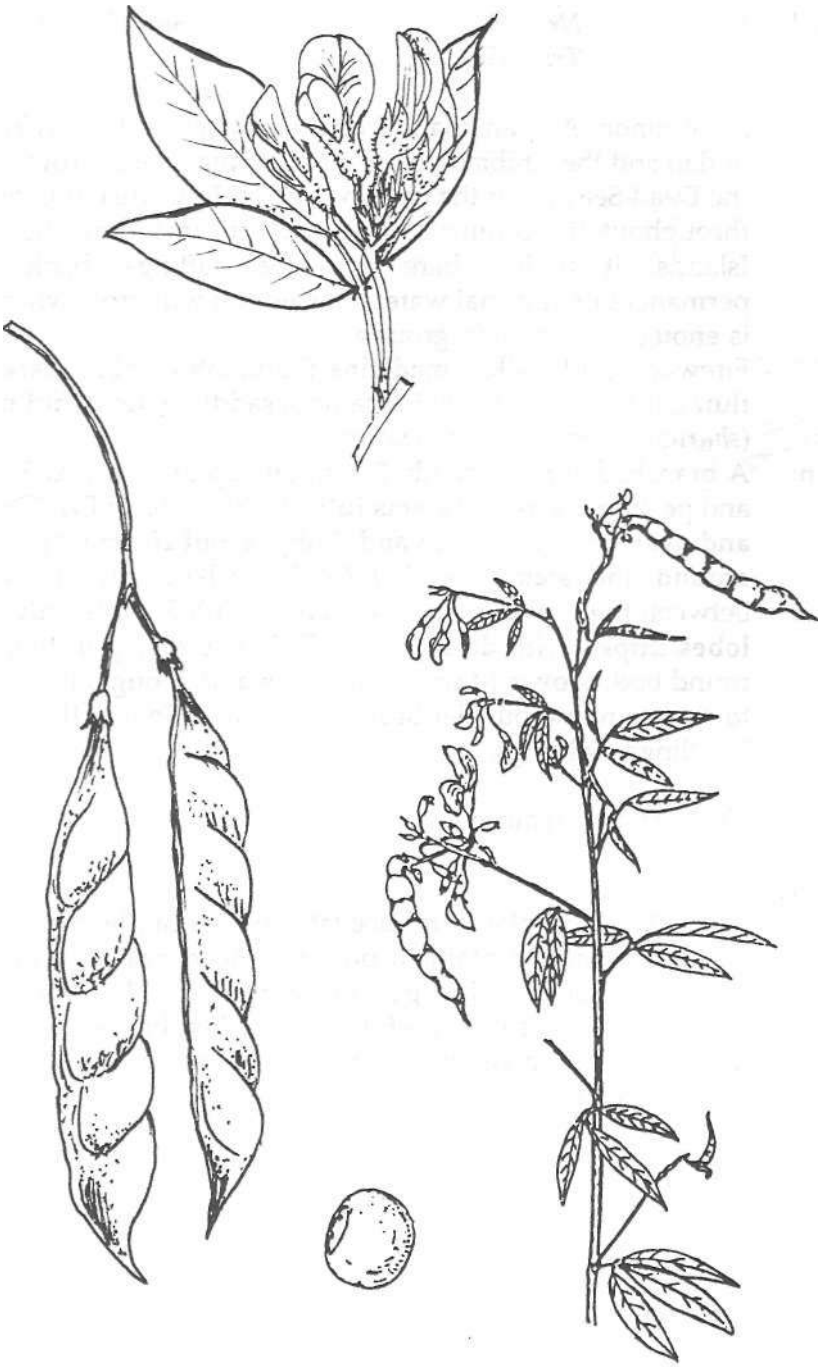
**treatment:** Soak in water for 12 hours.

**storage:** Seed stores well if kept dry, cool and insect free.

**Management:** Fast growing. Weeding.

**Remarks:** A useful, high-yielding crop for dry areas which may produce pods over 4-5 years, but it is susceptible to many pests and diseases. Improved perennial "tree-types" are available. It is cultivated for its edible seeds but is also an important plant in soil and water conservation. Suitable as hedges along the contours.

Cajanus cajan *Papilionoideae*



## Calotropis procera *Asclepiadaceae*

Indigenous

*Af: Ghulaento* *Ar: Kisher* *Bl: Tenfia*
*Eng: Apple of Sodom. Dead Sea fruit* *Hd: Emberese*
*Km: Tanfa, Buka* *Nr: Boo* *Sh: Ghelaeto*
*Tg: Ghindae* *Tr: Ghindae*

**Ecology:** A common African plant from the Sahel to East Africa, the Sudan and the Arabian peninsular to India. It also grows around the Dead Sea and in the oasis of Jordan. In Eritrea, it is common throughout the country below 1,700 m, including the Dahlak Islands. It prefers bare road-side cuttings, banks along permanent or seasonal water courses and will grow where there is enough water underground.

**Uses:** Firewood (old stalks), **medicine** (bark, latex), fibre (bark), seed fluff (stuffing), medicine for camels, saddles (stem), **hut making** *(shurub),* river-bank stablization.

**Description:** A branched shrub, usually 2-3 m but up to 5 m. BARK: Corky and peeling, the **round stems full of white latex.** LEAVES: **Large and oval,** pale grey-green and fleshy, about 20 cm long, **in pairs around the stems.** FLOWERS: In stalked clusters of 3-10 between the leaves, each 2 cm across, with 5 **white-pale mauve lobes tipped with dark purple.** FRUIT: Develop in twin-lobed round bodies **over 10 cm long. Green and spongy,** then dry out to release numerous flat brown seeds **with long silky hairs.**

**Propagation:** Seedlings, wildings.

**Seed:**

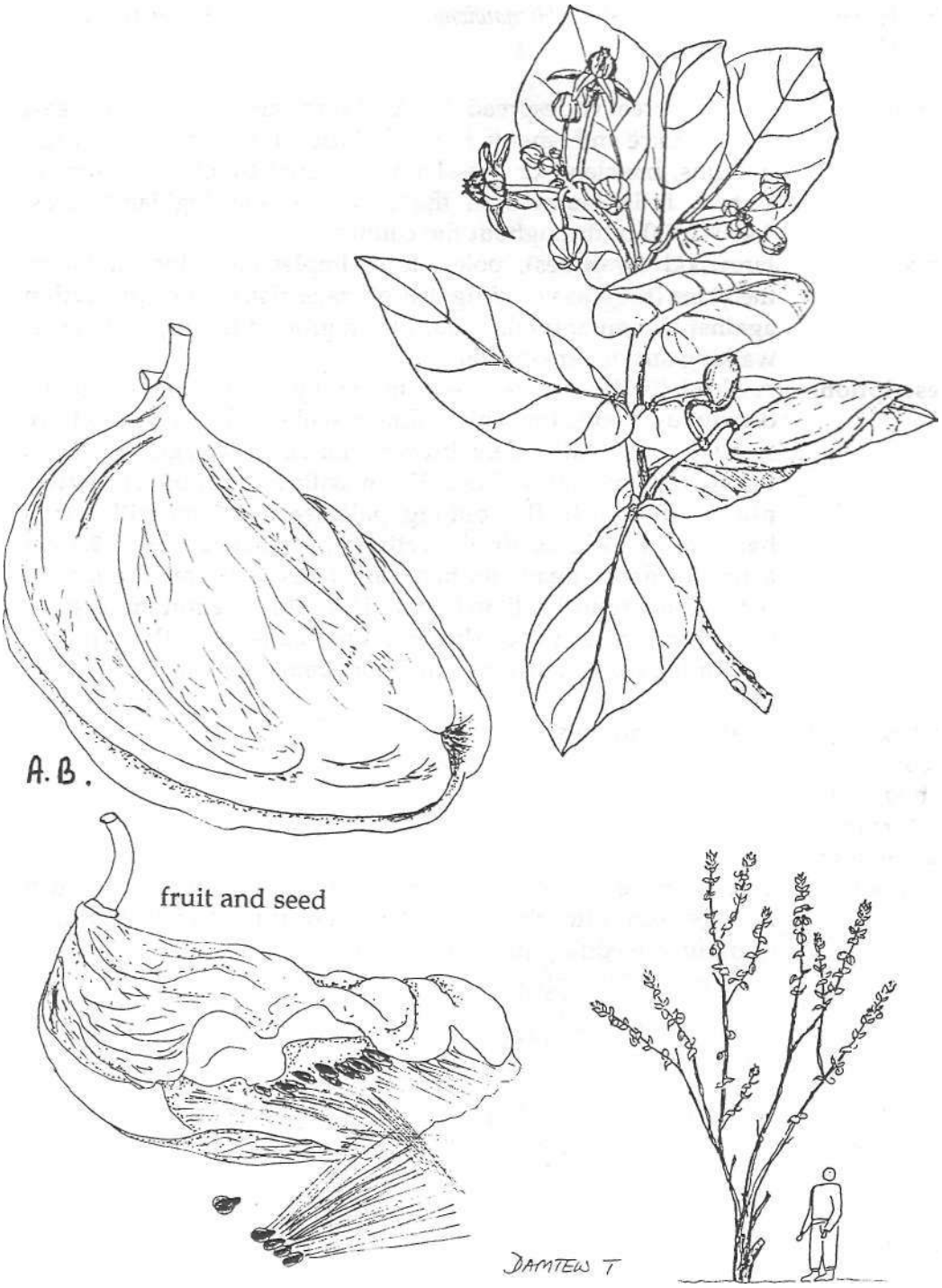
**treatment:** No treatment required.

**storage:**

**Management:**

**Remarks:** All parts of this plant produce latex which can be dangerous to the eyes. It also contains a powerful heart poison (calotropin) which has been used to poison arrow heads. The strong inner bark fibres can be very useful and the plant has been cultivated for fibre in South America. The very light wood has been used as floats for fishing nets.

Calotropis procera *Asclepiadaceae*



## Calpurnia aurea *Papilionoideae*

Indigenous

***Bl:*** *Hichawech* *Sh:* *Hichawiche* *Tg: Hetsawus*
*Tr: Hachewchew, Sutora*

**Ecology:** A small tree widespread in Africa through the Sudan, east Africa, Zaire and Angola to South Africa. It is common in forest margins, bushland or grassland, favoured by over-grazing. In Eritrea, it is common in the midlands and highland areas, 1,400-2,400 m throughout the country.

**Uses:** Firewood (branches), poles, farm implements, **tool handles,** medicine (roots as vermifuge), bee forage, fish poison, **protection against lice on animals** (liquid from ground leaves), live fence, walking sticks, ornamental.

**Description:** A shrub or bushy tree 1-10 m, rarely over 5 m. It can be deciduous. Young branchlets, flower stalks and even leaves have small hairs. BARK: Pale brown, darker with age. LEAVES: Compound on stalks about 25 cm with **5-15 pairs of leaflets plus a terminal leaflet, oblong, pale green, 2.5 cm with a fine hair tip.** FLOWERS: **Bright yellow, pea-shaped about 2.5 cm across in dense heads on hanging stalks 7-24 cm.** The largest petal seems almost split in half. FRUIT: **Thin membranous pods to 12 cm, pale yellow-brown, one edge slightly winged,** containing seeds. The unopened pods remain a long time on the tree.

**Propagation:** Seedlings, cuttings.

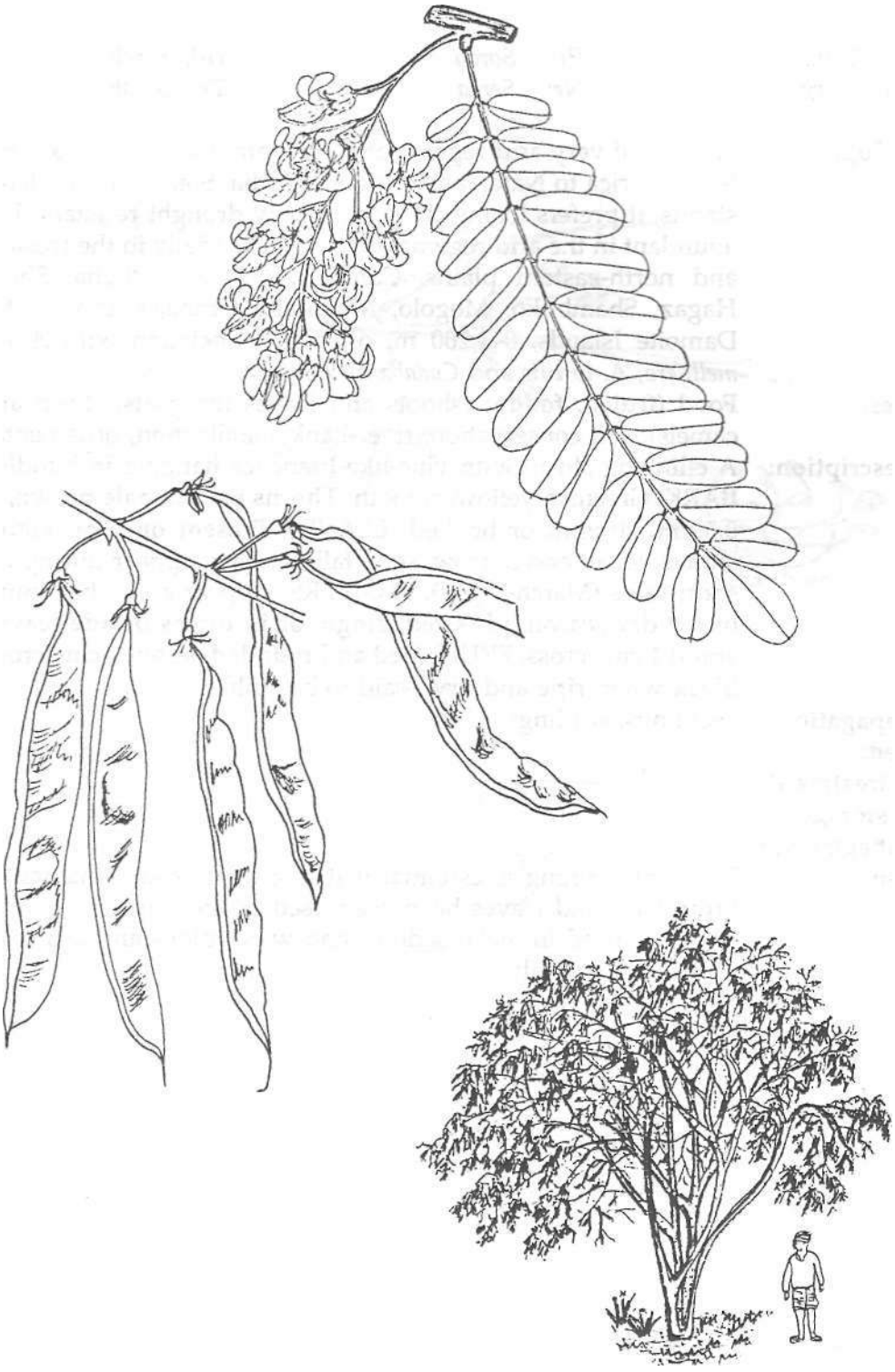
**Seed:**

**treatment:**

**storage:**

**Management:**

**Remarks:** Trees can be found in flower all the year round, but most flowers occur after the rains. The wood of the tree is used in **a** traditional wedding play called *sheded.*



## Capparis decidua *Capparidaceae*

Indigenous

| | | |
|---|---|---|
| *Ar: Tundyb* | *Bl: Sorob* | *Hd: Sorob* |
| *Km: Sherga* | *Nr: Serka* | *Tr: Sorob* |

**Ecology:** *A* plant of very arid regions of the Sahara, the Sudan, East and South Africa to Natal, and Arabia to India. Sometimes in dense stands, it prefers loamy clay and is very drought resistant. It is abundant in the arid regions of Eritrea, especially in the western and north-eastern plains. Common around Adobha, Sheib, Hagaz, Shambuko, Mogolo, Mogoraib, Omhajer and on the Damoite Islands, 0-1,200 m, often in association with *Acacia mellifera, A. tortilis* and *Cadaba rotundifolia.*

**Uses:** Food (fruits), **fodder** (shoots and leaves for goats, sheep and camels), soil conservation, river-bank stabilization, ornamental.

**.Description:** A climbing shrub with vine-like branches hanging in bundles. BARK: Greenish-yellow, smooth. **Thorns paired, pale brown, to 0.5 cm,** straight or hooked. LEAVES: **Present only on young shoots,** small and narrow, soon falling. They appear during the short rains (March-April). FLOWERS: Appear at the beginning of the dry season, **pink-red, single or in threes beside leaves, about 1 cm across.** FRUIT: **Red and rounded, about 1 cm across, black when ripe** and dry—said to be edible.

**Propagation:** Seedlings, wildings.

**Seed:**

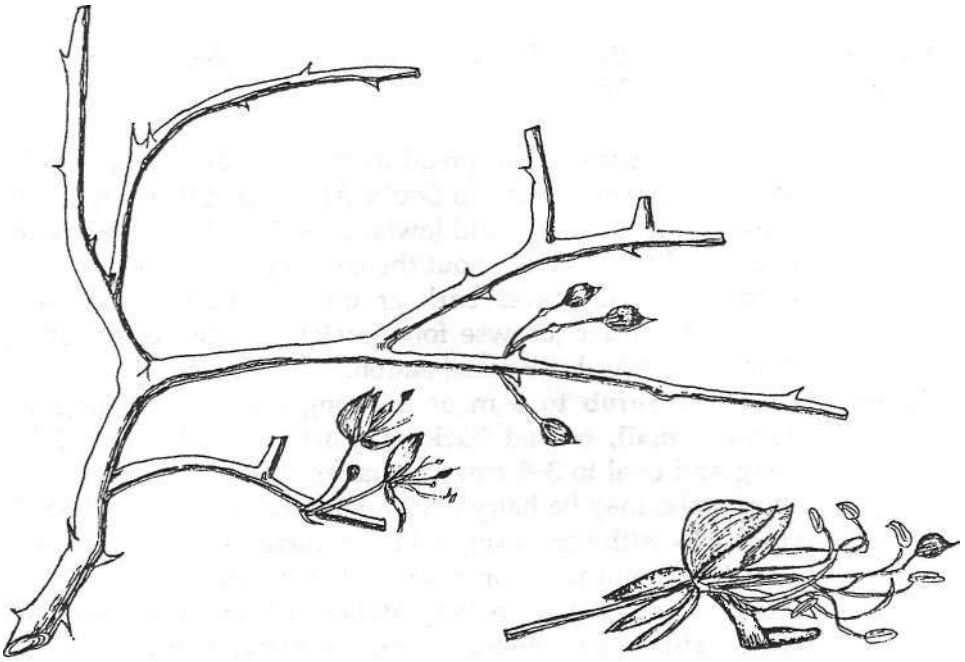
**treatment:**

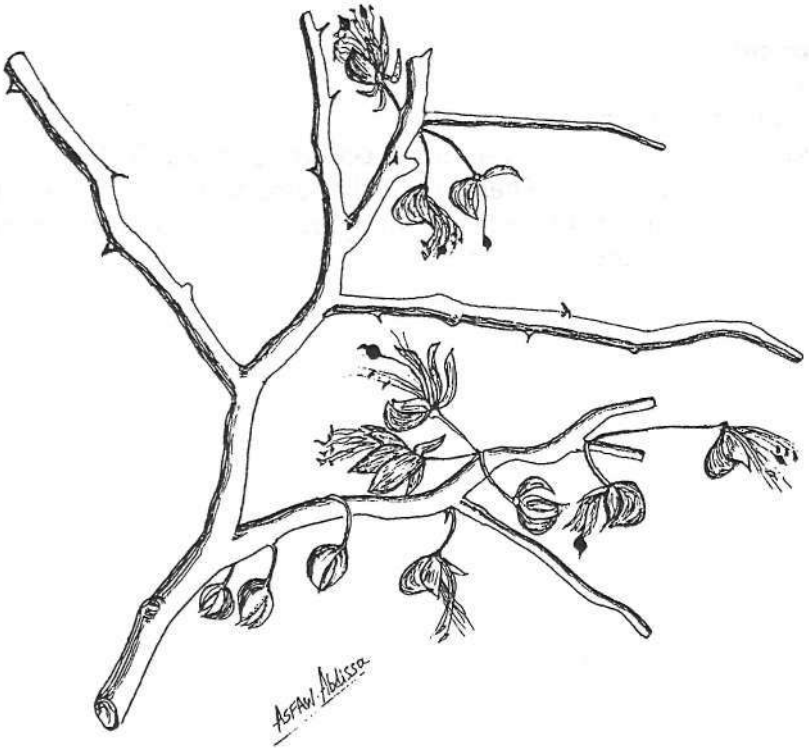
**storage:**

**Management:**

**Remarks:** Frequent pruning is essential if it is grown as an ornamental. Fruit, bark and leaves have been used as medicine. The wood has been used to make saddles and water pipes and ash from burnt wood as salt.

Capparis decidua *Capparidaceae*





## Capparis tomentosa *Capparidaceae*

Indigenous

| | | |
|---|---|---|
| *Ar: Sharube* | *Bl: Higula* | *Km: Olala* |
| *Tg: Andel* | *Tr: Andel* | |

**Ecology:** A climbing shrub widespread in tropical Africa from the Sahel to Ethiopia, east Africa to South Africa. In Eritrea, it grows in semi-arid and semi-humid lowland, highland woodlands, forest edges and scrub throughout the country, 600-2,000 m.

**Uses:** **Medicine** (roots, leaves, bark, ground seeds used for dressing of wounds), fodder (browse for camels), **live fence, fencing** (cut branches), river-bank stabilization.

**Description:** A thorny **shrub** to 3 m or a strong climber reaching 10 m. **Thorns small, curved back,** in pairs beside leaves. LEAVES: Long and oval to 3-9 cm, **grey-green, thick and leathery,** on a short stalk, may be hairy below, slightly pink. FLOWERS: To 5 cm across with very many white stamens, 4 small white petals, 4 sepals. The ovary is on a stalk. Flowers are usually in groups. FRUIT: Hang down on **long stalks to 5 cm, rounded** 1-6 cm across, **shiny orange-red,** drying black, **persisting** on the bush. Many seeds embedded in pinkish edible flesh.

**Propagation:** Seedlings, cuttings, wildings.

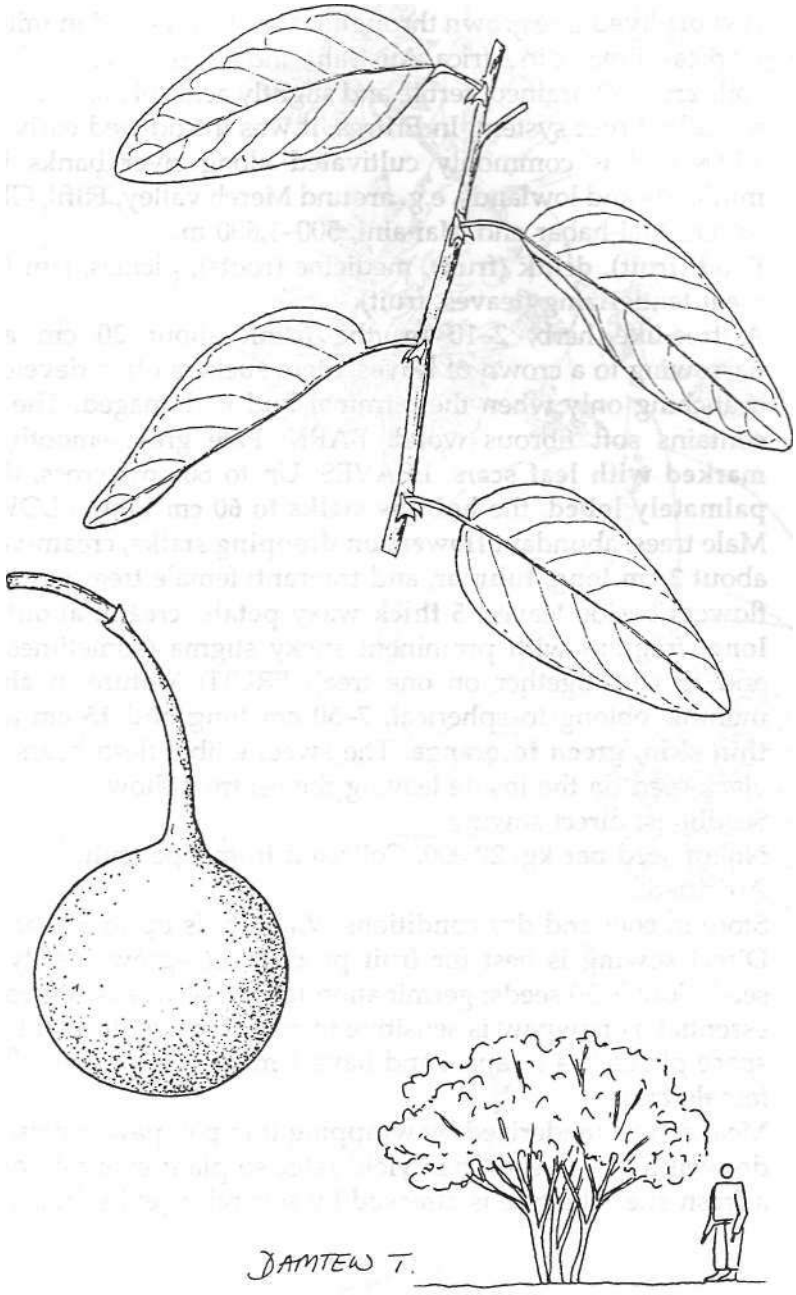
**Seed:**

**treatment:**

**storage:**

**Management:** Lopping.

**Remarks:** May become a serious weed unless controlled. Roots can be very poisonous. There is a belief among some villagers that smoke coming out of the Capparis wood causes separation of a husband and wife.


JAMTEW T.

## Carica papaya *Caricaceae*

Tropical America

*Ar: Babaya* *Bl: Bobaye* *Eng: Papaya, pawpaw*
*Tg: Papayo* *Tr: Pabayo*

**Ecology:** A short-lived tree grown throughout the tropics and in mild sub-tropical climates in Africa, Australia and North America. Suitable soils are well drained, fertile and slightly acid (pH 6.0-6.5). It has a shallow root system. In Eritrea, it was introduced early in the 1900s and is commonly cultivated along river banks in the midlands and lowlands, e.g. around Mereb valley, Filfil, Ghinda, Keren, Mai-habar and Mai-aini, 500-1,600 m.

**Uses:** **Food (fruit), drink** (fruit), medicine (roots), pickles, jam (fruit), meat tenderizing (leaves, fruit).

**Description:** A tree-like herb, 2-10 m, the trunk about 20 cm across, narrowing to a crown of leaves. Stem suckers often develop but branching only when the terminal bud is damaged. The trunk contains soft fibrous wood. BARK: Pale grey, smooth, **well marked with leaf scars.** LEAVES: Up to 60 cm across, **deeply palmately lobed,** the **hoi low stalks to 60 cm long.** FLOWERS: Male trees, abundant **flowers on drooping stalks,** cream-yellow, about **2 cm long, tubular,** and fragrant; female trees larger, few flowers beside leaves, **5 thick waxy petals, cream, about 5 cm long,** fragrant with prominent sticky stigma (sometimes male and female together on one tree). FRUIT: Mature in about 3 months, oblong to spherical, **7-50 cm long and 15 cm across, thin skin, green to orange.** The sweet edible flesh bears many black seed on the inside leaving the centre hollow.

**Propagation:** Seedlings, direct sowing.

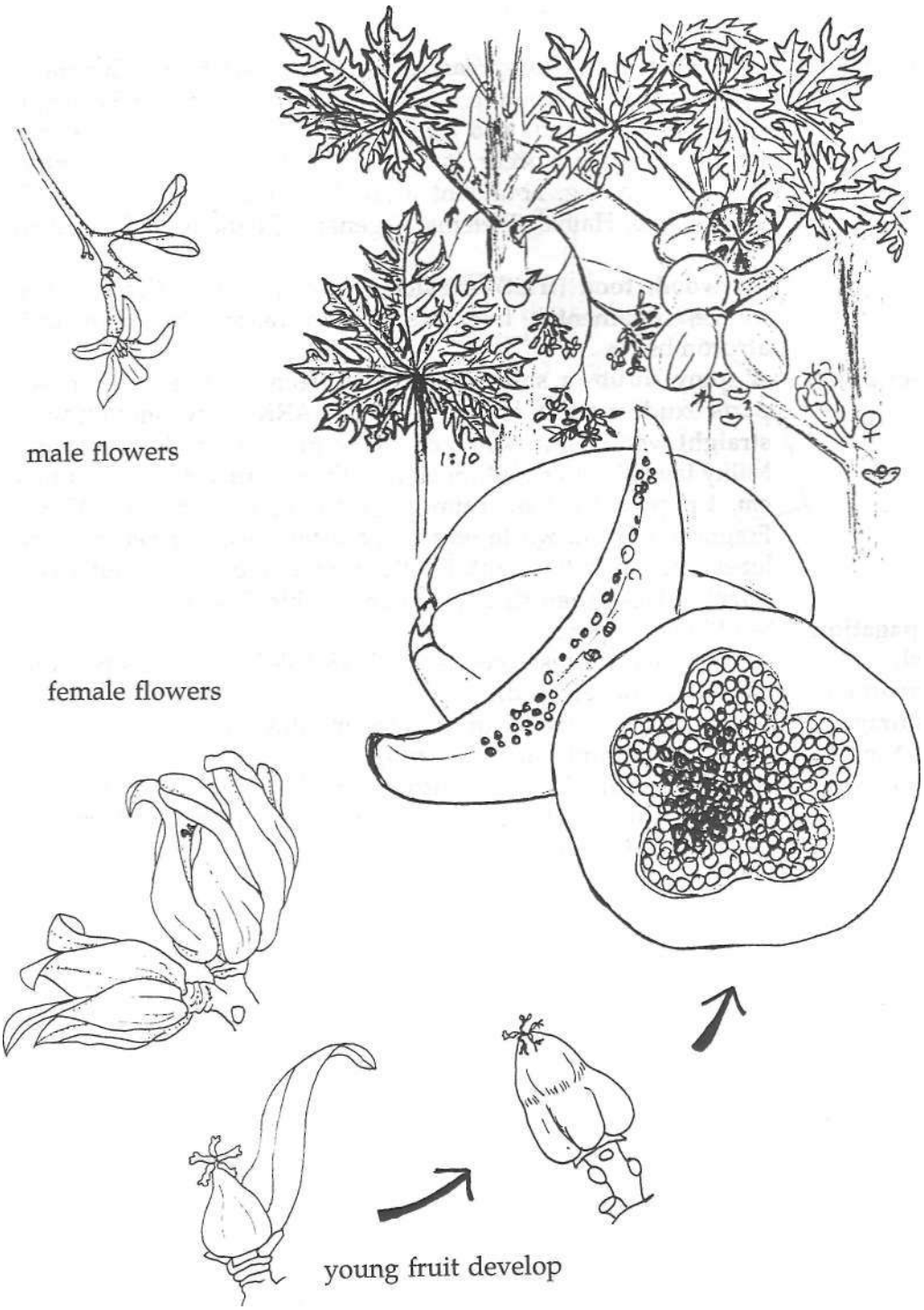
**Seed info.:** No. of seed per kg: 20,000. Collected from ripe fruit.

**treatment:** Air dried.

**storage:** Store in cool and dry conditions. Viability is up to 3 years.

**Management:** Direct sowing is best for fruit production—grows easily from seed. Sow 5-30 seeds; germination takes 1-4 weeks. Weeding is essential as pawpaw is sensitive to root damage. In plantations, space plants 2-4 m apart and have 1 male tree for every 25-100 female trees.

**Remarks:** Meat can be tenderized by wrapping it in pawpaw leaves. Trees do well for 3-4 years then yield falls, so plant every 4 years on a fresh site. The tree is attacked by several weevils, bugs, etc.


male flowers
1:10
female flowers
young fruit develop

## Carissa edulis *Apocynaceae*

Indigenous

| | | |
|---|---|---|
| *Ar: Emir* | *Bl: Ashel* | *Sh: Azela* |
| *Tg: Agam* | *Tr: Agam* | |

**Ecology:** *A* shrubby tree widespread in tropical Africa from Ethiopia to South Africa; common in drier types of woodland. In Eritrea, it grows in woodlands and forests where Euphorbia, Acacia, and Croton commonly occur. It is common throughout the country, 600-2,600 m, e.g. abundant around Ghinda, Semenawi-bahri, Rora-habab, Halhal, Tselema, Segenaiti, Quahaito and Hazemo plains.

**Uses:** **Firewood, food** (fruit), **medicine** (roots), fodder (leaves), bee forage, ornamental, **live fence, dead fence (dry branches),** afrocombs.

**Description:** A spiny shrub or small tree to 5 m, sometimes a climber. All parts exude a milky latex when cut. BARK: Grey, smooth with **straight woody spines to 5 cm,** often in pairs, rarely branching. Milky latex. LEAVES: **Opposite,** leathery, **shiny dark green to 5 cm, tip pointed,** base rounded, stalk very short. FLOWERS: Fragrant, in **pink-white terminal clusters,** each flower to 2 cm, lobes overlap to the right. FRUIT: Rounded berries about **1 cm, purple-black when ripe,** sweet and edible, 2-4 seeds.

**Propagation:** Seedlings, wildings.

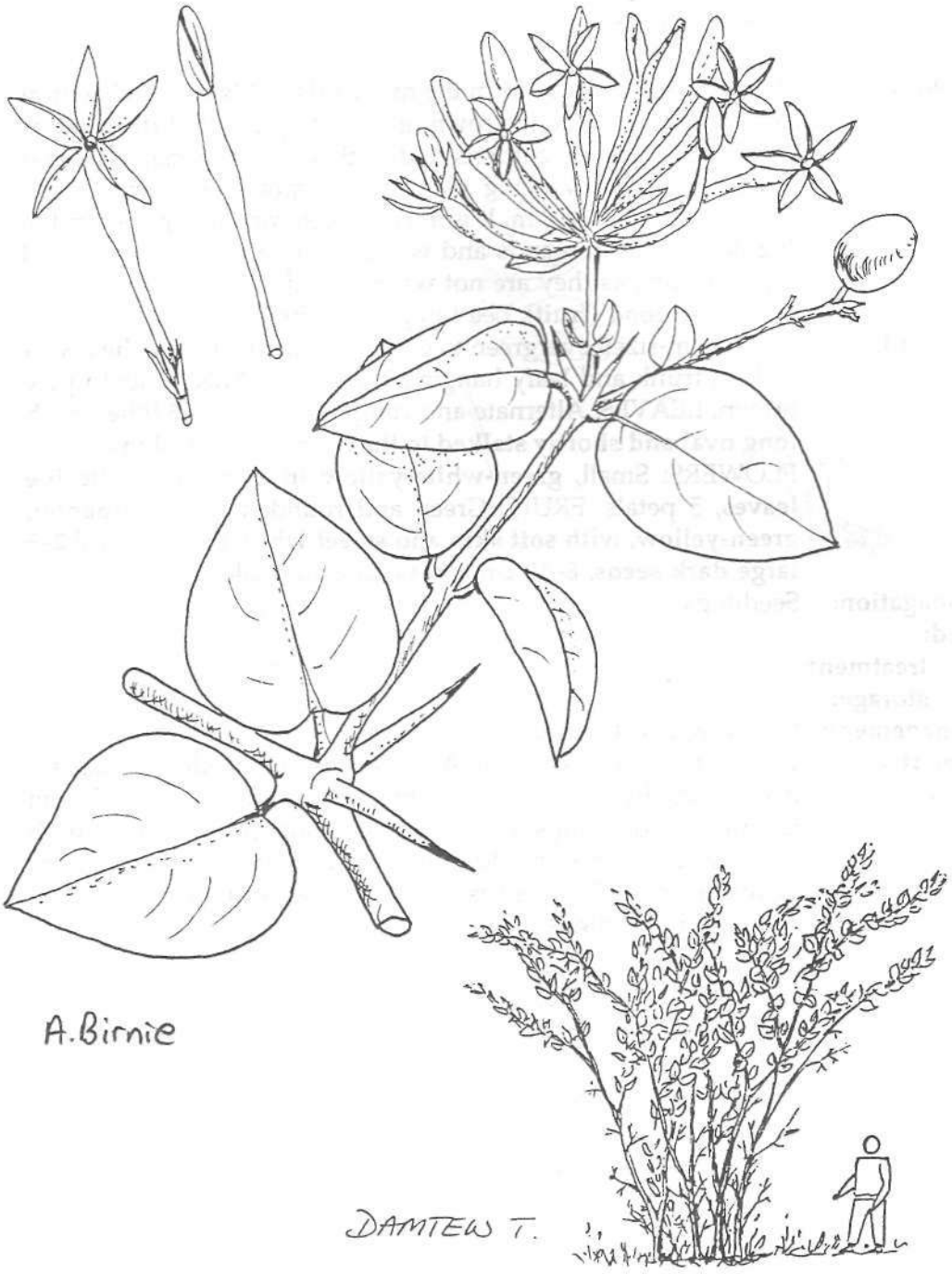
**Seed:** Germination of fresh seed is good. 28,000-30,000 seeds per kg.

**treatment:** No treatment required.

**storage:** Can retain viability for up to three months only.

**Management:** Reducing multiple stems, lopping.

**Remarks:** Although difficult to establish, it can be grown from seed to develop into an attractive and impenetrable hedge. It makes excellent firewood.


A.Birnie
DAMTEW T.

## Casimiroa edulis *Rutaceae*

Central America

*Tg: Cazmir* *Tr: Cazmir*
*Eng: Casimoroa, Mexican sapote*

**Ecology:** A fruit tree originally from the highlands of Mexico and Central America now widely grown in **the** tropics. In Eritrea, it is cultivated in home gardens and back yards, especially around Asmara. It is now being planted in many other parts of the country, 1,700 -2,400 m. It is a useful agroforestry species in the highlands and midlands and will grow in a wide range of soil types as long as they are not waterlogged.

**Uses:** Firewood, **food (fruit),** bee forage, windbreak.

**Description:** A medium-sized evergreen tree up to 12 m, much branched with a short trunk and leafy hanging branches. BARK: Smooth pale brown. LEAVES: Alternate and **compound with 3-5 lobes, each long oval and shortly stalked** to the centre, surface shiny green. FLOWERS: Small, **green-white-yellow in loose heads beside leaves,** 5 petals. FRUIT: Green and rounded at first **ripening green-yellow, with soft skin and sweet white pulp around 2-5 large dark seeds, 8-10 cm across,** like an apple.

**Propagation:** Seedlings.

**Seed:**

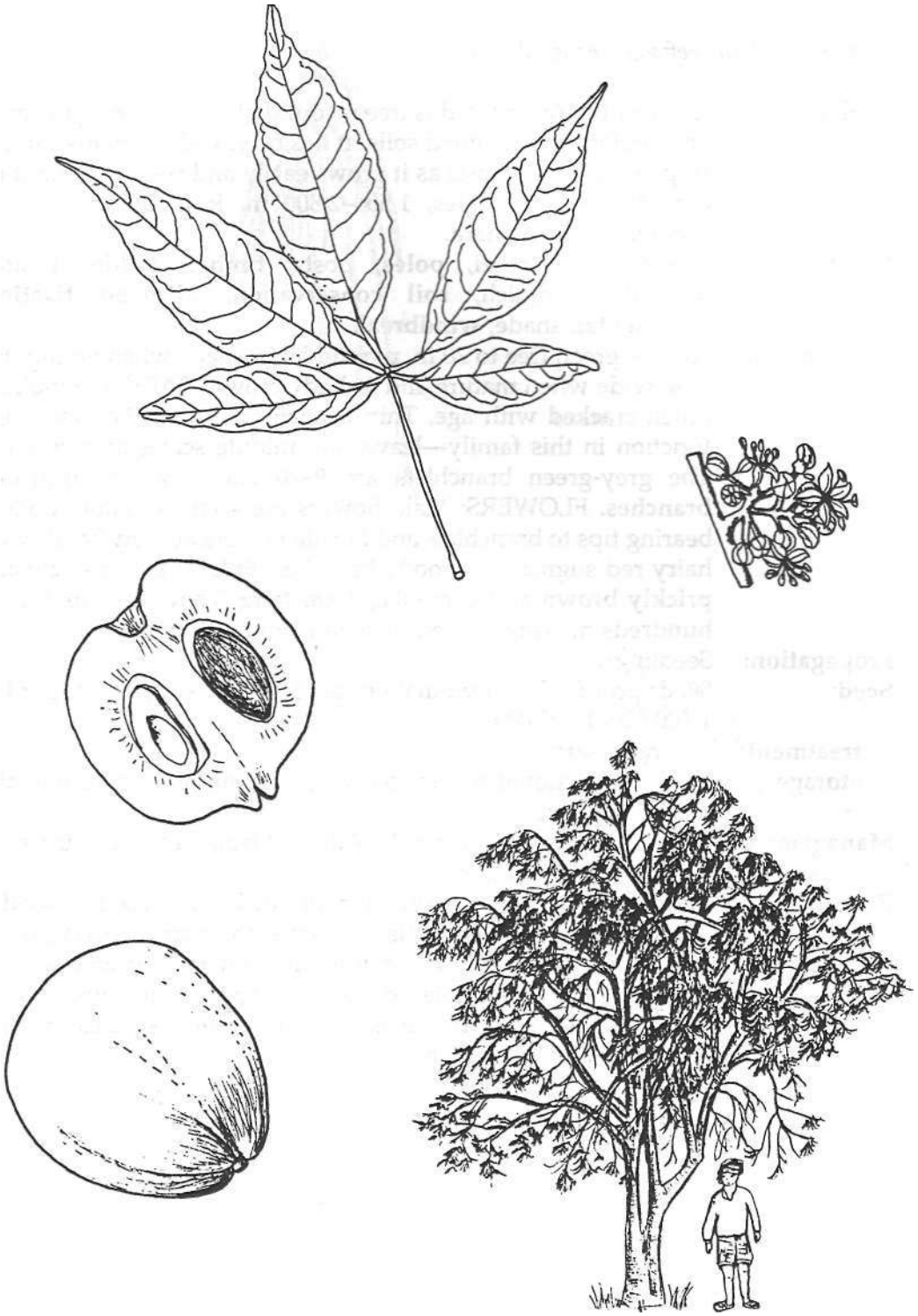
**treatment**

**storage:**

**Management:** It is slow to establish.

**Remarks:** The fruits are sold locally in Asmara. Bees are needed to increase fruit setting by pollination. Fruiting begins after 10 years, but in favourable conditions a mature tree produces much fruit each year. Grafted trees should fruit in 2 or 3 years and there are many varieties. The tree has a vigorous root system so plant well away from buildings.

Casimiroa edulis *Rutaceae*



## Casuarina cunninghamiana *Casuarinaceae*

N.E. Australia, Pacific Islands

*Eng: Australian beefwood, River she oak*

**Ecology:** In its native Australia this tree is found along streams and rivers and prefers well-drained soils. It has been widely planted in the tropics and sub-tropics as it grows easily and resists drought on a variety of soil types, 1,500-2,800 m. It is common as an ornamental in Asmara.

**Uses:** **Firewood, charcoal, poles,** posts, **timber,** fodder (young branchlets), mulch, **soil conservation, nitrogen fixation, ornamental,** shade, **windbreak.**

**Description:** An evergreen tree to 20 m, pyramidal in shape when young, the base wide when mature and a shady crown. BARK: Grey-black, much cracked with age. Thin **branchlets** have taken over leaf function in this family—leaves are minute scales at each joint. The grey-green branchlets are **9-20 cm long,** on **upturned branches.** FLOWERS: Male flowers are seen as yellow pollen-bearing tips to branchlets and female flowers are tiny heads with hairy red stigmas on woody branches. FRUIT: In dense cluster, **prickly brown** and cone-like, 1 **cm** long. They ripen and shed hundreds of winged seed, pale in colour.

**Propagation:** Seedlings.

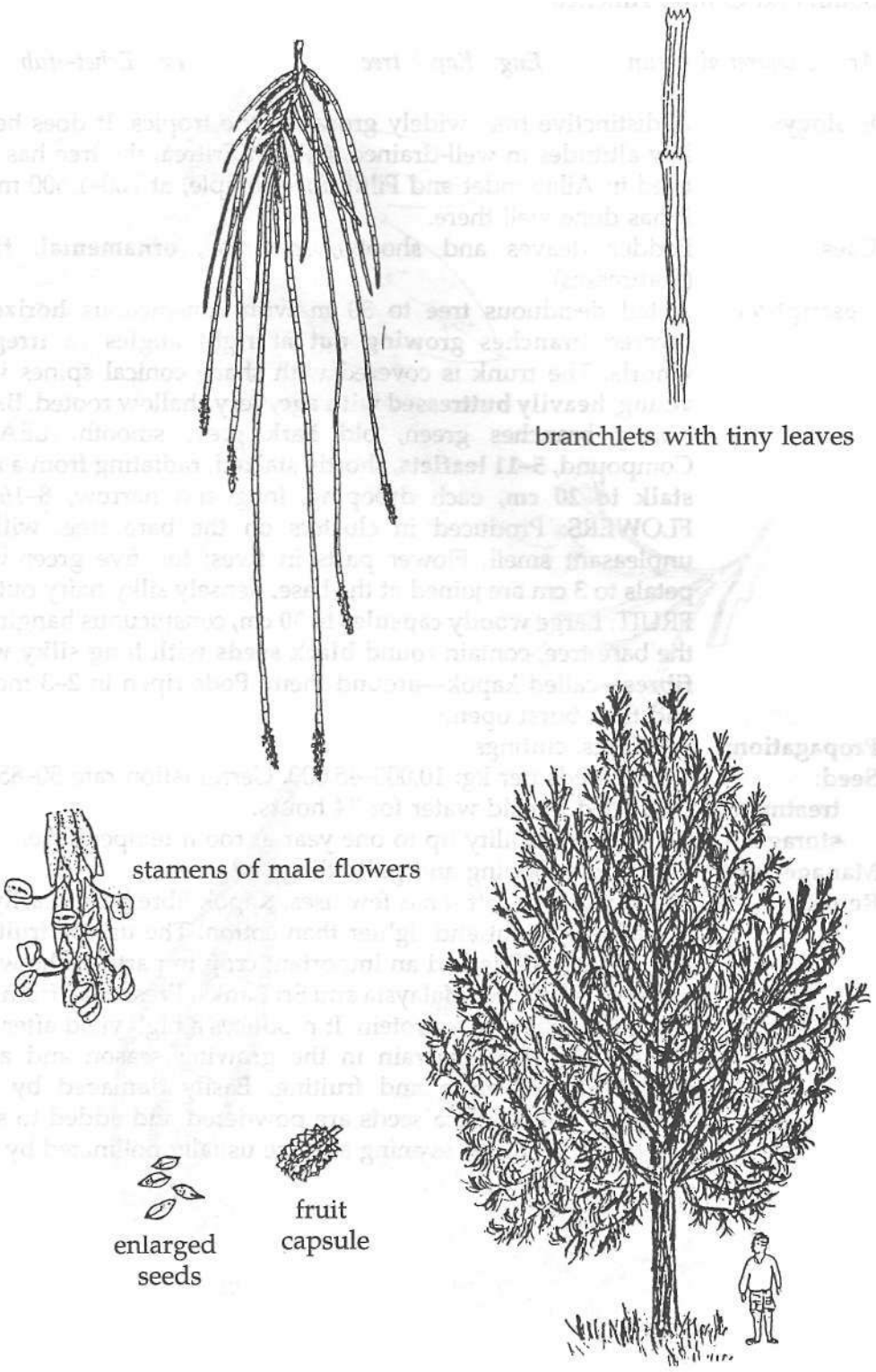
**Seed:** Seeds prolifically. Germination rate 55-90%. No. of seeds per kg: 1,400,000-1,600,000.

**treatment:** Not necessary.

**storage:** Seed can be stored for up to a year at room temperature in air-tight containers.

**Management:** Side prune to get a clear bole. Add soil from below old trees for root nodule formation.

**Remarks:** Fairly fast growing. In Australia, branchlets are used as fodder when nothing else is available (hence the name "beefwood"). The wood is very hard and thus difficult to saw and season, though it is susceptible to termite attack. The special root association with an actinomycete fungus *(Frankia* species) enables Casuarina to fix nitrogen.


branchlets with tiny leaves
stamens of male flowers
enlarged seeds
fruit capsule

## Ceiba pentandra *Bombacaceae*

South and Central America

*Ar: Shajaret al kutun* *Eng: Kapok tree* *Tr: Echet-etub*

**Ecology:** A distinctive tree, widely grown in the tropics. It does best at low altitudes in well-drained soils. In Eritrea, the tree has been tried in Ailagundet and Filfil, for example, at 700-1,600 m and it has done well there.

**Uses:** Fodder (leaves and shoots), medicine, **ornamental, fibres** (mattresses).

**Description:** A tall deciduous tree to 30 m with conspicuous **horizontal layered branches growing out at right angles in irregular whorls.** The trunk is covered with sharp conical spines when young, **heavily buttressed with age,** very shallow rooted. BARK: Young branches green, old bark grey, smooth. LEAVES: Compound, **5-11 leaflets,** shortly stalked, radiating from **a main stalk to 20 cm,** each drooping, long and narrow, 8-16 cm. FLOWERS: Produced in clusters on the bare tree, with an unpleasant smell. Flower parts in fives; the five green-white petals to 3 cm are joined at the base, densely silky hairy outside. FRUIT: Large **woody capsules to 30 cm,** conspicuous hanging on the bare tree, contain round **black seeds with long silky white fibres**—called kapok—around them. Pods ripen in 2-3 months and then burst open.

**Propagation:** Seedlings, cuttings.

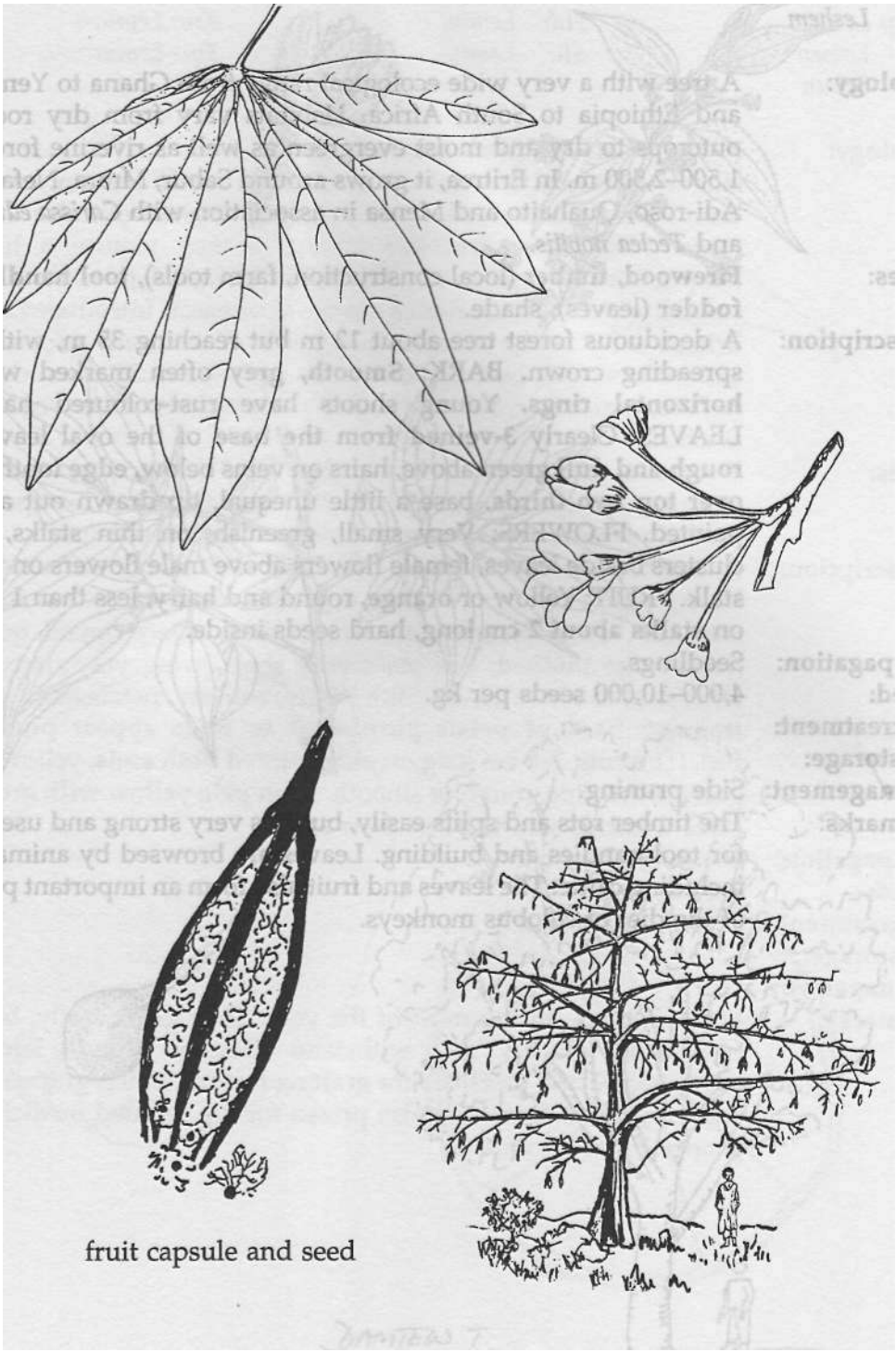
**Seed:** No. of seeds per kg: 10,000-45,000. Germination rate 50-85%.

**treatment:** Soak seed in cold water for 24 hours.

**storage:** Can retain viability up to one year at room temperature.

**Management:** Coppicing, lopping and pollarding.

**Remarks:** The wood is so soft it has few uses. Kapok fibre burns easily but is water-repellent and lighter than cotton. The unripe fruit and seed oil are edible and an important crop in parts of the world, e.g. Java, Thailand, Malaysia and Sri Lanka. Press cake from seed residue contains 26% protein. It produces a high yield after 8-10 years with abundant rain in the growing season and a dry period for flowering and fruiting. Easily damaged by high winds. In West Africa seeds are powdered and added to soup. Flowers open in the evening and are usually pollinated by bats.


fruit capsule and seed

## Celtis africana *Ulmaceae*

Indigenous

*Ar: Tutal* *Sh: Temeilko* *Tg: Chebaale*
*Tr: Leshem*

**Ecology:** A tree with a very wide ecological range from Ghana to Yemen and Ethiopia to South Africa. Habitats vary from dry rocky outcrops to dry and moist evergreen as well as riverine forest, 1,500-2,500 m. In Eritrea, it grows around Sabur, Mrara, Nefasit, Adi-roso, Quahaito and Mensa in association with *Carissa edulis* and *Teclea nobilis.*

**Uses:** **Firewood, timber** (local construction, farm tools), **tool handles, fodder** (leaves), shade.

**Description:** A deciduous forest tree about 12 m but reaching 35 m, with a spreading crown. BARK: **Smooth, grey** often marked with **horizontal rings.** Young shoots have rust-coloured hairs. LEAVES: Clearly **3-veined from the base** of the oval leaves, **rough and dull green** above, hairs on veins below, **edge toothed over top two thirds,** base a little unequal, tip drawn out and pointed. FLOWERS: Very small, greenish, on thin stalks, in clusters beside leaves, female flowers above male flowers on the stalk. FRUIT: Yellow or **orange,** round and hairy, less than 1 cm on **stalks about 2 cm** long, hard seeds inside.

**Propagation:** Seedlings.

**Seed:** 4,000-10,000 seeds per kg.

**treatment:**

**storage:**

**Management:** Side pruning.

**Remarks:** The timber rots and splits easily, but it is very strong and useful for tool handles and building. Leaves are browsed by animals, including cattle. The leaves and fruit also form an important part of the diet of colobus monkeys.


DAMTEW T.

## Citrus limon *Rutaceae*

India

| | | |
|---|---|---|
| *Af: Lemin* | *Ar: Lemun* | *Bl: Lemin* |
| *Eng: Lemon* | *Hd: Lemin* | *Km: Lemuna* |
| *Nr: Lomen* | *Sh: Lemin* | *Tg: Lemin* |
| *Tr: Lebun* | | |

**Ecology:** A tree originally from Assam in India, introduced to east and central Africa by the Arabs. It is suited to sandy or loamy well-drained soils. Lemon trees will grow at higher altitudes than some other citrus, but like all citrus they require a high temperature to fruit well and well-distributed rainfall. High humidity increases the risk of pests and diseases. Introduced into Eritrea early in the nineteenth century, it was only grown in plantations, with best production being below 1,500 m such as at Filfil, Mai-habar, Solomuna, Adi-roso, Mai-aini, Elabered and Bimbina.

**Uses:** Firewood (twigs, dead branches), **food** (fruit, jam, pickle, chutney, candied peel), drink, flavouring (peel), oil (peel), **medicine** (juice, roots, leaves), ornamental, perfume (oil).

**Description:** A tree to 8 m, rather open, branches with stout, stiff thorns. Young plants are more thorny, especially near the centre of the tree. LEAVES: **Paler green than most citrus,** sharp tipped, quite large, **edge toothed,** leaf stalk very short, wing very narrow, clear joint to blade. FLOWERS: **White, solitary,** petals thick and fragrant, **back of petals purple-red so buds appear purple.** FRUIT: About 7-8 cm long, **ovoid, pointed both ends,** yellow or green when ripe, rough or smooth, **flesh pale yellow with much juice** which is acid to bitter. Few seeds.

**Propagation:** Seedlings, grafting.

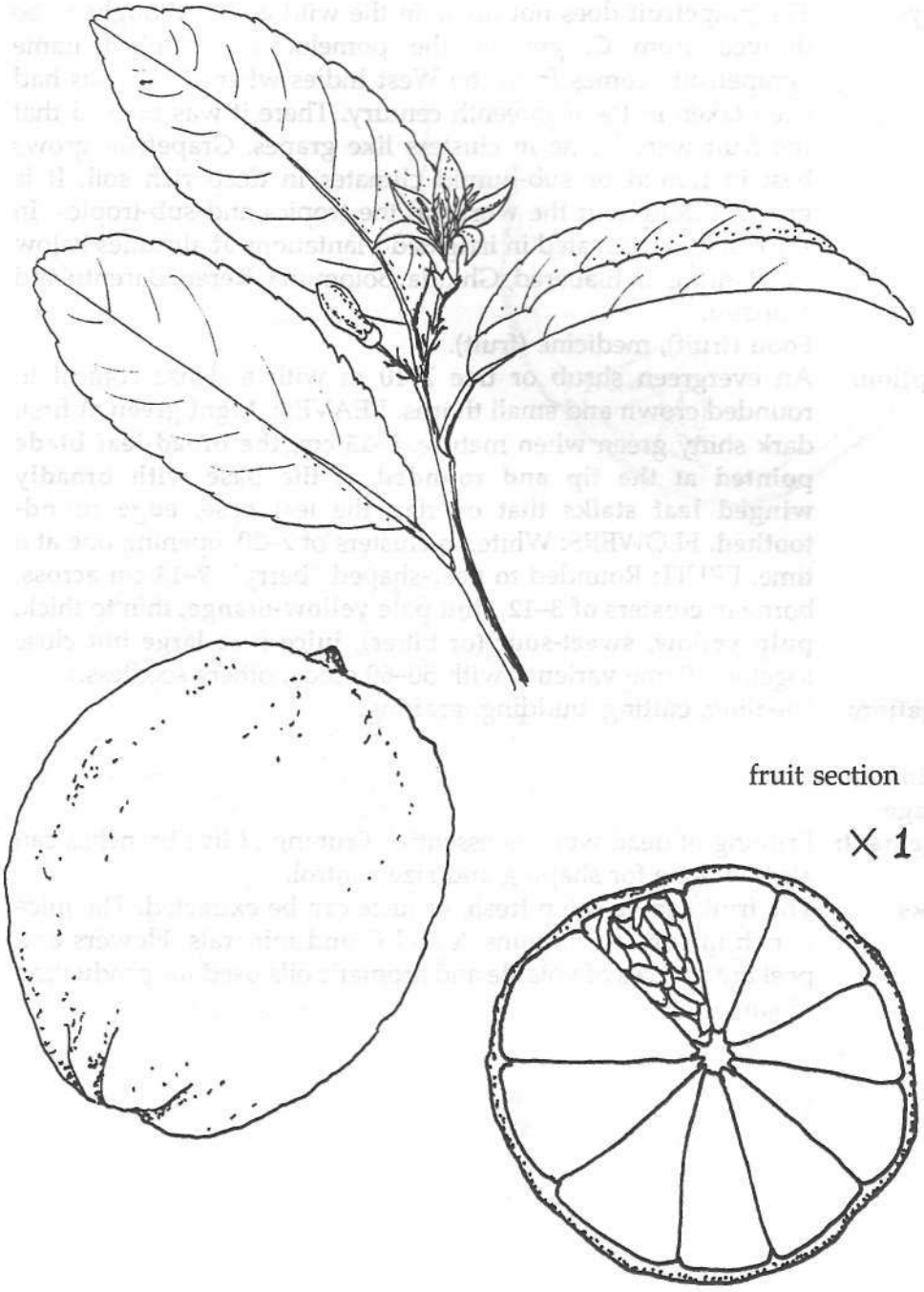
**Seed:**

**treatment:**

**storage:**

**Management:**

**Remarks:** Lemons ripen during most of the year. They grow easily, bear fruit quite quickly and withstand drought. Rough lemon provides the best rootstock for grafting lemons, limes, grapefruit and tangerines. Lemon is also prized for the reputed medicinal properties of the fruit.


fruit section
× 1

## Citrus paradisi *Rutaceae*

Asia

*Eng: Grapefruit*

**Ecology:** The grapefruit does not occur in the wild and is thought to be derived from *C. grandis,* the pomelo. The English name "grapefruit" comes from the West Indies where *C. grandis* had been taken in the eighteenth century. There it was noticed that the fruit were borne in clusters like grapes. Grapefruit grows best in humid or sub-humid climates in deep rich soil. It is grown throughout the world in the tropics and sub-tropics. In Eritrea, it is cultivated in irrigated plantations at altitudes below 1,500 m, e.g. in Elabered, Ghinda, Solomuna, Keren, Barentu and Mai-aini.

**Uses:** **Food** (fruit), medicine (fruit).

**Description:** An evergreen shrub or tree 7-10 m with a dense conical to rounded crown and small thorns. LEAVES: **Light green** at first, dark shiny green when mature, **8-13 cm, the broad leaf blade pointed at the tip and rounded at the base with broadly winged leaf stalks** that overlap the leaf base, **edge round-toothed.** FLOWERS: White, in clusters of 2-20, opening one at a time. FRUIT: Rounded to pear-shaped "berry", **9-13 cm across,** borne in **clusters of 3-12, rind pale yellow-orange,** thin to thick, **pulp yellow, sweet-sour** (or bitter), juice sacs **large** but close together. Some varieties with 50-60 seeds, others seedless.

**Propagation:** Seedling, cutting, budding, grafting.

**Seed:**

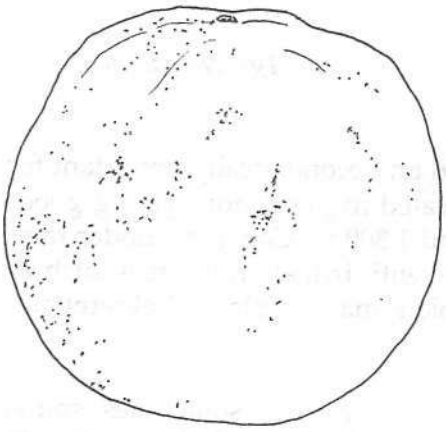
**treatment:**

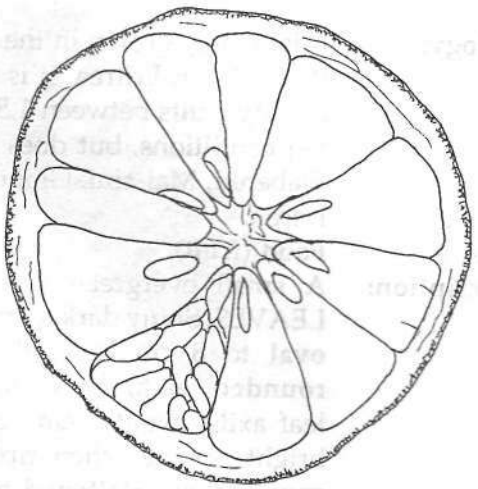
**storage:**

**Management:** Pruning of dead wood is essential. Pruning of live branches can also be done for shaping and size control.

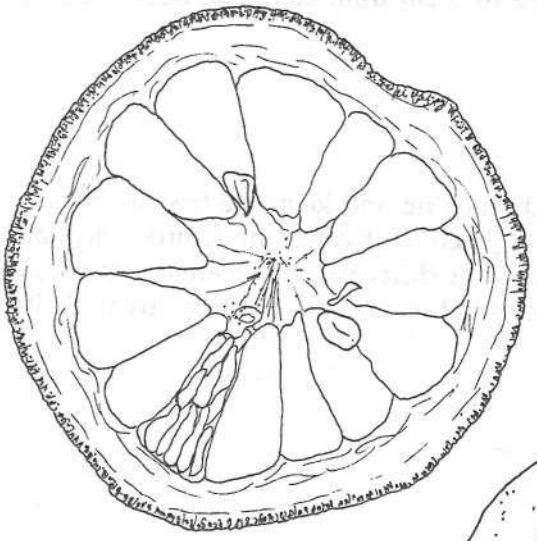
**Remarks:** The fruit can be eaten fresh, or juice can be extracted. The juice is rich in sugars, vitamins A and C and minerals. Flowers and peel are sources of volatile and aromatic oils used for production of jam.

*Citrus paradisi* — grapefruit

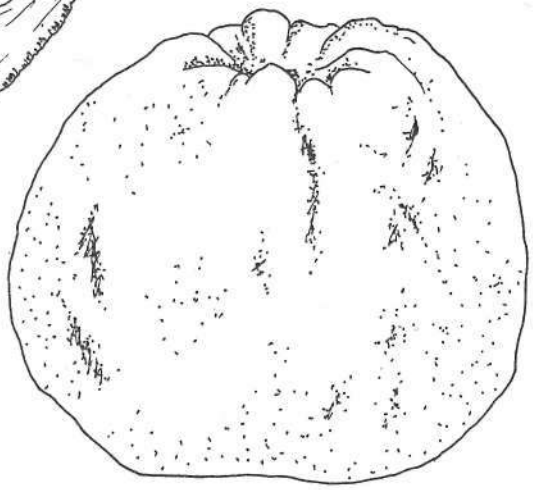




fruit section



*Citrus grandis* — pummelo



## Citrus reticulata *Rutaceae*

S.E. Asia, Cochin China, Japan

*Ar: Yosufi* *Bl: Manderin*
*Eng: Mandarin, Tangerine* *Sh: Manderin* *Tg: Manderin*
*Tr: Manderin*

**Ecology:** **It** is widely grown in the world and economically important for its fruits. In Eritrea, it is cultivated in plantations giving good-quality fruits between 1,500 and 1,800 m. Can grow under rain-fed conditions, but does better with irrigation in areas such as Elabered, Mai-aini, Ghinda, Solomuna, Ala plains, Tekreret and Keren.

**Uses:** **Food** (fruit).

**Description:** A small evergreen tree or shrub 2-8 m, sometimes spiny. LEAVES: Shiny dark green above, yellow-green below, **narrowly oval** to 8 cm long, the **edge usually with widely spaced rounded teeth,** the stalk very narrowly winged. FLOWERS: In leaf axils, about 2 cm across, 5 white petals. FRUIT: Typically bright orange when ripe but others staying green. Fruit are **rounded but flattened to 8 cm diameter.** The peel is thin and loose.

**Propagation:** Seedlings, wildings.

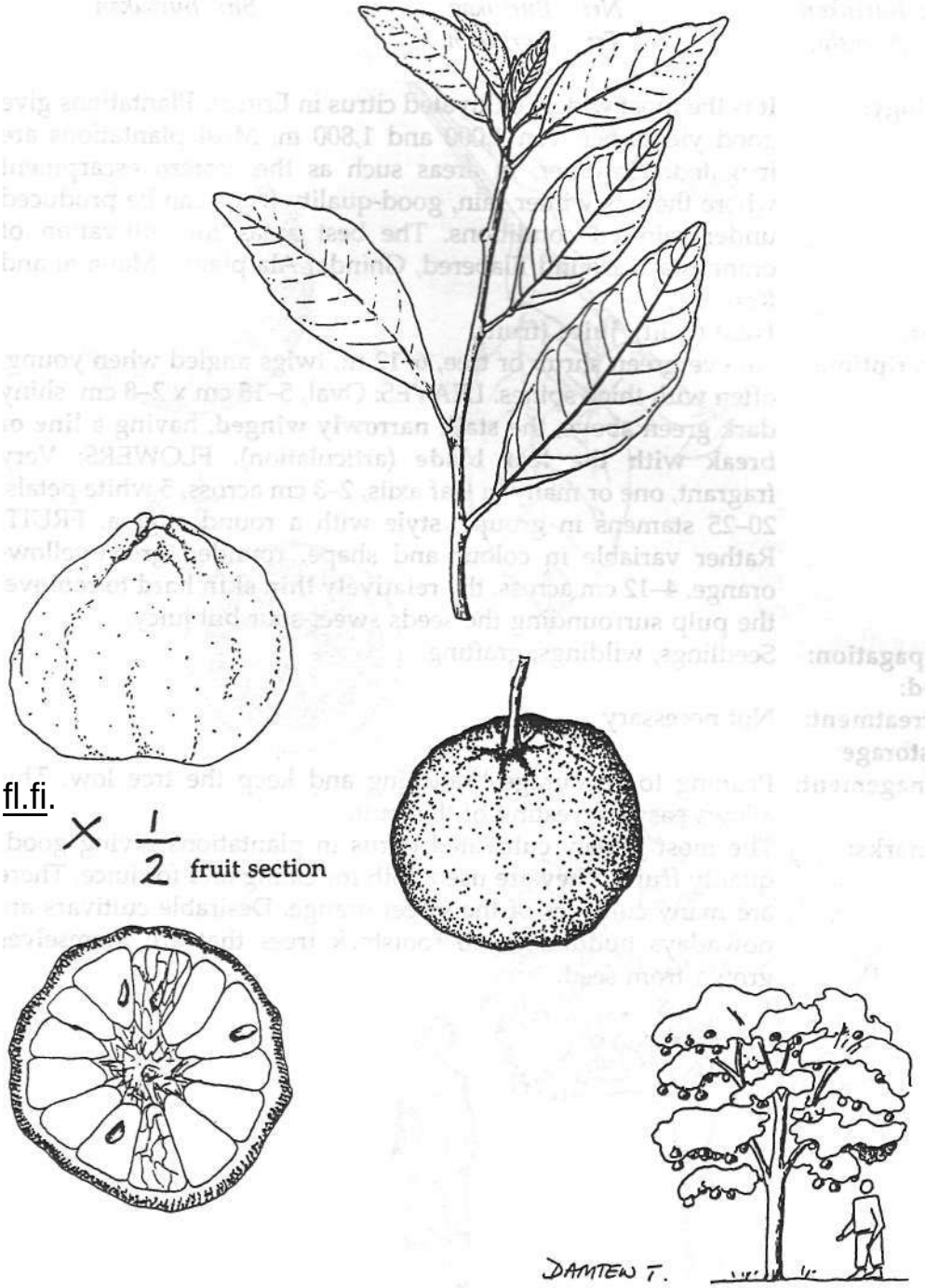
**Seed:**

**treatment:** Not necessary.

**storage:**

**Management:** Pollarding to initiate branching and keep the tree short.

**Remarks:** This fruit has always been cultivated in China and Japan. (Experts do not agree on the difference between this species and C. *deliciosa.)* This species is the hardiest of the cultivated citrus. There are many cultivars.


fl.fi.
× 1/2 fruit section
DAMTEW T.

## Citrus sinensis *Rutaceae*

Southern China, Vietnam

| | | |
|---|---|---|
| *Ar: Burtukal* | *Bl: Aranshi* | *Eng: Sweet orange* |
| *Km: Burtukan* | *Nr: Burtukan* | *Sh: Burtukan* |
| *Tg: Aranshi,* | *Tr: Burtukan* | |

**Ecology:** It is the most widely cultivated citrus in Eritrea. Plantations give good yields between 1,000 and 1,800 m. Most plantations are irrigated. However, in areas such as the eastern escarpment where there is winter rain, good-quality fruits can be produced under rain-fed conditions. The best areas for cultivation of oranges are around Elabered, Ghinda, Ala plains, Mai-aini and Keren.

**Uses:** **Food (fruit), juice** (fruit).

**Description:** An evergreen shrub or tree, 6-12 m, twigs angled when young, often with thick spines. LEAVES: Oval, 5-15 cm x 2-8 cm, shiny dark green above, the **stalk narrowly winged,** having a **line or break with the leaf blade** (articulation). FLOWERS: Very fragrant, one or many in leaf axils, 2-3 cm across, 5 white petals, 20-25 stamens in groups, style with a round stigma. FRUIT: Rather variable in colour and shape, rounded green-yellow-orange, 4-12 cm across, the **relatively thin skin hard to remove,** the pulp surrounding the seeds sweet-sour but juicy.

**Propagation:** Seedlings, wildings, grafting.

**Seed:**

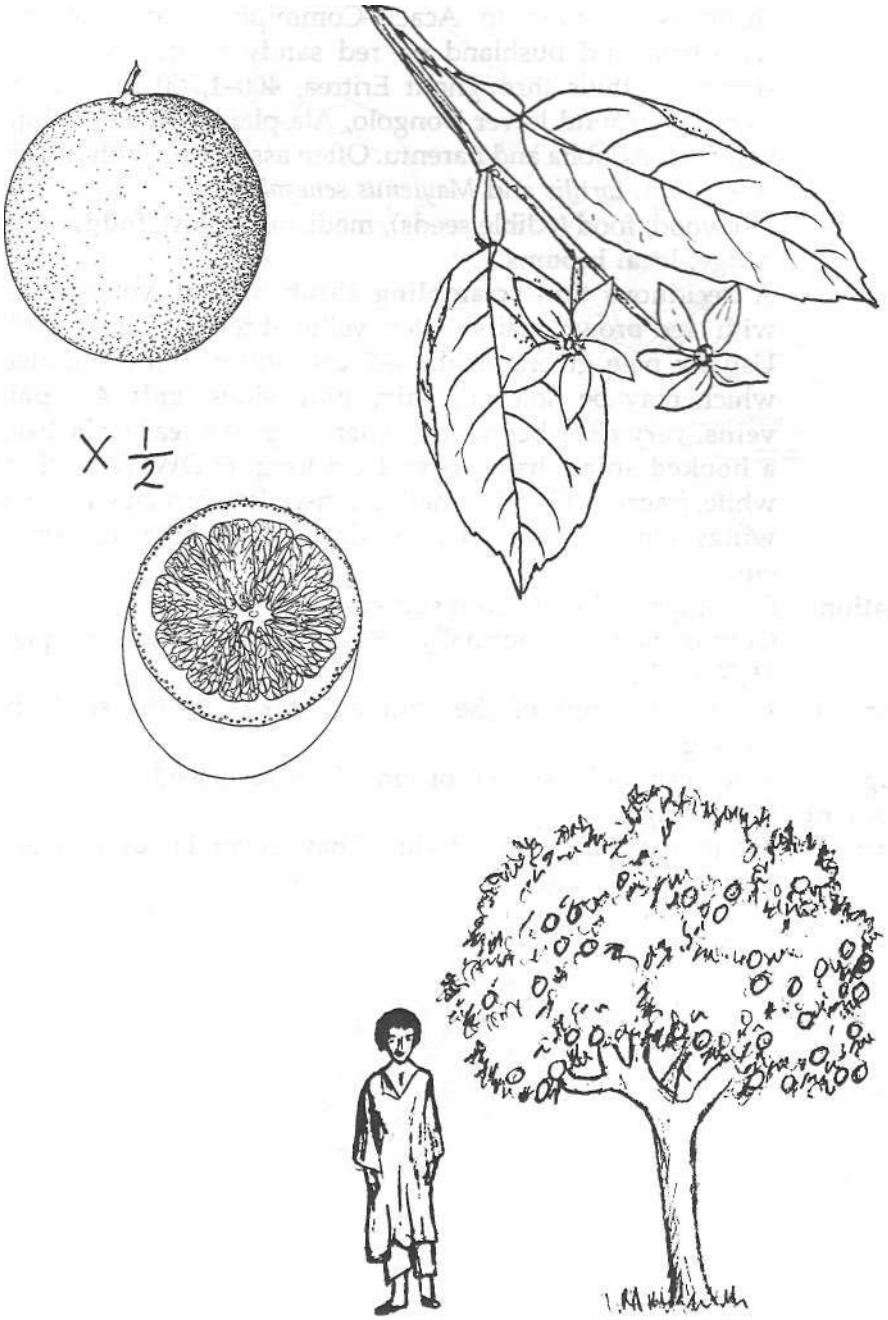
**treatment:** Not necessary

**storage:**

**Management:** Pruning to encourage branching and keep the tree low. This allows easy harvesting of the fruit.

**Remarks:** The most widely cultivated citrus in plantations giving good-quality fruits. They are used both for eating and for juice. There are many cultivars of the sweet orange. Desirable cultivars are nowadays budded on to rootstock trees that are themselves grown from seed.

**Citrus sinensis** *Rutaceae*



## Combretum aculeatum *Combretaceae*

Indigenous

| | | |
|---|---|---|
| *Km: Aitra* | *Nr: Ashela* | *Sh: Zanguh* |
| *Tg: Kuto* | *Tr: Karnotai* | |

**Ecology:** The most northern of the tropical African Combretum. This shrub is common in Acacia-Commiphora and Combretum woodland and bushland on red sandy to silty soil or rocky slopes, foothills throughout Eritrea, 400-1,700 m. Particularly common around lower Dongolo, Ala plains, Molki, Goluj, Adi-berebere, Adobha and Barentu. Often associated with *Acacia asak, A. seyal, A. tortilis* and *Maytenus senegalensis.*

**Uses:** Firewood, food (edible seeds), medicine (roots), **fodder** (leaves), hedge, **local brooms.**

**Description:** A deciduous **thin scrambling shrub** to 4 m, young branches with red-brown hairs, later yellow-brown, hairy. LEAVES: Usually pale green, **small, 4-7 cm,** wider at the rounded tip, which may be notched, **hairy both sides, only 4-6 pairs of veins,** very clear below. On older twigs the **leaf stalk becomes a hooked spine,** hairy, over 1 cm long. FLOWERS: Yellowish-white, fragrant. FRUIT: Small, green-yellow-brown with 5 **papery wings,** almost round to 2 cm, tip notched, on a thin stalk to 1 cm.

**Propagation:** Seedlings, wildings, root suckers.

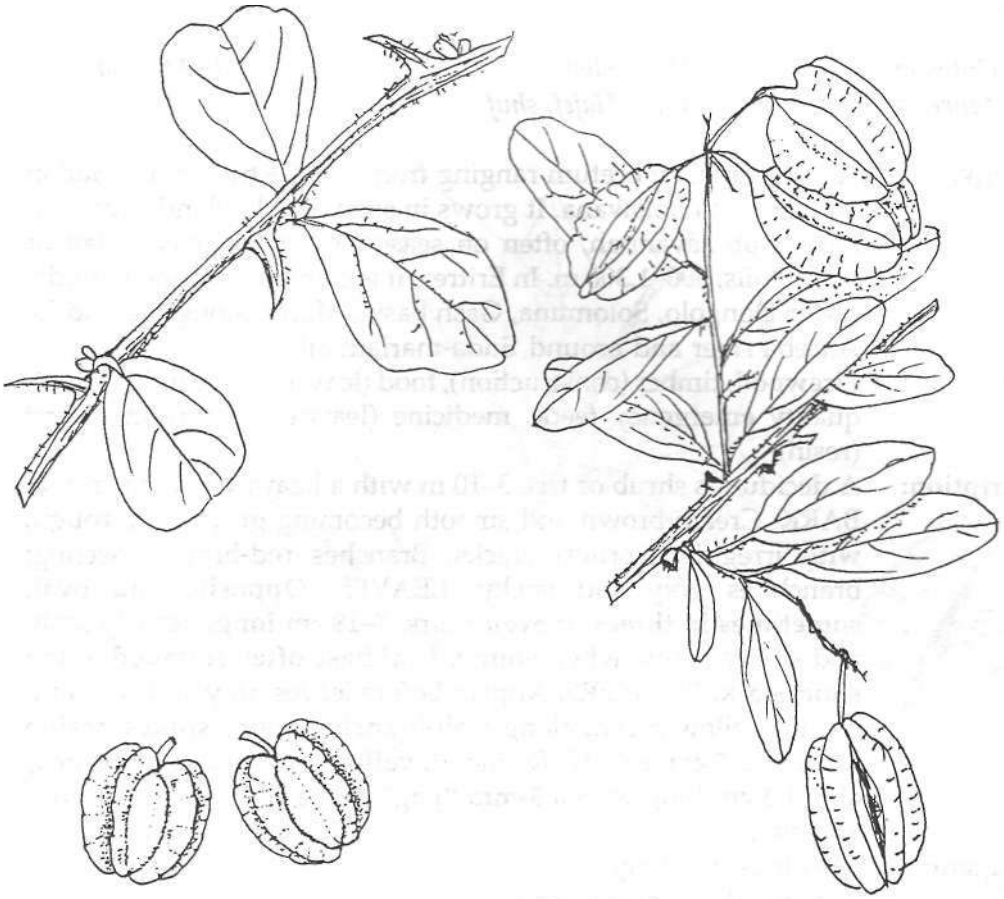
**Seed:** Germination is normally 60-80%; no. of seed per kg: 16,000-17,000.

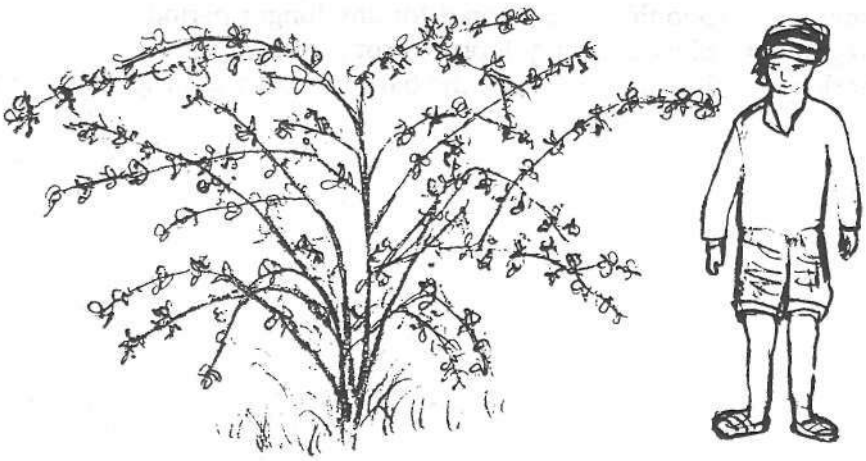
**treatment:** Break off wings of the fruit and take out the seeds before sowing.

**storage:** Seeds cannot be stored for long. Use fresh seed.

**Management:** Coppicing.

**Remarks:** Flexible young branches (withes) have several household and on-farm applications.





## Combretum fragrans *Combretaceae*

**(C. adenogonium, C. ghasalense)**

Indigenous

| | | |
|---|---|---|
| *Km: Gulmema* | *Nr: Shaf* | *Sh: Merhad* |
| *Tg: Tenkeleba* | *Tr: Hajef, shuf* | |

Ecology: An African Combretum ranging from West Africa to the Sudan and south to Botswana. It grows in semi-arid lowland savannah and scrub savannah, often on seasonally waterlogged clay or stony soils, 500-1,300 m. In Eritrea, it is common around Ghinda, lower Dongolo, Solomuna, Gash basin, Marat, along the middle Anseba river and around Enda-mariam-aila.

**Uses:** **Firewood,** timber (construction), food (leaves, fruit), **fodder** (low-quality emergency feed), medicine (leaves, fruit, resin), paint (resin).

**Description:** A deciduous shrub or tree 3-10 m with a heavy rounded crown. BARK: Cream-brown and smooth becoming grey-black, rough, with irregular vertical cracks. Branches red-brown, peeling; branchlets grey and sticky. LEAVES: **Opposite and oval, sometimes in threes or even fours, 7-18 cm long,** densely scaly and **sticky below when young. Leaf base often rounded to the short stalk.** FLOWERS: Appear before leaves, tiny and fragrant, cream—yellow-green, along well-branched **hairy spikes beside leaves, to 7 cm.** FRUIT: Rounded, **yellow-brown and 4-winged, about 3 cm long** with a **3-mm** "peg" **at the tip.** Young fruit red and sticky.

**Propagation:** Seedlings, wildings.

**Seed:** Around 10,000 seeds per kg.

**treatment:** Remove the wings mechanically.

**storage:** Should not be stored for any longer period.

**Management:** Slow growing, lopping, coppicing.

**Remarks:** In some countries the bark has been used to poison fish.

Combretum fragrans *Comhretaceae*

**(C. adenogonium, C. ghasalense)**

## Combretum molle *Combretaceae*

Indigenous

*Bl: Abelwa* *Eng: Velvet-leaved combretum*
*Tg: Sesewe, Abelwa* *Tr: Tserob*

**Ecology:** A widespread tree in wooded grassland and bushland all over Africa. In Eritrea, it is common in Combretum and Combretum-Terminalia woodlands and wooded grassland and bushlands in the midlands, often on stony hills around Semenawi-bahri, Rora-habab, Ksad-ika, Ghinda, Adi-shuma and on Mt. Seled, 600-2,300 m.

**Uses:** **Firewood, charcoal,** poles, **posts,** timber (construction), tool handles, medicine (roots, leaves, bark), bee forage, mulch, smoke bath (like a sauna), local beer *(sewa)* flavouring.

**Description:** A small deciduous tree, to 15 m, the trunk often crooked and branching near the base. BARK: Distinctive, older trunks **dark brown-black, deeply grooved in squares** like "crocodile skin". Branchlets peeling in fibrous strips. LEAVES: Large, **soft and hairy** both sides, up to 21 x 12.5 cm, **rounded at the base,** tip pointed. FLOWERS: Greenish-yellow spikes to 10 cm, sweet scented, attracting insects, produced before or with new leaves. FRUIT: **4-winged,** yellow-green at first, drying **bright golden-brown, up to 2 cm.** Wings wider than the fruit. Fruit may hang on the tree until the next season.

**Propagation:** Seedlings, root suckers.

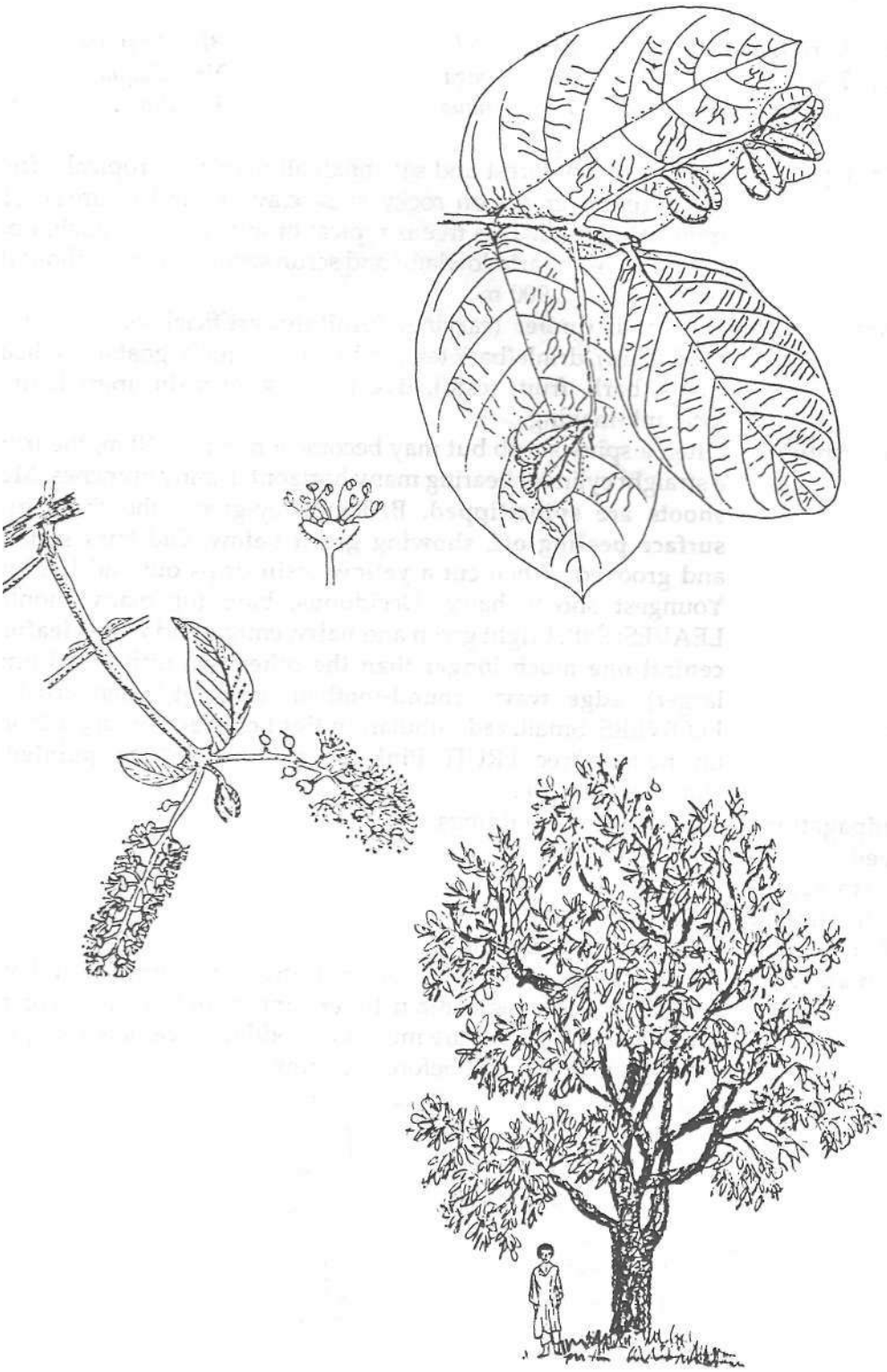
**Seed:** Remove seed wings before sowing. No. of seeds per kg: 10,000-15,000.

**treatment:** Not necessary, seed germinates easily, open fruit to get seed.

**storage:** Seed can be stored for only a very short period. Sow fresh seed for best germination results.

**Management:** Slow growing. Lopping and coppicing

**Remarks:** The species is very variable. The hard yellow wood burns well giving intense heat. The wood is moderately termite resistant. With abundant nectar and pollen all day it is recommended to increase honey production.



# Commiphora africana *Burseraceae*

Indigenous

| | | |
|---|---|---|
| *Af: Kurbeito* | *Ar: Gafal* | *Bl: Anquora* |
| *Hd: Teseni* | *Km: Agaga* | *Nr: Unqua* |
| *Sh: Kurbet* | *Tg: Anqua* | *Tr: Anqua* |

**Ecology:** A plant of dry forest and savannah all over arid tropical Africa. In Eritrea, it grows on rocky sites, clay or sand in areas with minimal rainfall. This tree is typical of much thorny bush, open savannah, semi-arid lowland and scrub savannah throughout the country, 350-1,900 m.

**Uses:** Firewood, **timber** (carving, furniture, artificial legs), utensils, **food** (fruit), drink (bark tea), **fodder** (for camels, goats), medicine (roots, bark, fruit, resin), **live fence, gum-resin,** ingredient in local ink-making.

**Description:** Often a spiny shrub but may become a tree to 6-10 m, the trunk a straight cylinder bearing many horizontal spiny branches. **Most shoots are spine-tipped.** BARK: Grey-green, the thin **shiny surface peeling off, showing green below.** Old bark squared and grooved. When cut a **yellow resin** drips out and hardens. Youngest shoots hairy. Deciduous, bare for many months. LEAVES: Soft, bright green and **hairy,** compound with **3 leaflets, central one much longer than the other two** (can be 10 times larger), **edge wavy, round-toothed,** fragrant when crushed. FLOWERS: Small, **red,** tubular, **in tight clusters,** often on thorns on the bare tree. FRUIT: **Pink-red,** soft, about **1 cm, pointed,** a stony seed inside.

**Propagation:** Large cuttings, wildings.

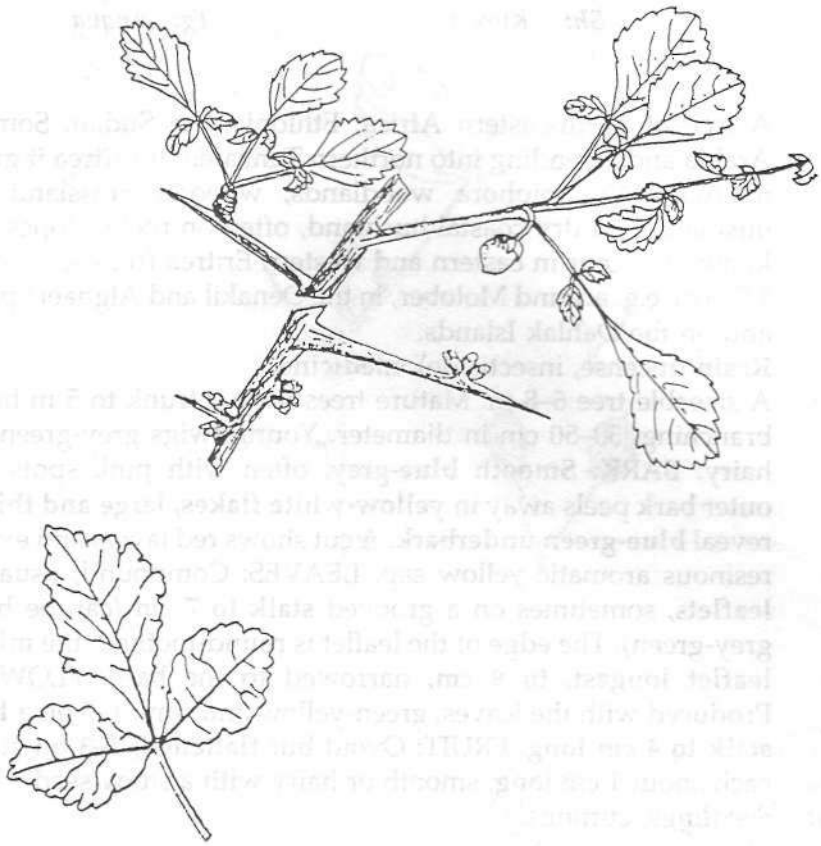
**Seed:**

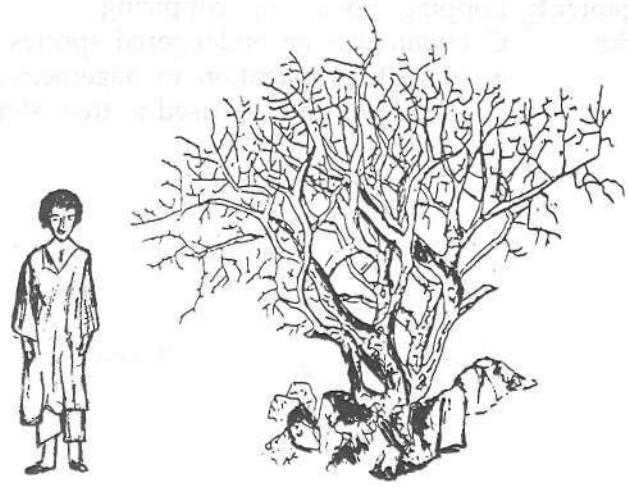
**storage:**

**treatment:**

**Management:** Slow growing. Lopping.

**Remarks:** Two varieties are recognized in Eritrea: var. *africana* and var. *ramosissima.* Leaves contain bitter tannin and so they are not browsed by cattle but are important fodder for camels and goats. It comes into leaf just before the rains.





## Commiphora erythraea *Burseraceae*

Indigenous

| | | |
|---|---|---|
| *Af: Kurbeito* | *Ar: Gafal* | *Bl: Anquora* |
| *Hd: Himet* | *Sh: Kurbet* | *Tg: Anqua* |
| *Tr: Anqua* | | |

**Ecology:** A tree of north-eastern Africa, Ethiopia, the Sudan, Somalia, Arabia and extending into northern Tanzania. It Eritrea it grows in Acacia-Commiphora woodlands, wooded grassland and bushland and dry coastal bushland, often on rocky slopes. It **is** known to occur in eastern and western Eritrea from sea level to 1,500 m, e.g. around Molober, in the Denakil and Alghaeta plains and on the Dahlak Islands.

**Uses:** **Resin** (incense, insecticide), **medicine.**

**Description:** A sizeable tree 6-8 m. Mature trees have a trunk to 5 m before branching, 30-50 cm in diameter. Young twigs grey-green and hairy. BARK: **Smooth blue-grey,** often with pink spots. The outer bark peels away in **yellow-white flakes, large and thin,** to reveal **blue-green underbark.** A cut shows red layers and exudes resinous aromatic yellow sap. LEAVES: Compound, usually **3 leaflets,** sometimes on a grooved **stalk to 7 cm** (can be hairy, grey-green). The edge of the leaflet is round-toothed, the **middle leaflet longest, to 9 cm,** narrowed to the base. FLOWERS: Produced with the leaves, green-yellow and tiny, 1-5 on a **hairy stalk to 4 cm long.** FRUIT: Ovoid but **flattened, 1-3 on stalks,** each about 1 cm long, smooth or hairy with a stony seed inside.

**Propagation:** Seedlings, cuttings.

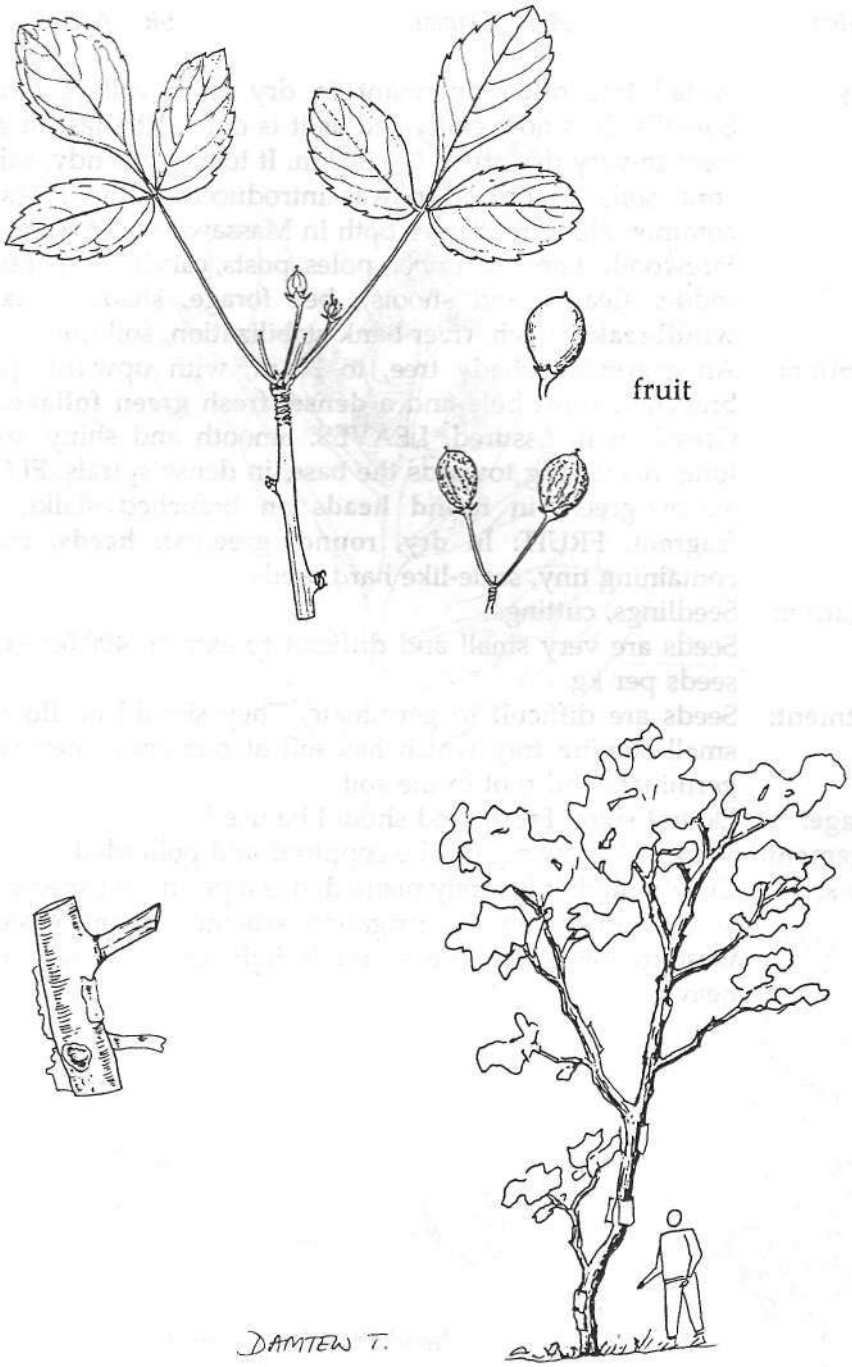
**Seed:**

**treatment:**

**storage:**

**Management:** Lopping, pollarding, coppicing.

**Remarks:** C. *erythraea* is an endangered species and attention should be given to its propagation, management and protection. The resin, called *kerbe* locally, is used to treat stomach disorders.


fruit
DAMTEW T.

## Conocarpus lancifolius *Cotnbretaceae*

Somalia

*Af: Aden* *Ar: Damas* *Sh: Aden*

**Ecology:** A tall tree often dominant in dry river valleys (wadis) in Somalia. It is now cultivated as it is one of the fastest growing trees in very dry areas, 0-1,000 m. It tolerates sandy, saline and coral soils. In Eritrea, it was introduced in the 1940s and is common along roadsides both in Massawa and Assab.

**Uses:** Firewood, charcoal, timber, poles, posts, carvings, boat building, fodder (leaves and shoots), bee forage, shade, **ornamental, windbreak,** mulch, river-bank stabilization, soil improvement.

**Description:** An evergreen shady tree, to 20 m, with upward spreading branches, short bole and a **dense, fresh green foliage.** BARK: Grey-brown, fissured. LEAVES: Smooth and shiny, to 10 cm long, narrowing towards the base, in dense spirals. FLOWERS: Yellow-green, in **round heads** on branched stalks, slightly fragrant. FRUIT: In **dry, round, greenish heads, cone-like,** containing tiny, scale-like hard seeds.

**Propagation:** Seedlings, cuttings.

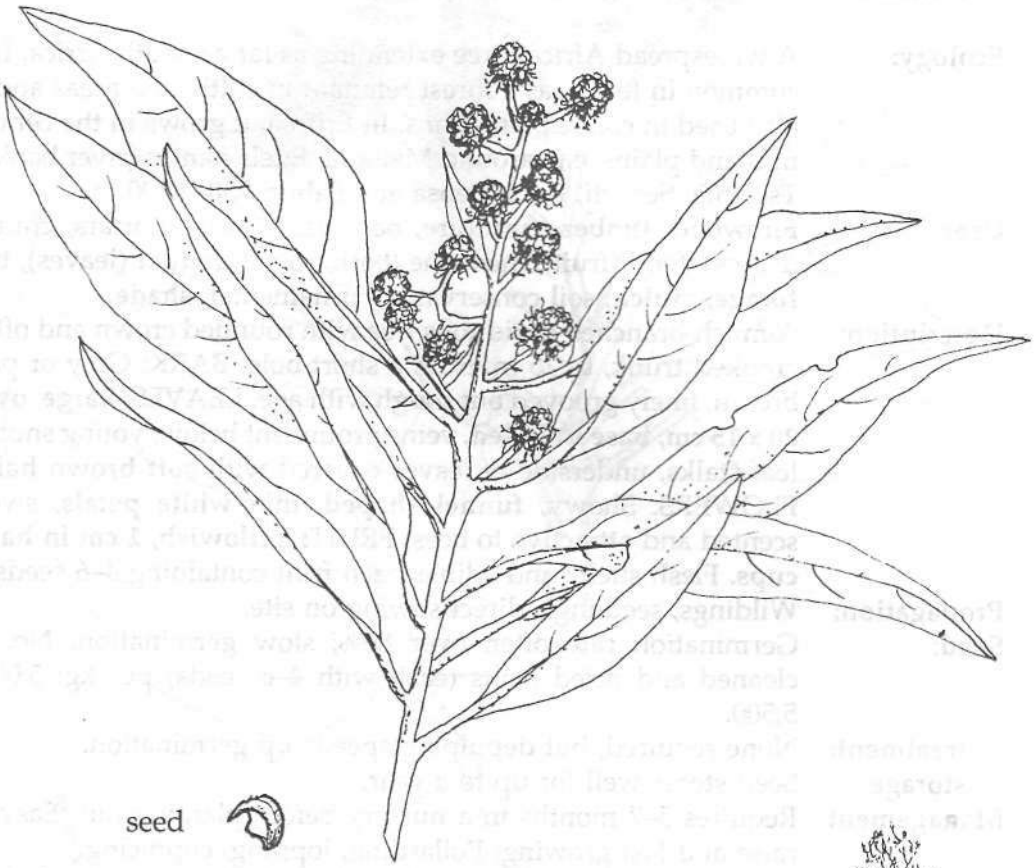
**Seed:** Seeds are very small and difficult to extract. 400,000-1,700,000 seeds per kg.

**treatment:** Seeds are difficult to germinate. They should be floated in a small sloping tray which has soil at one end. They will then germinate and root in the soil.

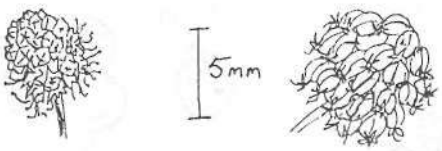
**storage:** Do not store. Fresh seed should be used.

**Management:** Very fast growing; can be coppiced and pollarded.

**Remarks:** Even though it is rarely planted, it is a promising species for use as shelterbelts in the irrigation schemes in the eastern and western lowlands. The wood is light coloured and medium heavy.



seed




flower and fruit head

## Cordia africana *Boraginaceae*

Indigenous

| | | |
|---|---|---|
| *Ar: Gambil* | *Bl: Chergelo* | *Km: Ghunja* |
| *Sh: Madre* | *Tg: Awhi* | *Tr: Awhi* |

**Ecology:** A widespread African tree extending as far as South Africa. It is common in forest, as **a** forest remnant in cultivated areas and is also used in coffee plantations. In Eritrea, it grows in the central midland plains, e.g. around Mai-aini, Egela names (river banks), Tselema, Seharti, Rora-mensa and Sabur, 750-2,000 m.

**Uses:** **Firewood, timber** (furniture, beehives, boxes, mortars, church drums), food (fruit), medicine (bark, roots), **fodder** (leaves), **bee forage, mulch,** soil conservation, ornamental, **shade.**

**Description:** A much-branched deciduous tree with rounded crown and often crooked trunk, to 25 m, from a short bole. BARK: Grey or pale brown, finely grooved but rough with age. LEAVES: **Large, oval, 20 x 15 cm, base rounded,** veins prominent below; young shoots, leaf stalks, underside of leaves covered with **soft brown hairs.** FLOWERS: Showy, **funnel shaped,** thin **white petals,** sweet scented and attractive to bees. FRUIT: **Yellowish, 1 cm in hairy cups.** Flesh sticky and edible, each fruit containing 4-6 seeds.

**Propagation:** Wildings, seedlings, direct sowing on site.

**Seed:** Germination rate often over 80%; slow germination. No. of cleaned and dried fruits (each with 4–6 seeds) per kg: 5,000-5,500.

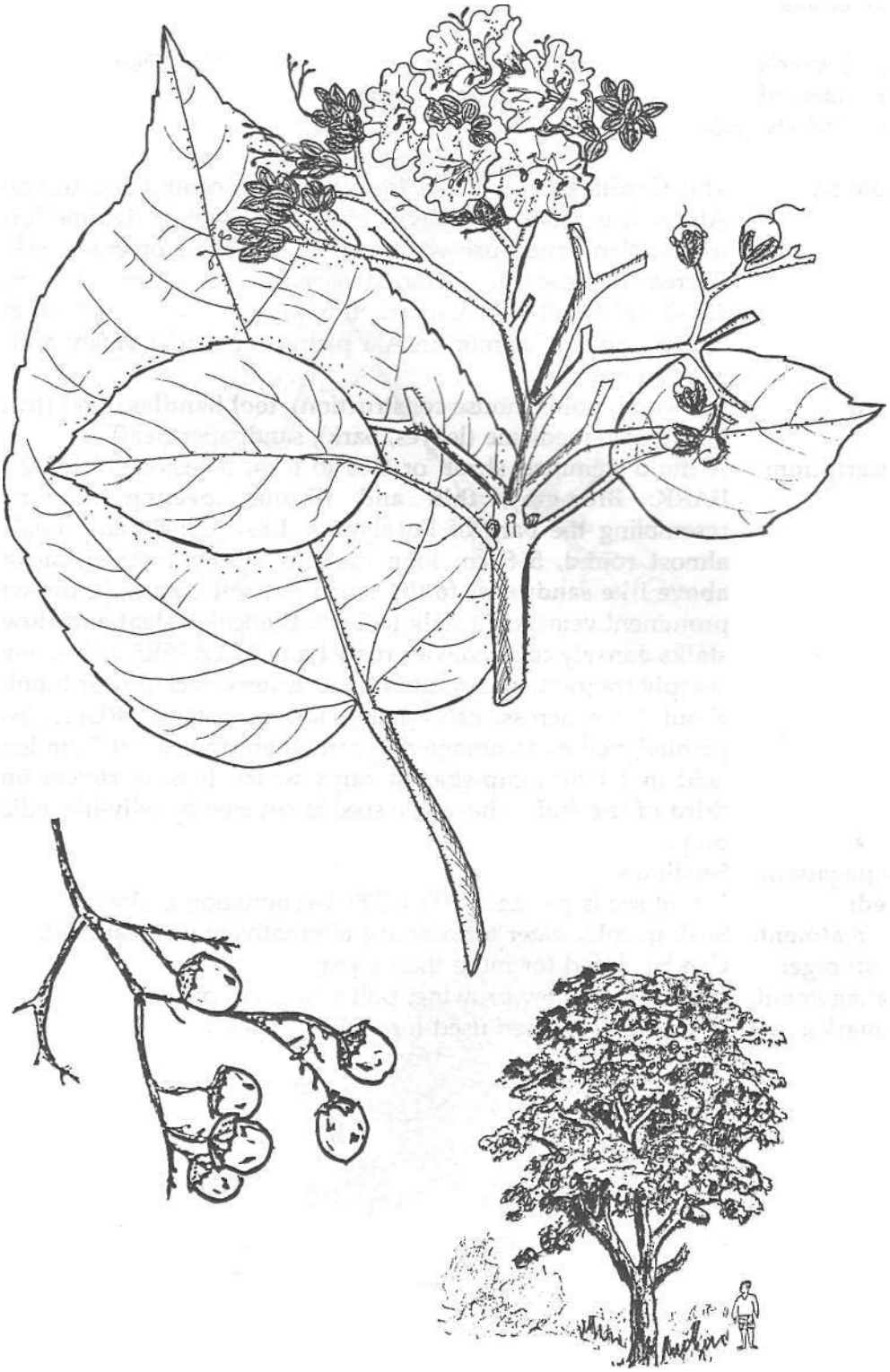
**treatment:** None required, but depulping speeds up germination.

**storage:** Seed stores well for up to a year.

**Management:** Requires 5-7 months in a nursery before planting out. Easy to raise and fast growing. Pollarding, lopping, coppicing.

**Remarks:** The heartwood is hard and durable and takes a good polish so the timber is prized for furniture, but it can be twisted and difficult to saw. Plantations should be dense to encourage straight growth. A useful tree for homesteads and on crop land.

Cordia africana *Boraginaceae*



## Cordia monoica (C. ovalis) *Boraginaceae*

Indigenous

| | | |
|---|---|---|
| ***Bl:*** *Chergelo* | *Hd:* *Wendra* | *Nr:* *Sheri* |
| *Sh:* *Karuwah* | *Tg:* *Awhi -tsergah* | |
| *Tr:* *Awhi-tsergah* | | |

**Ecology:** This Cordia species grows from Eritrea to central and southern Africa. It is found in many habitats from wet or riverine forest to woodland and bush with Acacia-Euphorbia or grassland. In Eritrea, it grows in degraded parts of the central highlands, 400-2,000 m, often in association with *Acokanthera schimperi* and *Acacia tortilis.* Common in Ala plains and Hidai valley and in Semenawi-bahri.

**Uses:** Firewood, **poles** (house construction), tool handles, food (fruit), bee forage, medicine (leaves, bark), sandpaper (leaf).

**Description:** A multi-stemmed shrub or tree to 6 m, occasionally to 12 m. BARK: **Blue-grey, thin and fibrous, peeling in strips,** resembling the bark of Eucalyptus. LEAVES: Broadly oval to almost round, 5-8 cm long, margin lightly toothed, **surface above like sandpaper to the touch** but softly hairy below with prominent veins, on a stalk to 2 cm. Branchlets, **leaf and flower stalks densely covered with rusty hairs.** FLOWERS: Pale yellow, sharply fragrant, in dense terminal clusters, each flower tubular, about 1 cm across, calyx hairy and persistent. FRUIT: Oval, pointed, yellow to orange and soft when ripe, about 2 cm long, held in a hairy, **cup-shaped** calyx **which loosely covers one-third of the fruit.** The single seed is covered by jelly-like edible pulp.

**Propagation:** Seedlings.

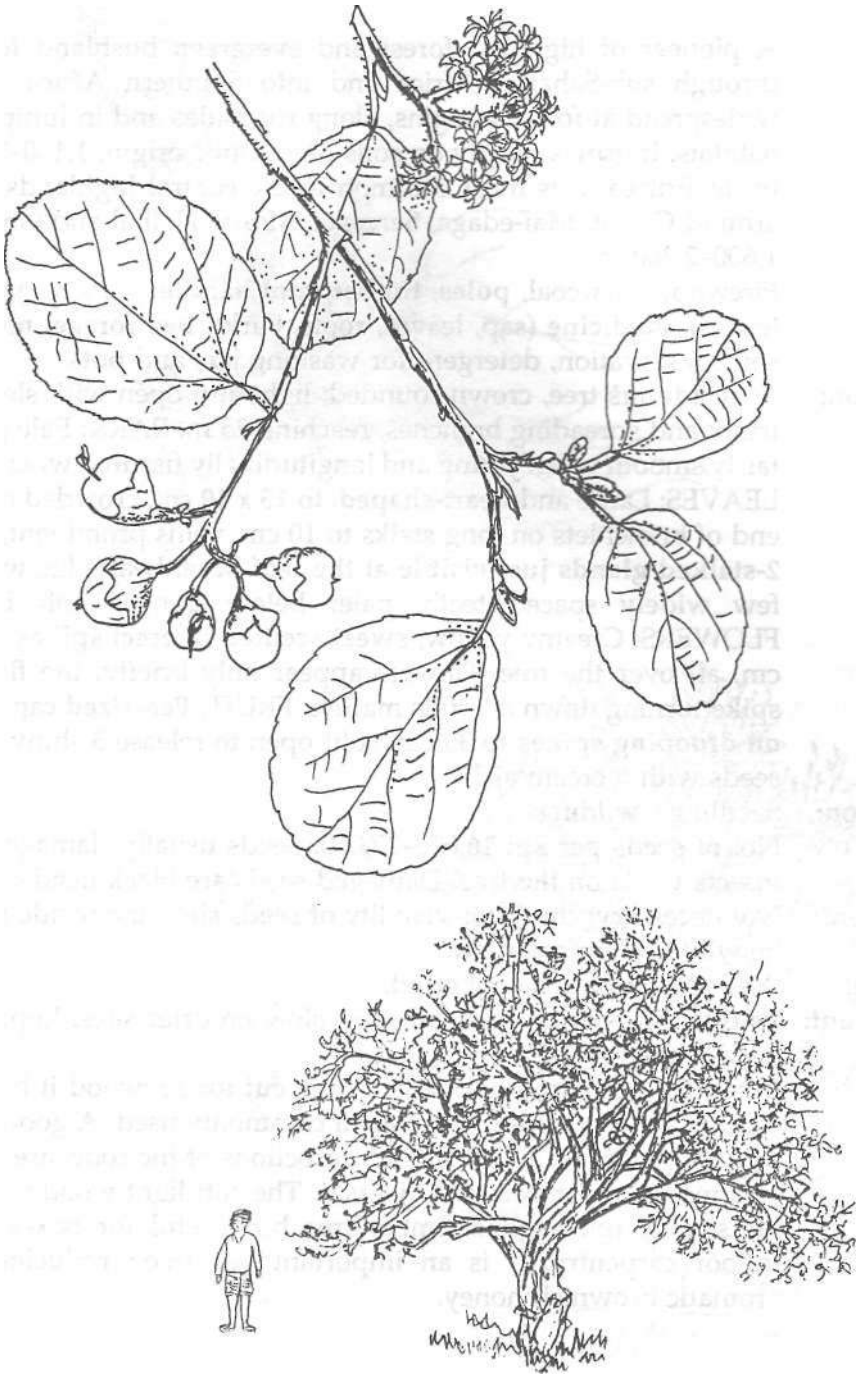
**Seed:** No. of seeds per kg: 5,000-6,000. Germination is slow.

**treatment:** Soak in cold water for 6 hours; alternatively no treatment.

**storage:** Can be stored for more than a year.

**Management:** Moderate to slow growing; pollarding, coppicing.

**Remarks:** The wood has been used for walking sticks.



## Croton macrostachyus *Euphorbiaceae*

Indigenous

*Sh: Tambukh* *Tg: Tambuk* *Tr: Tambuk*

**Ecology:** A pioneer of highland forest and evergreen bushland found through sub-Saharan Africa and into Southern Africa. It is widespread at forest margins, along roadsides and in Juniperus habitats. It grows mostly on soils of volcanic origin, 1,100-2,500 m. In Eritrea, it is most common in the central highlands, e.g. around Quatit, Mai-edaga, Serejeka, Mrara, Halhal and Gheleb, 1,600-2,200 m.

**Uses:** Firewood, charcoal, **poles, timber, tool handles,** forage (young leaves), **medicine** (sap, leaves, roots, bark), **bee forage, mulch,** soil conservation, detergent for washing jars and pots.

**Description:** A **deciduous** tree, crown rounded, light and open with slender trunk and spreading branches, reaching 25 m. BARK: Pale grey, fairly smooth when young and longitudinally fissured when old. LEAVES: Large and **heart-shaped, to 15 x 10 cm,** crowded at the end of branchlets on long stalks to 10 cm, veins prominent, and **2-stalked glands just visible at the leaf base.** Leaf edge with a few widely spaced teeth, paler below due to soft hairs. FLOWERS: Creamy yellow, **sweet scented in erect spikes** to 25 cm, all over the tree. Flowers appear only briefly, the flower spike turning down as fruits mature. FRUIT: **Pea-sized capsules on drooping spikes** to 30 cm, split open to release 3 shiny grey seeds with a cream aril.

**Propagation:** Seedlings, wildings.

**Seed:** No. of seeds per kg: 16,000-27,000. Seeds usually damaged by insects while on the tree. Damaged seeds are black inside.

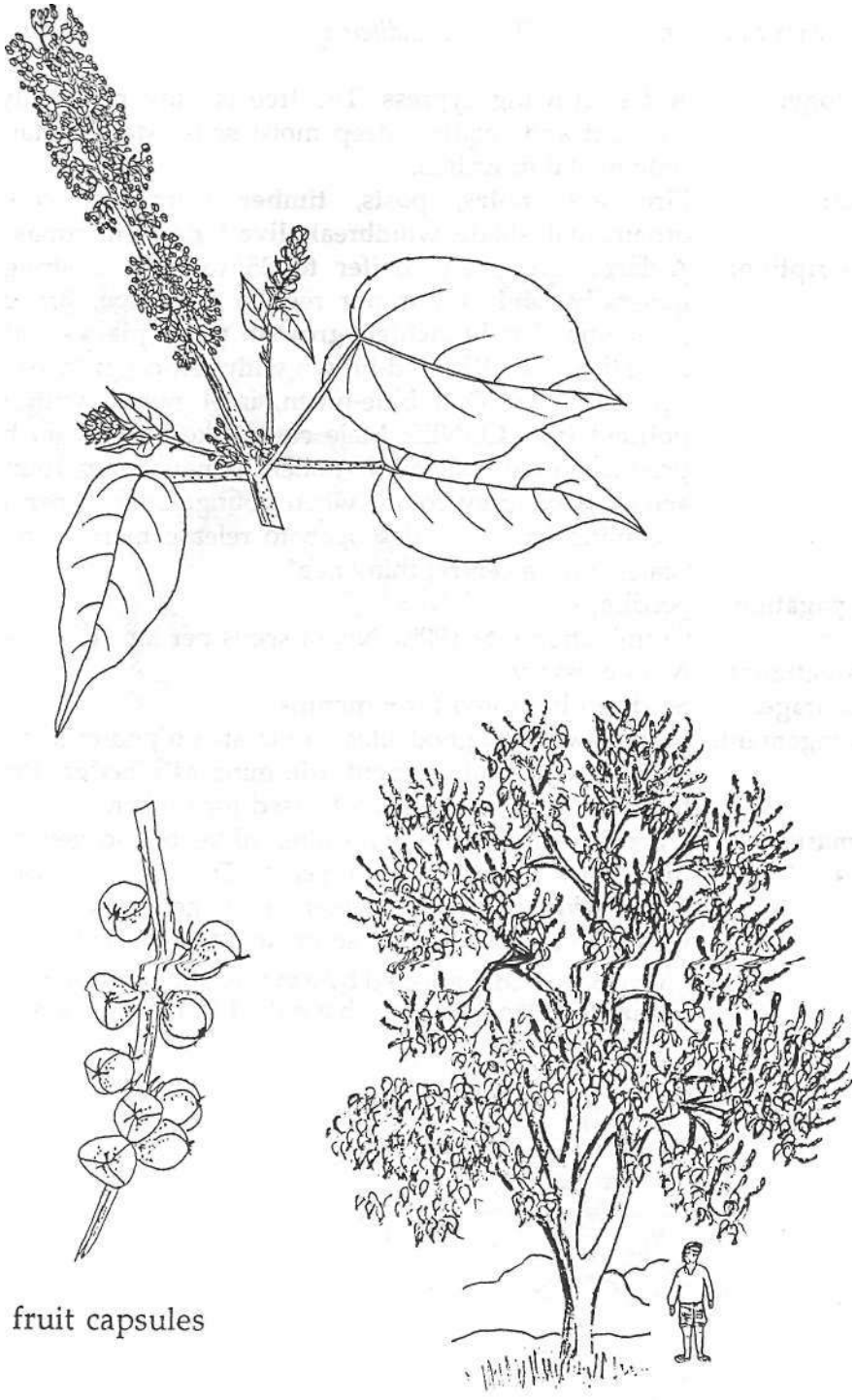
**treatment:** Not necessary; check for viability of seeds since the inside must be white-cream coloured.

**storage:** Seeds store for a short period.

**Management:** Fairly fast growing on good sites, slow on drier sites. Lopping, pollarding, coppicing.

**Remarks:** Seed and resin are poisonous. When cut for firewood it has an unpleasant spicy odour but is still commonly used. A good tree for intercropping. The fruit and decoctions of the roots are used as a medicine for venereal diseases. The soft light wood is very perishable; not a good timber tree but useful for boxes and indoor carpentry. It is an important bee tree producing an aromatic brownish honey.

**Croton macrostachyus** *Euphorbiaceae*



## Cupressus lusitanica *Cupressaceae*

Mexico, Guatemala

*Eng: Mexican cypress* *Tg: Tsehdiferenji*

**Ecology:** A fast-growing cypress. The tree is only moderatly drought resistant and requires deep moist soils. Mainly planted as an ornamental in Eritrea.

**Uses:** **Firewood, poles,** posts, **timber** (furniture, construction), ornamental, shade, windbreak, **live fence,** Christmas tree.

**Description:** A large evergreen conifer to 35 m with a straight trunk, **generally conical** but not regular in shape, branches wide spreading. The **branchlets grow in many planes** and branches hang down. BARK: Red-brown with vertical grooves, grey with age. LEAVES: Dull blue-green, in **4 ranks, with spreading pointed tips.** CONES: Male cones like fat tips on branchlets, produce clouds of yellow pollen; female cones round, 1.5 **cm across,** waxy-grey colour when young. Cones ripen in 2 years becoming brown, scales open to release many winged seeds. Scales have a central thin "peg".

**Propagation:** Seedlings.

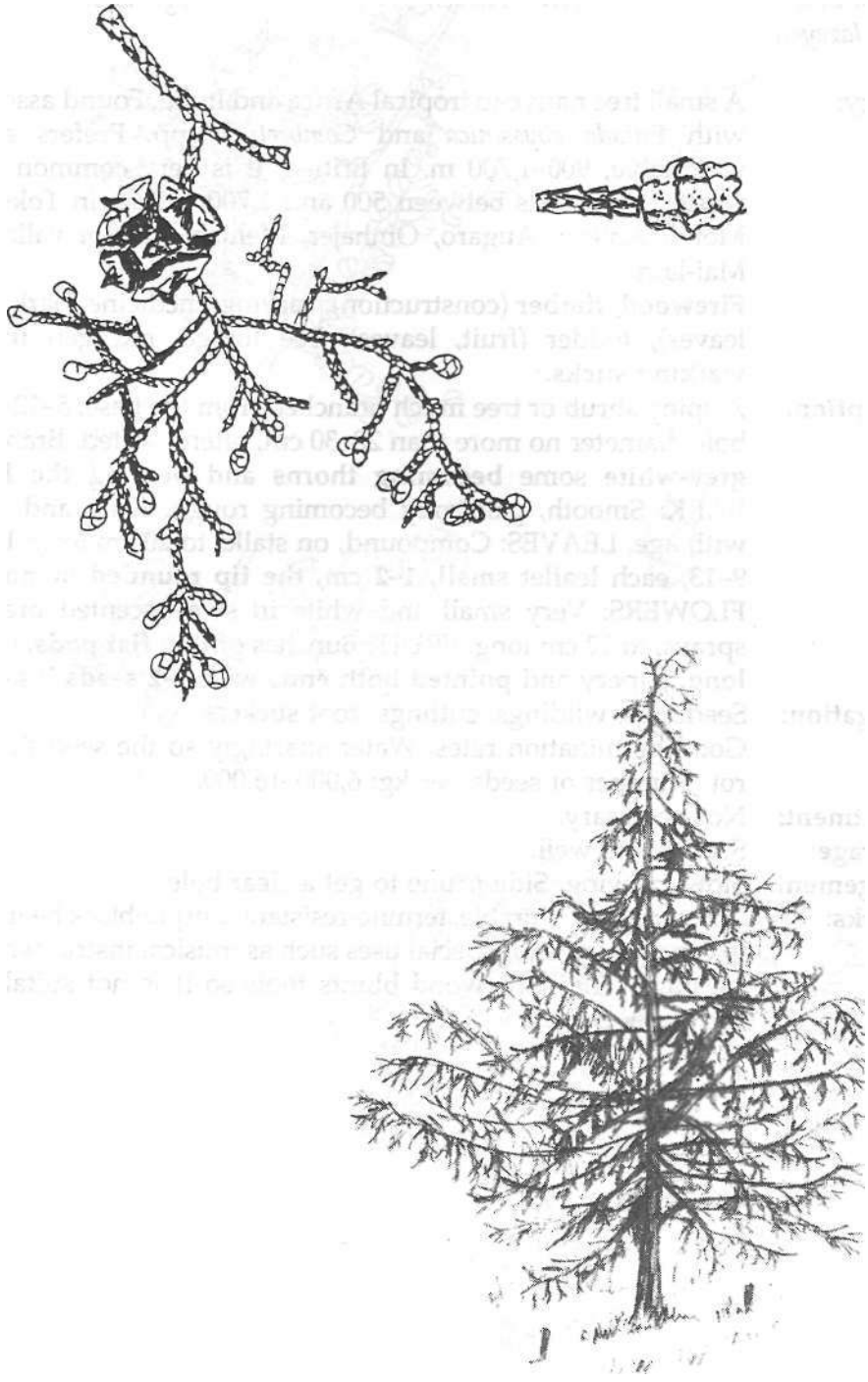
**Seed:** Germination rate ±90%. No. of seeds per kg: 160,000-290,000.

**treatment:** Not necessary.

**storage:** Seed can be stored for 6 months.

**Management:** Fast-growing on good sites, moderate on poorer sites. Weeding during early establishment, trimming as a hedge. Pruning and thinning of trees in woodlots used for timber.

**Remarks:** Cypress can produce poles after 10 years and general-purpose timber in as little as 20 years. The tree is susceptible to *Monochaetia unicornis* (canker) pathogen and *Oemida gahani* woodborer. From Kenya south to Malawi cypress plantations have been badly affected by a cypress aphid *(Cinara cupressi)* and many thousands of trees have died in recent years.



## Dalbergia melanoxylon *Papilionoideae*

Indigenous

*Ar: Babanus* *Bl: Shinara*
*Eng: African blackivood, African ebony* *Hd: Abunusa*
*Km: Dekina* *Nr: Aleden* *Tg: Zebe*
*Tr: Alazeyen*

**Ecology:** A small tree native to tropical Africa and India. Found associated with *Entada abyssinica* and *Combretum* spp. Prefers a high watertable, 900-1,700 m. In Eritrea, it is very common in the western lowlands between 500 and 1,700 m, e.g. in Tokombia, Molki, Antore, Augaro, Omhajer, Mehlab, Maaldi valley and Mai-lam.

**Uses:** **Firewood, timber** (construction), carving, medicine (bark, roots, leaves), fodder (fruit, leaves), bee forage, nitrogen fixation, **walking sticks.**

**Description:** A spiny shrub or tree much branched from the base, 5-12 m, the bole diameter no more than 20-30 cm, often twisted. Branchlets, **grey-white** some **becoming thorns and bearing the leaves.** BARK: Smooth, pale grey becoming rough, flaky and darker with age. LEAVES: Compound, on stalks to 20 cm long, leaflets 9-13, each leaflet **small, 1-2 cm, the tip rounded or notched.** FLOWERS: Very small and white in sweet-scented branched sprays, to 12 cm long. FRUIT: Bunches of thin **flat pods, to 7 cm long,** papery and **pointed both ends** with 1-2 **seeds** inside.

**Propagation:** Seedlings, wildings, cuttings, root suckers.

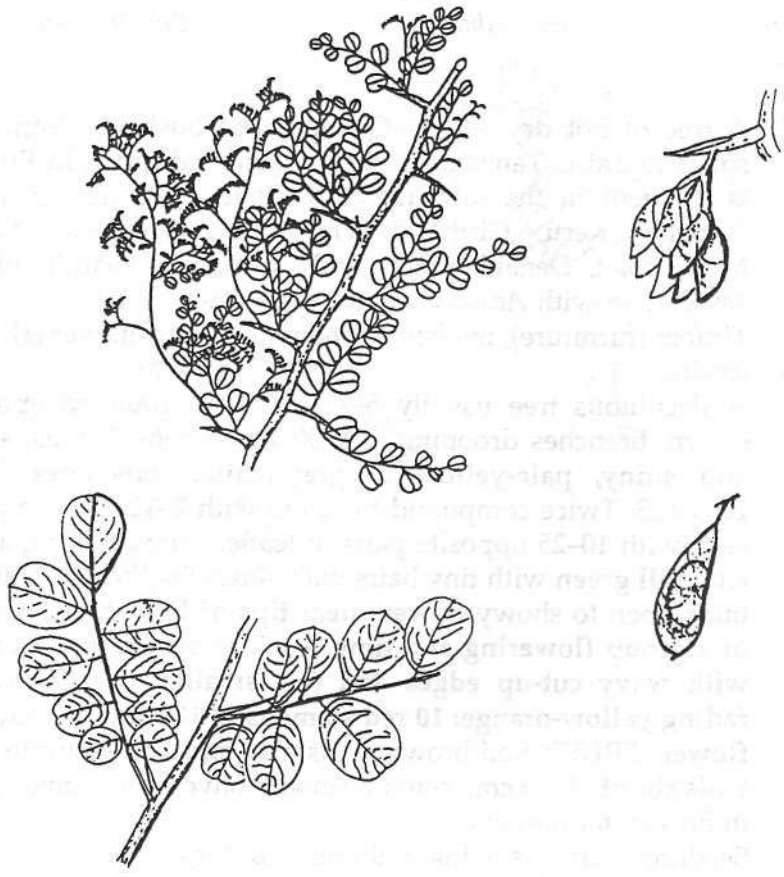
**Seed:** Good germination rates. Water sparingly so the seed does not rot. Number of seeds per kg: 6,000-16,000.

**treatment:** Not necessary.

**storage:** Seed stores well.

**Management:** Slow growing. Side prune to get a clear bole.

**Remarks:** The very hard, durable, termite-resistant, purple-black heartwood is very valuable for special uses such as musical instruments and carvings. The hard wood blunts tools so it is not suitable for furniture, etc.



Indigenous

*Af: Amaito* *Ar: Mashilah* *Hd: Ghui*
*Km: Burumbura* *Nr: Abumbu* *Sh: Yebusus*
*Tr: Refna, Ref*

**Ecology:** A tree of hot dry Acacia-Commiphora bushland from Egypt south to Zaire, Tanzania east to Arabia and India. In Eritrea, it is frequent in the lowlands from 0 to 1,500 m, e.g. around Adobha, Keru, Girmaica, Hawashait, Ghizgiza, Akurdet, Metkelabiet, Denakil plains and on Dahlak Islands, often in association with *Acacia asak* and *A. tortilis.*

**Uses:** Timber (furniture), medicine (pods), **fodder, ornamental,** tannin (fruit).

**Description:** A deciduous tree usually 5-7 m with a rounded spreading crown, branches drooping. BARK: Quite conspicuous, **smooth and shiny, pale-yellow to grey-white,** sometimes flaking. LEAVES: Twice compound to 15 cm with 2-12 pairs of pinnae, each with 10-25 opposite pairs of leaflets, **long oblong about 1 cm, dull green** with tiny hairs both sides. FLOWERS: Flat green buds open to showy flowers **near tips of branchlets, only one of a group flowering at a time, 4 white petals over 3 cm long with wavy cut-up edges and one smaller yellow petal, all fading yellow-orange; 10 red stamens to 10 cm hang out of the flower.** FRUIT: Red-brown pods **flat and thin, pointed both ends about 13-20 cm,** contain smooth olive-brown oblong seeds in horizontal pockets.

**Propagation:** Seedlings, direct sowing, wildings, cuttings.

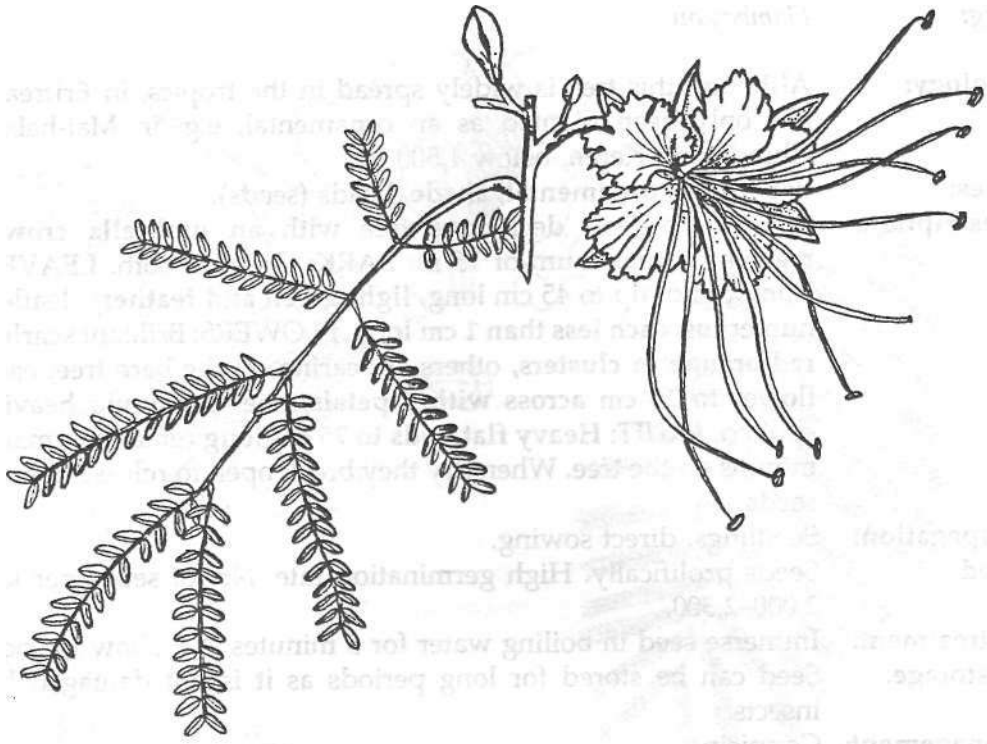
**Seed:**

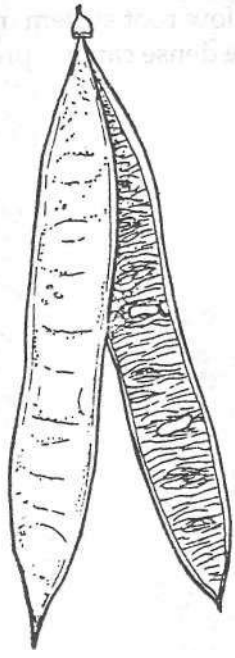
**treatment:** Immerse in hot water, allow to cool and soak for 24 hours.

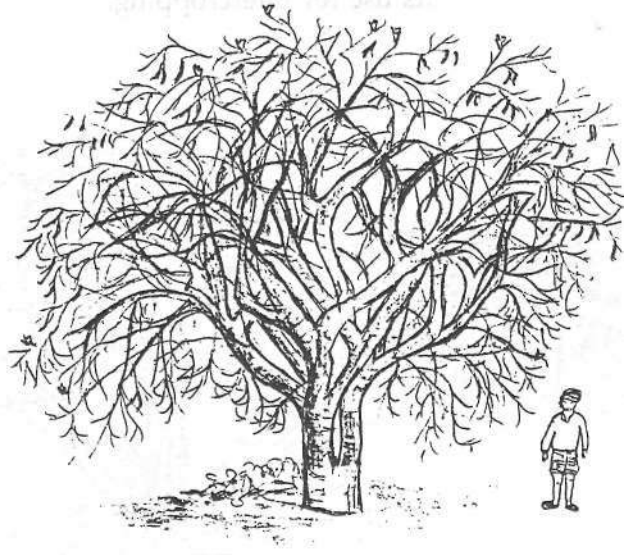
**storage:** Perishable so should not be stored.

**Management:**

**Remarks:** An infusion of the pods is used as a laxative.







## Delonix regia *Caesalpinioideae*

Madagascar

*Eng:* *Flamboyant*

**Ecology:** Although this tree is widely spread in the tropics, in Eritrea it has only been planted as an ornamental, e.g. in Mai-habar, Ghinda and Keren, below 1,500 m.

**Uses:** Bee forage, **ornamental, shade,** beads (seeds).

**Description:** A medium-sized deciduous tree with **an umbrella crown,** reaching a maximum of 15 m. BARK: Grey, smooth. LEAVES: Compound, up to 45 cm long, **light green and feathery,** leaflets numerous, **each less than 1 cm long.** FLOWERS: Brilliant **scarlet-red-orange in clusters,** others appearing on the bare tree, each flower **to 10 cm across with 5 petals,** one cream and heavily spotted. FRUIT: **Heavy flat pods to 75 cm long** remaining many months on the tree. When dry they break open to release oblong seeds.

**Propagation:** Seedlings, direct sowing.

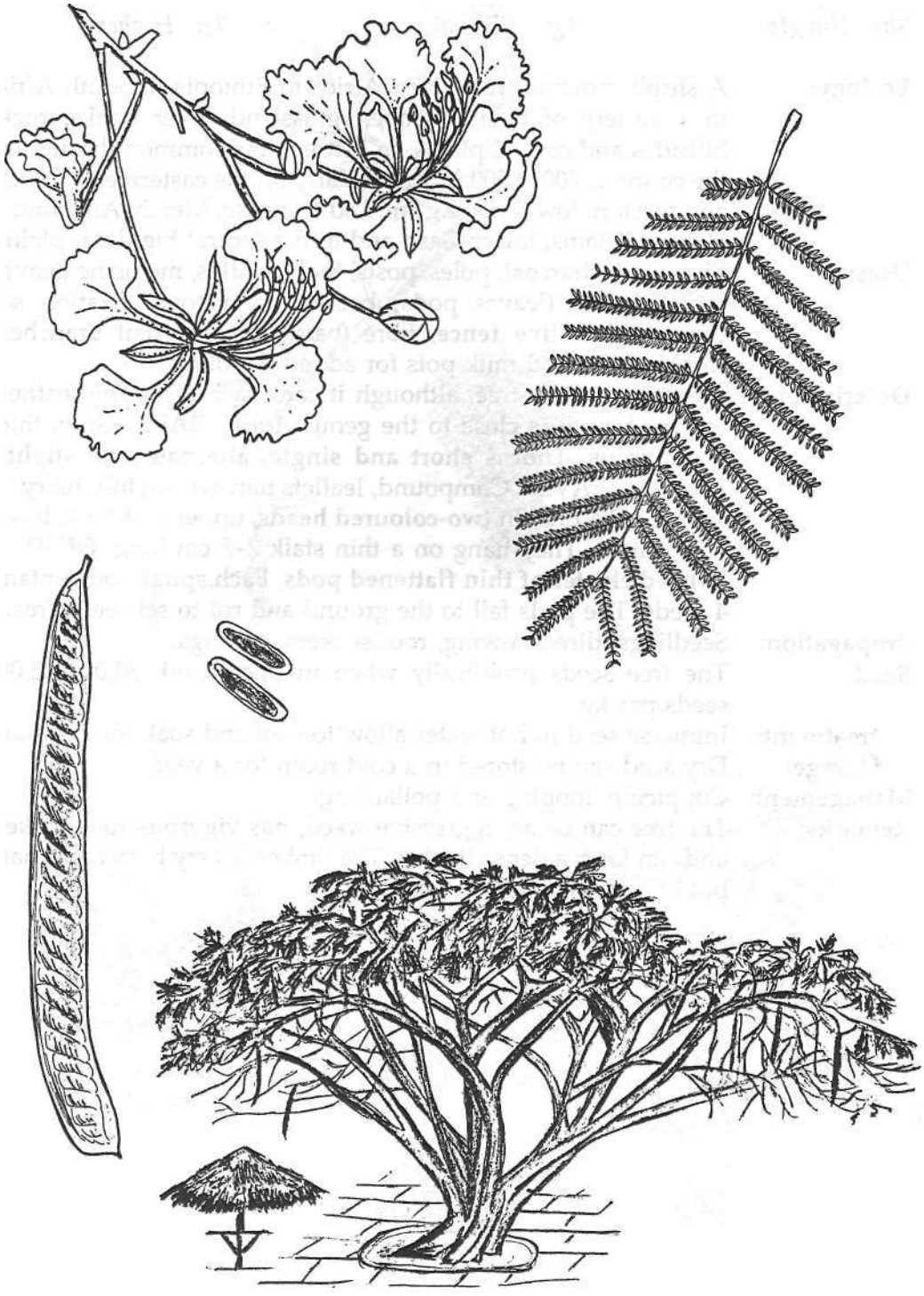
**Seed:** Seeds prolifically. High germination rate. No. of seeds per kg: 2,000-2,300.

**treatment:** Immerse seed in boiling water for 5 minutes and allow to cool.

**storage:** Seed can be stored for long periods as it is not damaged by insects.

**Management:** Coppicing.

**Remarks:** A fast-growing species which has a shallow root system making it unsuitable to grow near buildings. The dense canopy prevents its use for intercropping.



## Dichrostachys cinerea *Mimosoideae*

Indigenous

| | | |
|---|---|---|
| *An Heghetn* | *Bl: Guam* | *Km: Susa* |
| *Sh: Unugto* | *Tg: Ghonok* | *Tr: Heghem* |

**Ecology:** *A* shrub growing from West Africa to Ethiopia to South Africa in a variety of habitats—open grassland, river banks, rocky hillsides and coastal plains. In Eritrea, it is common throughout the country, 700-2,500 m, particularly on the eastern escarpment and western lowlands, e.g. around Dongolo, Mereb, Ailagundet, Hazemo plains, lower Gash and in the central highland plains.

**Uses:** **Firewood, charcoal,** poles, posts, **tool handles,** medicine (leaves, roots), **fodder** (leaves, pods), bee forage, nitrogen fixation, soil conservation, **live fence,** fibre (bark), fencing (cut branches), smoking jars and milk pots for added flavour.

**Description:** A small shrubby tree, although it can reach 6 m. The feathery leaves show it is close to the genus *Acacia.* BARK: Grey, thick and fibrous. **Thorns short and single, alternate and slightly hooked.** LEAVES: Compound, leaflets narrow, slightly hairy, to 1 cm. FLOWERS: In **two-coloured heads,** upper half pink, lower half yellow. They hang on a thin stalk 2-5 cm long. FRUIT: **A twisted cluster of thin flattened pods.** Each spiral pod contains 4 seeds. The pods fall to the ground and rot to set seeds free.

**Propagation:** Seedlings, direct sowing, root suckers, cuttings.

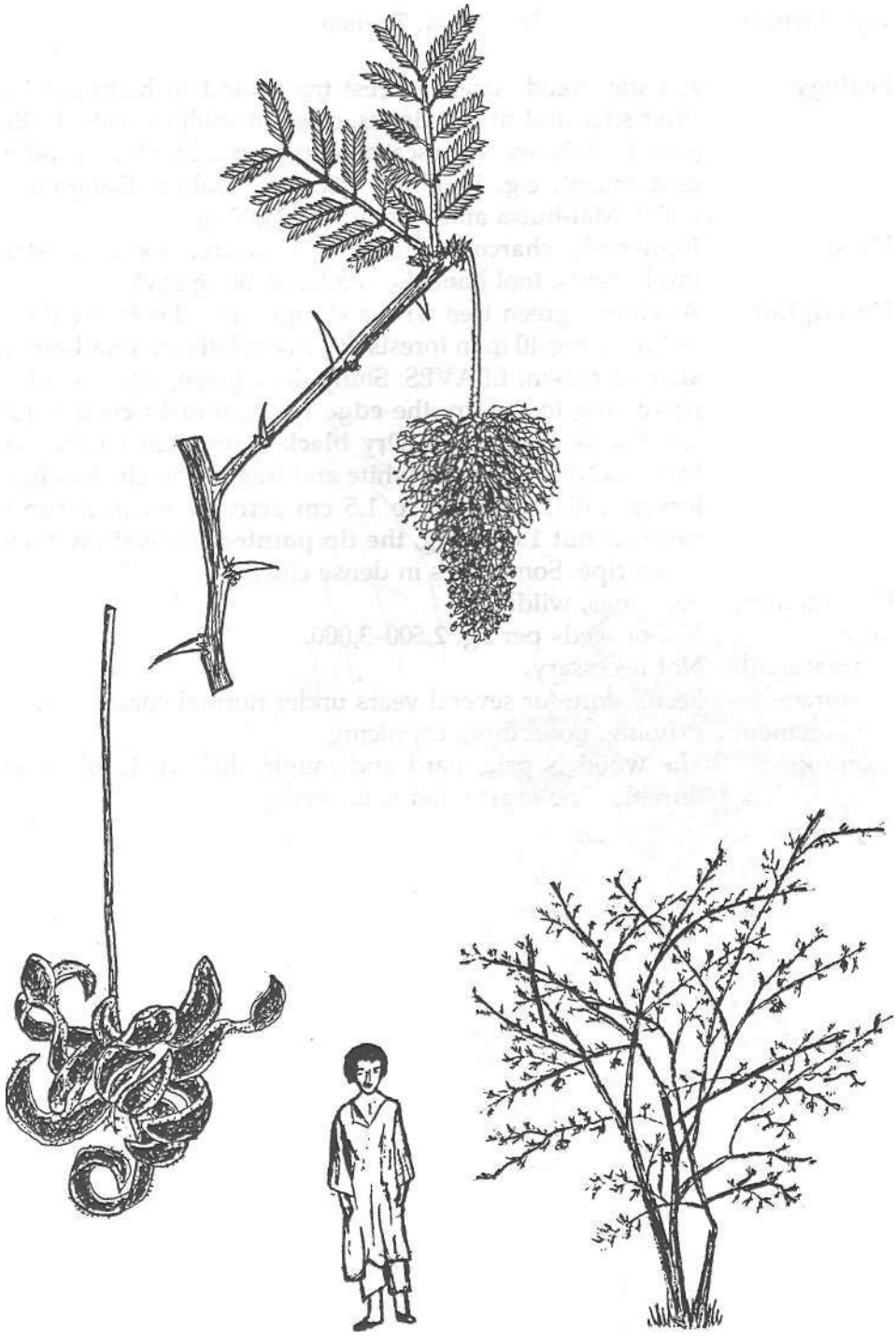
**Seed:** The tree seeds prolifically when in open land. 30,000-45,000 seeds per kg.

**treatment:** Immerse seed in hot water allow to cool and soak for 24 hours.

**storage:** Dry seed can be stored in a cold room for a year.

**Management:** Coppicing, lopping and pollarding.

**Remarks:** The tree can be an aggressive weed, has vigorous root suckers and can form a dense thicket. The timber is very heavy and hard but of quite small dimensions.



# Diospyros abyssinica *Ebenaceae*

Indigenous

*Tg: Tselimo* *Tr: Aira, Tselimo*

**Ecology:** A widespread African forest tree found in highland forest on drier sites and upper slopes, often in shallow soils. In Eritrea it grows on the eastern escarpment, central highlands and western escarpment, e.g. in Filfil, Medhanit, Sabur, Dongolo, Mensa, Nalai, Mai-hutsa and Areza, 750-2,000 m.

**Uses:** **Firewood, charcoal, timber** (furniture, local construction), implements, tool handles, shade, walking sticks.

**Description:** A tall evergreen tree with a straight, slender trunk about 20 m but reaching 40 m in forests. It has a relatively **small mushroom-shaped crown.** LEAVES: Shiny dark green, long oval to 16 cm, narrowing to the tip, the **edge wavy, midrib clear below.** The short stalk is grooved. **Dry black leaves** can be seen below **a** tree. FLOWERS: Small, white and fragrant in clusters beside the leaves. FRUIT: Round to 1.5 cm across held in a **cup-shaped calyx, about 1 cm long, the tip pointed, red-yellow then black** when ripe. Sometimes in dense clusters.

**Propagation:** Seedlings, wildings.

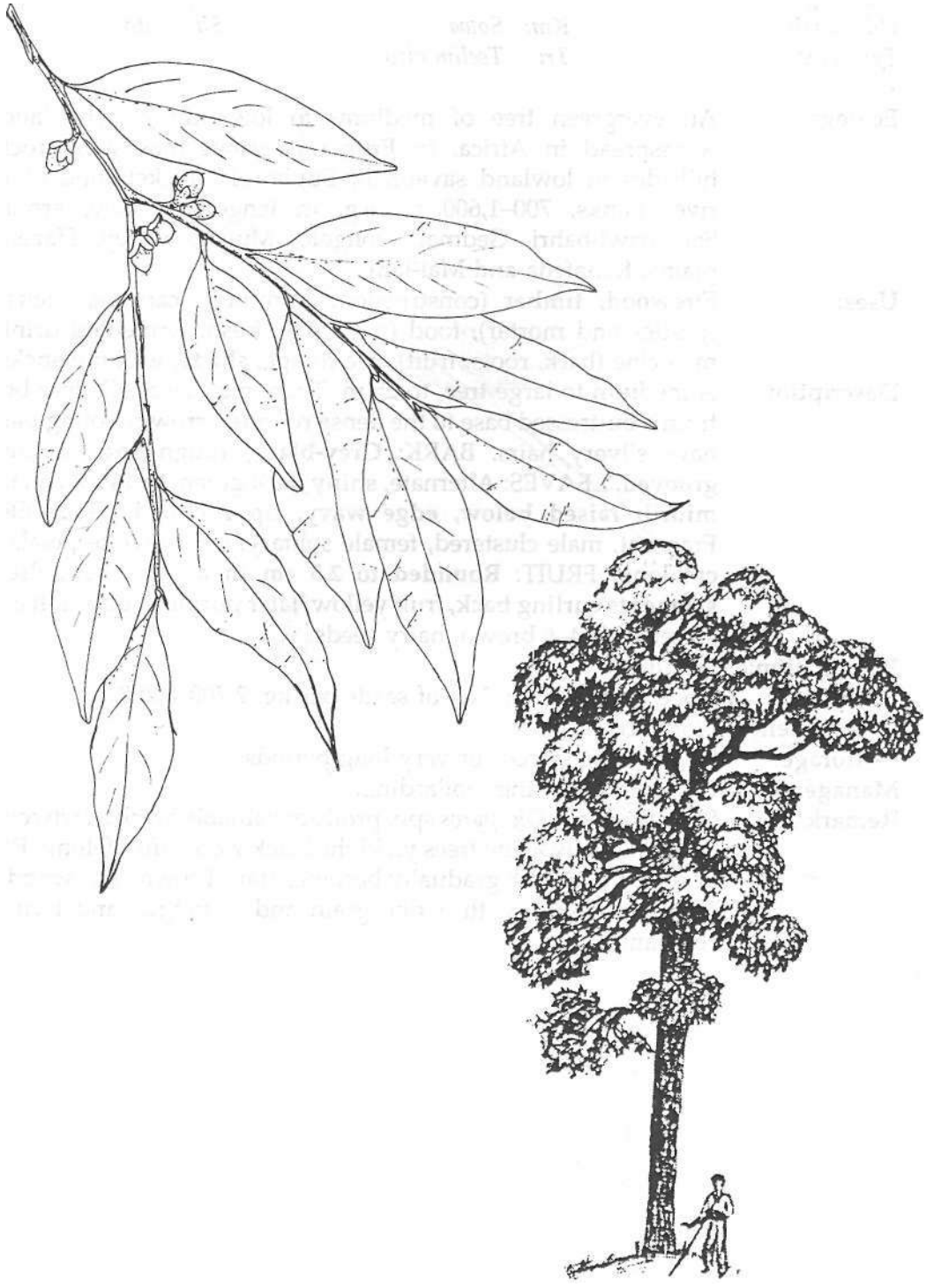
**Seed:** No. of seeds per kg: 2,500-3,000.

**treatment:** Not necessary.

storage: Seeds store for several years under normal conditions.

**Management:** Pruning, pollarding, coppicing.

**Remarks:** The wood is pale, hard and tough, difficult to plane and not durable. The heartwood is darker.



## Diospyros mespiliformis *Ebenaceae*

Indigenous

| | | |
|---|---|---|
| *Ar: Jughan* | *Bl: Aira* | *Eng: African ebony* |
| *Hd: Iriab* | *Km: Sowa* | *Sh: Aito* |
| *Tg: Aye* | *Tr: Tselim airo* | |

**Ecology:** An evergreen tree of medium- to low-altitude woodlands, widespread in Africa. In Eritrea it grows mostly on rocky hillsides in lowland savannah, Euphorbia thickets and along river banks, 700-1,600 m, e.g. in Jengeren valley, around Semenawi-bahri, Gedmai, Dongolo, Mutsub valley, Hazemo plains, Kenafena and Mai-lam.

Uses: **Firewood, timber** (construction, furniture), **carving,** utensils (pestles and mortar), food (fruit: dry, fresh, fermented drink), medicine (bark, roots, fruit), bee forage, **shade,** walking sticks.

**Description:** A medium to large tree, to 25 m. There may be a tall clear bole from a buttressed base to the dense rounded crown. Young parts have silvery hairs. BARK: **Grey-black, rough and squared, grooved.** LEAVES: Alternate, **shiny dark green, to 14 x 3 cm, the midrib raised below, edge wavy, tip rounded.** FLOWERS: Fragrant, male clustered, female solitary, cream-white petals, 1 cm long. FRUIT: **Rounded to 2.5 cm in a calyx cup, the 5 segments curling back,** fruit yellow, later purplish, pulp soft and sweet with 4-6 brown, hairy seeds.

**Propagation:** Seedlings.

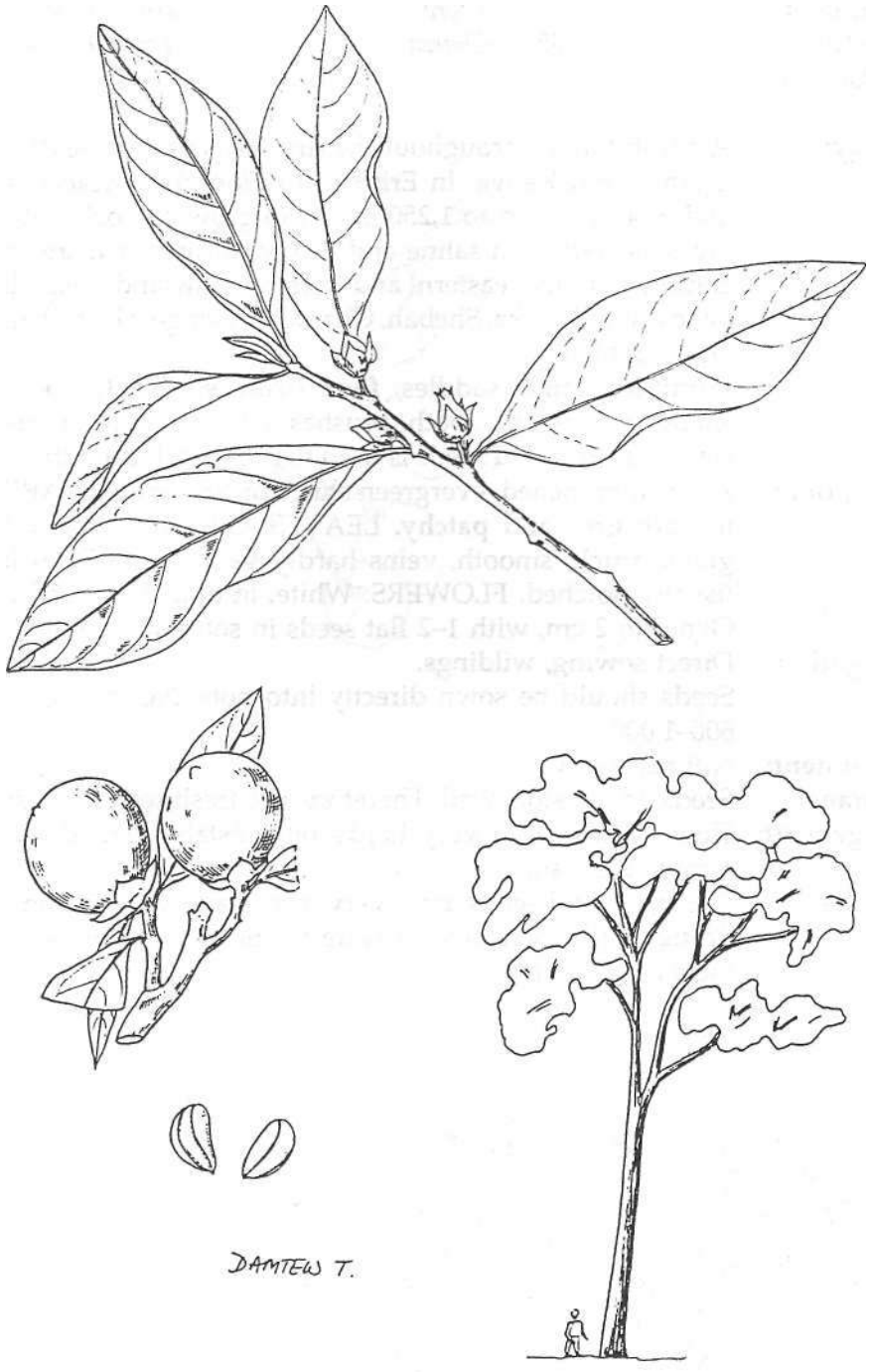
**Seed:** Good germination. No. of seeds per kg: 2,700-3,200.

**treatment:** Not necessary.

**storage:** Seed can be stored for very long periods.

**Management:** Pruning, coppicing, pollarding.

**Remarks:** Slow growing. *Diospyros* spp. produce valuable black heartwood, "ebony". Only a few trees yield the black wood after felling. Pale at first, the timber gradually becomes dark brown. The wood is hard and tough with a fine grain and is fungus and termite resistant.


DAMTEW T.

## Dobera glabra *Salvadoraceae*

Indigenous

| | | |
|---|---|---|
| *Af: Gharsa* | *Ar: Zobra* | *Hd: Mikae* |
| *Nr: Dame* | *Sh: Gharsa* | *Tg: Gharsai* |
| *Tr: Gherset* | | |

**Ecology:** A shrub found throughout the dry areas of north-east Africa to Uganda and Kenya. In Eritrea, it is found in Acacia savannah and woodland up to 1,250 m. It can grow on rocky sites in dry areas as well as in saline and heavy calcareous loam soils. It is common in the eastern and western lowlands, e.g. in Hidai valley, Wadi-labka, Shebah, Ghahtelai, Gonge, Hashishai, Boroka and Adobha.

**Uses:** Furniture, camel saddles, **food** (fruit, seeds), **fodder** (leaves), shade, containers, tooth brushes (stems), gum, **preservative** (water from boiled seeds is used to preserve local butter—*meret).*

**Description:** *A* much-branched, evergreen shrub or tree to 8 m. BARK: Green to dark **grey and patchy.** LEAVES: Opposite, yellow to **grey-green, thick,** smooth, veins hardly seen, up to 7 cm long, tip usually notched. FLOWERS: White, in branched heads. FRUIT: Ovoid to 2 cm, with 1-2 flat seeds in soft edible pulp.

**Propagation:** Direct sowing, wildings.

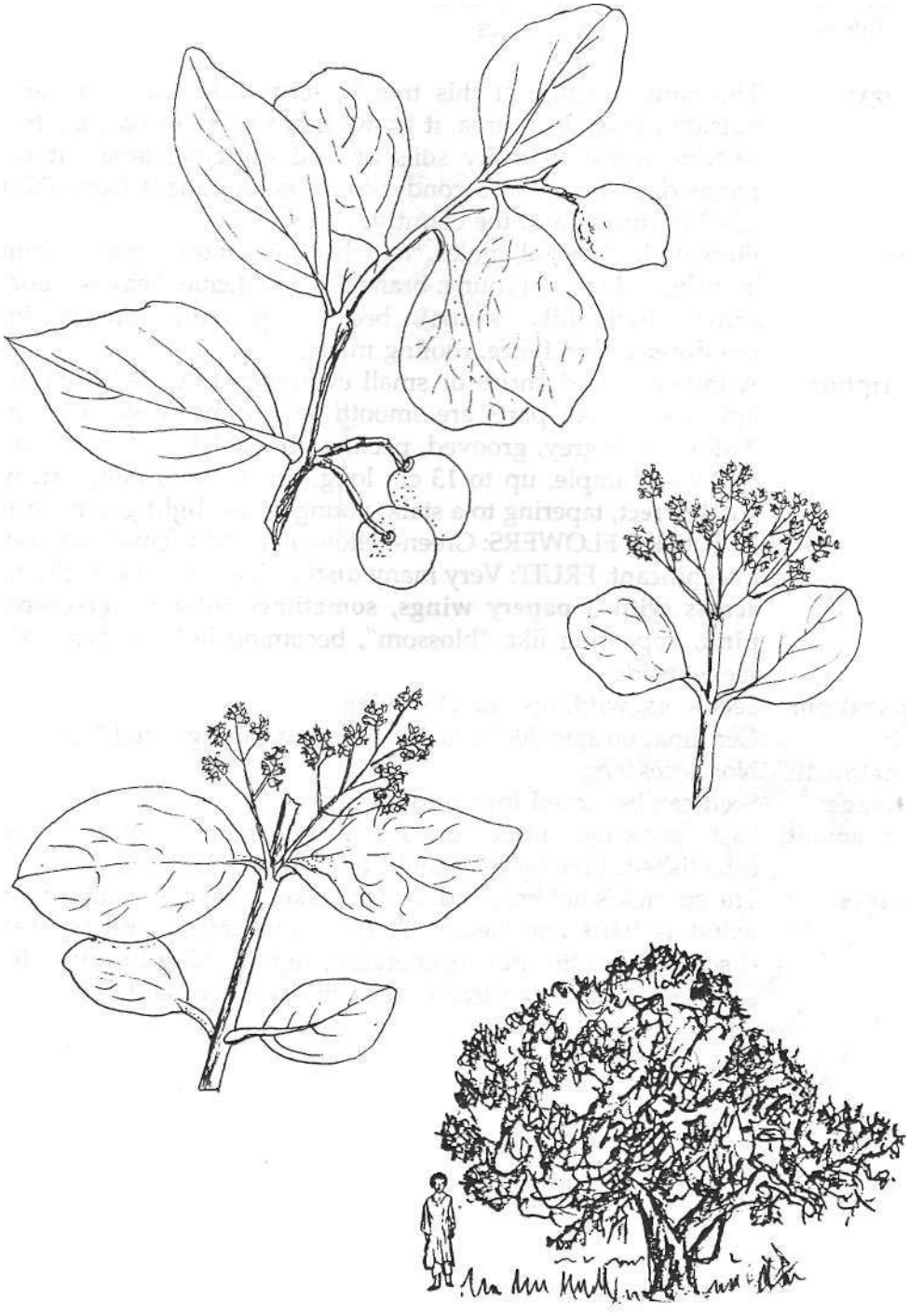
**Seed:** Seeds should be sown directly into pots. No. of seeds per kg: 600-1,000.

**treatment:** Not necessary.

**storage:** Seeds do not store well. Therefore, use fresh seed for best results.

**Management:** Slow growing but very hardy once established. Drought and termite resistant.

**Remarks:** The fruits and seeds are a very important food during times of drought. It is sensitive to waterlogging. D. *glabra* is becoming increasingly rare.



## Dodonaea angustifolia *Sapindaceae*

Indigenous

| | | |
|---|---|---|
| *Bl: Tesesa* | *Eng: Hop bush* | *Sh: Kedkida* |
| *Tg: Tahses* | **TV:** *Tases* | |

**Ecology:** The natural range of this tree is very wide, including areas outside Africa. In Eritrea, it grows in a variety of habitats from riverine forest to rocky soils or arid marginal areas. It is a pioneering species in secondary forests, dominant from 750 to 2,500 m throughout the country.

**Uses:** **Firewood,** charcoal, poles, tool handles, tooth brush (young branches), **broom** (young branches), medicine (leaves, roots), **smoke bath** (like sauna), bee forage, **soil conservation, windbreak, live fence,** roofing material.

**Description:** A thin-stemmed shrub or small evergreen tree, 3-8 m with a light crown. All parts are smooth and resinous when young. BARK: Dark grey, grooved, peeling. Branchlets red and sticky. LEAVES: Simple, up to 13 cm long, tip pointed, thin, **narrow, stiffly erect,** tapering to a stalk; young leaves **light green, shiny and sticky.** FLOWERS: Green-yellow, male and female separate, insignificant. FRUIT: Very many **distinctive capsules, each 2 cm across with 3 papery wings, sometimes inflated, green-red-pink,** appearing like "blossom", becoming light brown, small seeds inside.

**Propagation:** Seedlings, wildings, direct sowing.

**Seed:** Germination rate 30-70 %. No. of seeds per kg: ±100,000.

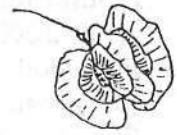
**treatment:** Not necessary.

**storage:** Seed can be stored for up to a year.

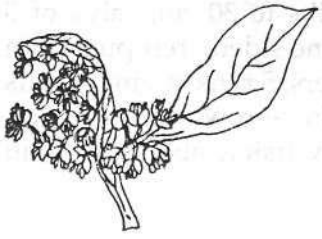
**Management:** Fast growing. Little or no management required once established. Live fences should be trimmed.

**Remarks:** The species is not browsed, which makes it easy to establish. The wood is hard and heavy. A good live fence for dry areas, susceptible to fire but regenerating rapidly after burning. It is especially useful as a tree to reclaim degraded land.

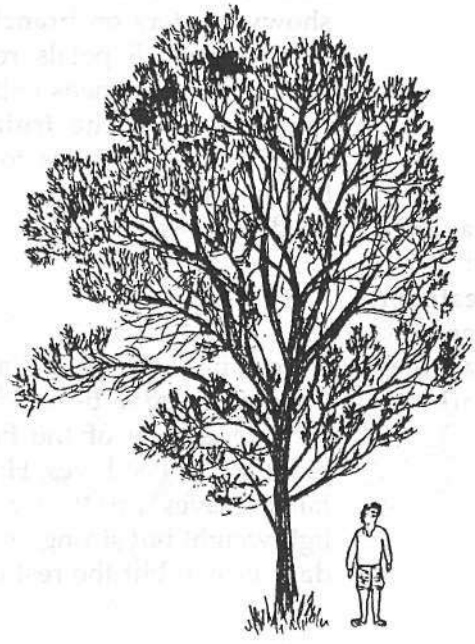
Dodonaea angustifolia *Sapindaceae*



winged fruit



male flower



## Dombeya torrida subsp. torrida *Sterculiaceae*

**(D. schimperiana, D. goetzenii)**

Indigenous

*Sh: Hambuka* *Tg: Sonqua* *Tr: Tambuk deber*

**Ecology:** A common understorey tree in the highland woodlands and forests of East Africa, the Sudan and Ethiopia, and also in Zaire and Malawi, often with Juniperus, *Rhus abyssinica* and *Olea africana.* In Eritrea, it grows **on** Mt. Bizen, Mt. Lalimba and around Rora-habab, Quahaito, Semenawi-bahri and Debresina, 1,900-2,500 m.

Uses: Firewood, **timber** (house construction, turnery), poles, **farm tools, bee forage, mulch,** soil improvement, **rope, cloth** (bark fibres).

**Description:** A deciduous shrub or **much-branched** tree, 12-15 m, with a **shady umbrella crown** and a trunk diameter about 50 cm. BARK: **Grey and smooth,** only lightly grooved with age; clear breathing pores (lenticels); inner bark thick, orange-brown, very fibrous. LEAVES: Large, hairy and **heart-shaped,** the **leaf bases overlapping,** to 30 cm long, **tip pointed,** edge sharply toothed, vein network very clear below with 5 or more veins radiating from the centre. **Young stems and leaf stalks often red.** FLOWERS: Often abundant, pale pink or white, full of nectar, in showy clusters on **branched hairy stalks** to 30 cm, calyx of 5 hairy sepals, 5 petals rounded but one-sided, red-purple in centre; many stamens with orange anthers; 5 pink stigma. **Petals remain around the fruit,** turning yellow-brown as they dry. FRUIT: Oval capsules to 1 cm, densely hairy, about 10 small brown seeds inside.

**Propagation:** Seedlings, wildings.

**Seed:**

**treatment:** Not necessary.

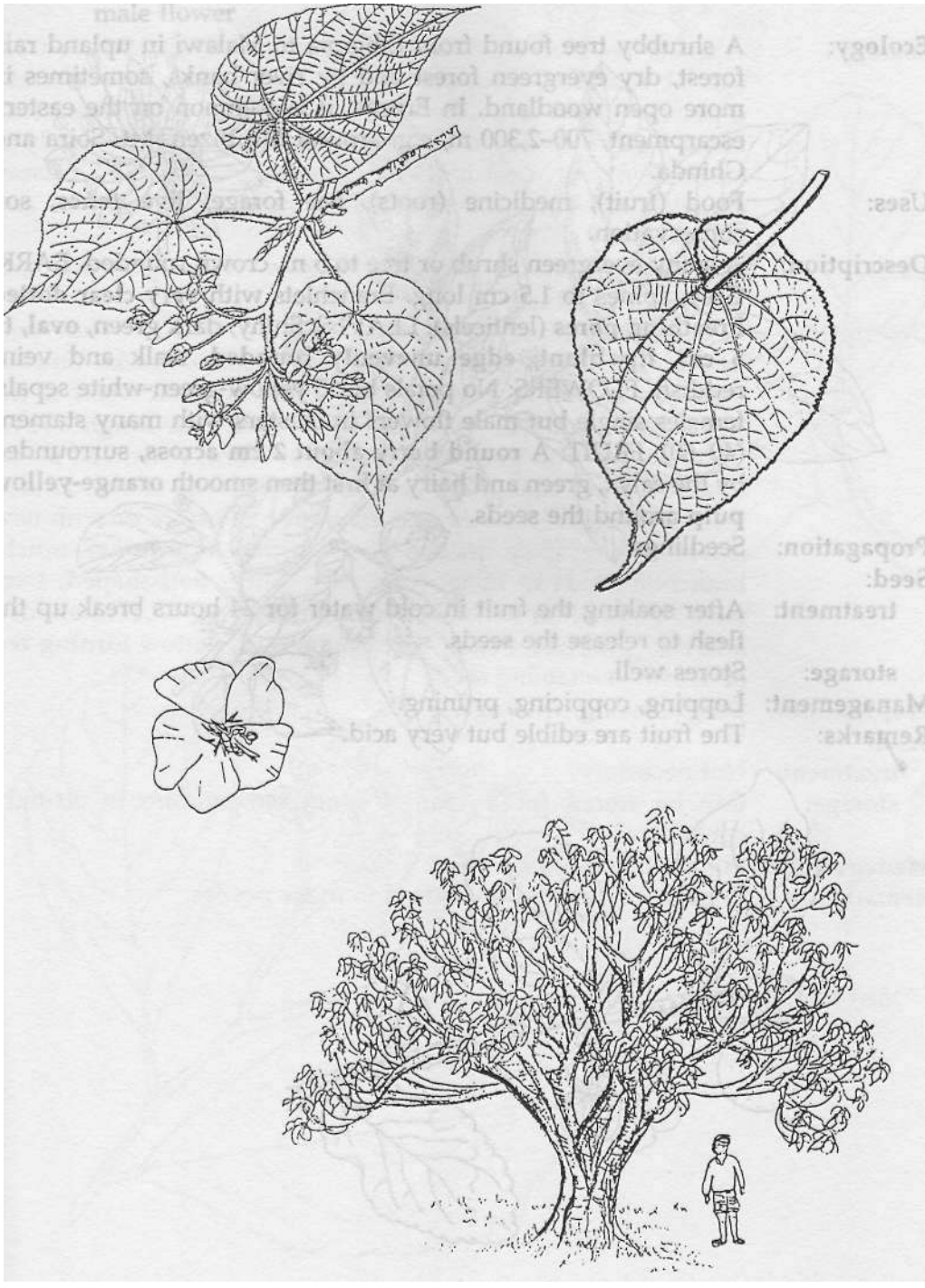
**storage:**

**Management:** Coppicing, lopping, pollarding.

**Remarks:** Bark fibres may be used to make cloth or string. The tree is considered one of the best nectar-producing trees so a good place to put bee-hives. High-quality soil may be found below as fallen leaves produce a rich mulch. The timber is soft and lightweight but strong, easy to saw and plane. The heartwood is dark brown but the rest of the wood is uniformly pale.

Dombeya torrida subsp. torrida *Sterculiaceae*

(D. schimperiana, D. goetzenii)



## Dovyalis abyssinica *Flacourtiaceae*

Indigenous

*Sh: Datahor* *Tr: Arake*

Ecology: *A* shrubby tree found from Ethiopia to Malawi in upland rain forest, dry evergreen forest and by river banks, sometimes in more open woodland. In Eritrea, **it** is common on the eastern escarpment, 700-2,300 m, e.g. around Mt. Bizen, Mt. Soira and Ghinda.

Uses: Food (fruit), medicine (roots), bee forage, **live fence,** soil conservation.

**Description:** A spiny evergreen shrub or tree to 5 m, crown rounded. BARK: Grey, spines to 1.5 cm long. Branchlets with **very clear dotted breathing pores** (lenticels). LEAVES: Shiny, dark green, **oval, to 5 cm, tip blunt, edge unevenly rounded,** stalk and veins reddish. FLOWERS: No petals but 5 yellow-green-white sepals, females single but male flowers in clusters with many stamens (40-60). FRUIT: A **round berry about 2 cm across, surrounded** by the calyx, green and hairy at first then smooth **orange-yellow pulp** around the seeds.

**Propagation:** Seedlings.

**Seed:**

**treatment:** After soaking the fruit in cold water for 24 hours break up the flesh to release the seeds.

**storage:** Stores well.

**Management:** Lopping, coppicing, pruning.

**Remarks:** The fruit are edible but very acid.

enlarged
male flower

## Ehretia amoena (E. stuhlmannii) *Boraginaceae*

Indigenous

*Eng: Sandpaper bush* *Tg: Zabia wedi mahyo* *Tr: Hal-awhi*

**Ecology:** A small tree well distributed in woodland and bushland from coastal Kenya to southern Africa, medium to low altitude, especially in hot areas. In Eritrea, it occurs in evergreen forest, usually on steep slopes and on river banks, and commonly in association with *Olea africana, Juniperus procera* and *Dodonaea angustifolia,* 1,000-2,000 m, e.g. around Nefasit, Dankur and Brikentiba.

**Uses:** Firewood, furniture, **farm implements, walking sticks, tool handles,** bee forage.

**Description:** A deciduous shrub or small tree 2-7 m. BARK: White-pale brown and smooth turning grey with shallow cracks. Smooth branches ash white. LEAVES: **Alternate,** oval but wider at the tip, almost rounded, 4-11 cm, dark green and **rough above, paler below with soft hairs** and clear veins, narrowed at the base to a short stalk, edge near tip usually with some rounded teeth. FLOWERS: **Showy and fragrant** just before or with new leaves, white (pale mauve-blue) in **loose terminal much-branched heads to 12 cm long,** each flower **bell-shaped, 1 cm with 5 pointed lobes** and bilobed central style. FRUIT: **Rounded and fleshy only 5-7 mm,** often numerous, **yellow turning red** or brown, containing seed.

**Propagation:** Direct sowing, wildings.

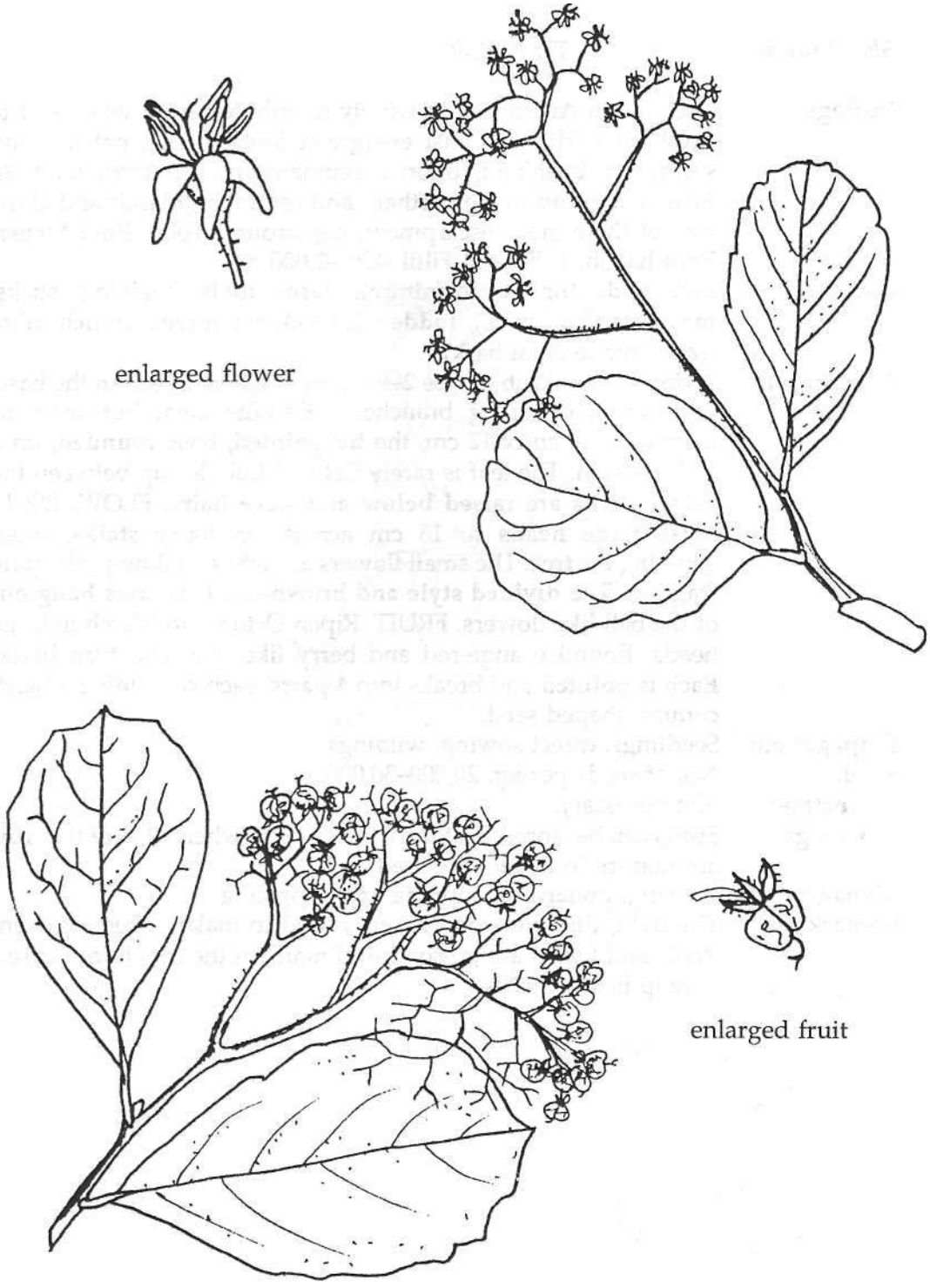
**Seed:**

**treatment:** Not necessary.

**storage:** Can be stored for a year at room temperature in air-tight containers.

**Management:** Pollarding, lopping.

**Remarks:** The hard wood has been used to make pestles.


enlarged flower
enlarged fruit

## Ehretia cymosa *Boraginaceae*

Indigenous

*Sh: Kurwah* *Tg: Kurbah*

**Ecology:** A common African plant widely distributed from west, east to southern Africa in moist evergreen forest, forest patches and secondary bushland, often a remnant tree on farm land. In Eritrea, it grows in the northern and central highlands and at the foot of the eastern escarpment, e.g. around Tobo, Rora-Mensa, Rora-habab, Tobo and Filfil, 400 -2,000 m.

**Uses:** **Firewood, timber** (furniture), **farm tools,** walking sticks, **medicine** (root juice), **fodder** (leaves), bee forage, **mulch,** fibre (ropes made from bark).

**Description:** A deciduous shrub or tree 2-9 m, often branching from the base, with weak drooping branches. LEAVES: Oval but wide or narrow to 20 cm x 12 cm, the **tip pointed, base rounded,** on a stalk 1-3 cm. The leaf is rarely flat and bubbles up between the veins. **Veins are raised below and have hairs.** FLOWERS: In **loose large heads** to 15 cm across, on **hairy stalks,** often covering the tree. The small flowers are white-yellow-pink, quite fragrant. The **divided style and brown-black anthers hang out** of the bell-like flowers. FRUIT: Ripen October to March in large heads. Round orange-red and berry like, the fruit turn black. Each is **pointed** and breaks into **4 parts,** each containing a hard, comma-shaped seed.

**Propagation:** Seedlings, direct sowing, wildings.

**Seed:** No. of seeds per kg: 20,000-30,000.

**treatment:** Not necessary.

**storage:** Seeds can be stored. Cut the fruiting head when 80 % of the fruit are mature to extract the seed.

**Management:** Pruning, pollarding, lopping and coppicing.

**Remarks:** The light, durable wood is often used to make yokes for oxen. Roots and leaves are poisonous to man but the root juice is used to help heal wounds.

## Entada abyssinica *Mimosoideae*

Indigenous

*Sh: Asena* *Tg: Halka* *Tr: Subuh*

**Ecology:** A small tree which grows from Sierra Leone and Uganda south to Angola, typically in woodlands. In Eritrea, it is mostly found on the eastern and western escarpments, e.g. around Sabur, Medhanit, Brikentiba, Beareza, Dongolo and Adi-neamen. It also grows on Mt. Lalimba, 600-1,900 m and is usually seen in association with *Combretum molle* and *Terminalia brownii.*

**Uses:** Firewood, timber (doors for local houses), medicine (roots), **fodder, nitrogen fixation,** shade, live fence, fencing (cut branches), fibre (ropes).

**Description:** A deciduous tree without thorns, 3-10 m, dense, leafy, spreading crown, flat or rounded. BARK: Grey-brown, rough or smooth. LEAVES: Compound, feathery like acacia, 4-22 pairs of pinnae on a stalk about 13 cm long, pink when young, the **leaflets narrow about 1 cm,** tip rounded. FLOWERS: **Cream-white-yellow in upright spikes,** long and **narrow to** 16 cm, sweet scented. FRUIT: Woody pods which are **long and wide, to** 39 x **8 cm,** straight but wavy. The central **1-seeded sections** break away from the woody rim of the pod leaving a **pod skeleton** on the tree. **About 10 papery winged seeds are released.**

**Propagation:** Seedlings, wildings.

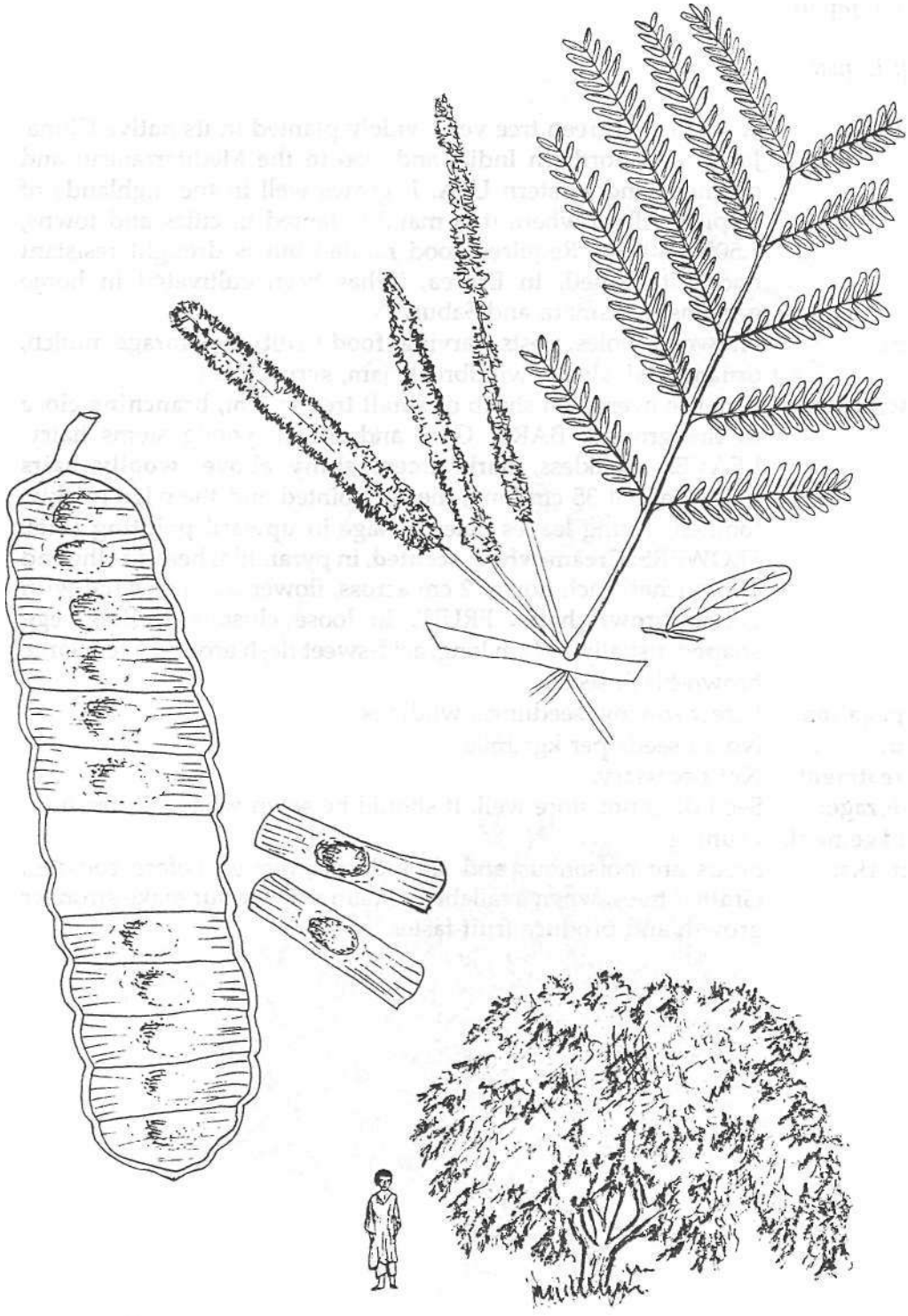
**Seed:** Germination ±70 %. No. of seeds per kg: 3,600-4,200.

**treatment:** Not necessary.

**storage:**

**Management:** Fast growing on good sites.

**Remarks:**



# Eriobotrya japonica *Rosaceae*

China, Japan

*Eng: Loquat*

**Ecology:** A small evergreen tree very widely planted in its native China, Japan and northern India, and also in the Mediterranean and southern and western USA. It grows well in the highlands of tropical Africa where it is mainly planted in cities and towns, 1,500-2,400 m. Requires good rainfall but is drought resistant once established. In Eritrea, it has been cultivated in home gardens in Asmara and Sabur.

**Uses:** Firewood, poles, posts, carving, **food (fruit), bee forage,** mulch, **ornamental,** shade, windbreak, jam, syrup (fruit).

**Description:** A dense evergreen shrub or **small tree to 7 m, branching close to the ground.** BARK: Grey and rough, young stems hairy. LEAVES: Stalkless, **dark green, shiny above, woolly hairs below,** about 35 cm long, the tip pointed and the edge prickly, toothed, young leaves paler, foliage in **upward pointing tufts.** FLOWERS: **Cream-white, scented,** in pyramidal heads at the end of branches, each flower 2 cm across, flower **buds covered with golden-brown hairs.** FRUIT: In loose clusters, **yellow, egg shaped,** usually 2-7 cm long, acid-sweet flesh around a few large brown-black seeds.

**Propagation:** Direct sowing, seedlings, wildings.

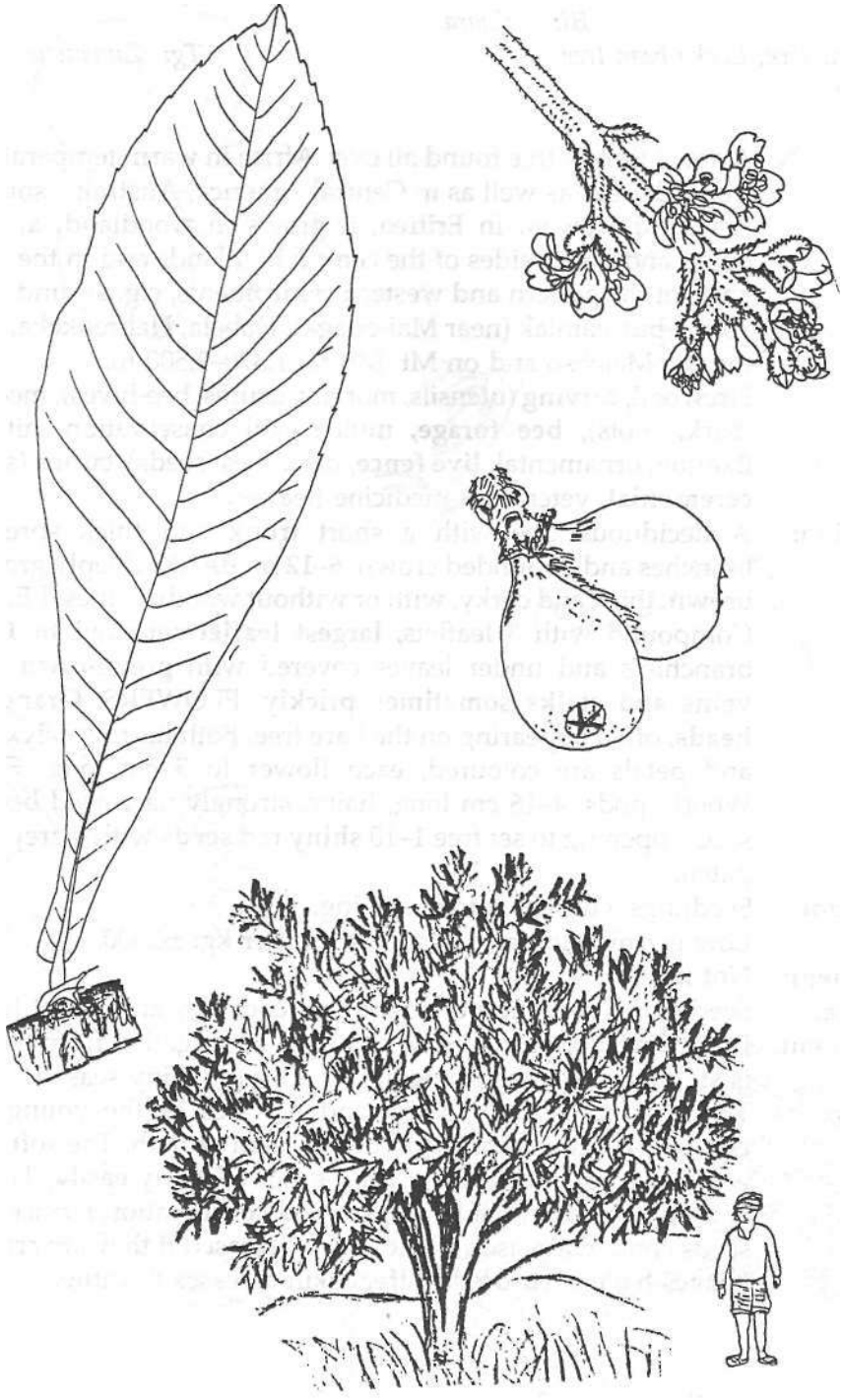
**Seed:** No. of seeds per kg: ±600.

**treatment:** Not necessary.

**storage:** Seed does not store well. It should be sown while still fresh.

**Management:** Pruning.

**Remarks:** Seeds are poisonous and should be removed before cooking. Grafted trees, when available, remain smaller but make stronger growth and produce fruit faster.



## Erythrina abyssinica *Papilionoideae*

Indigenous

*Ar: Dus* *Bl: Kuara*
*Eng: Flame tree, Lucky-bean tree* *Tg: Zuwawue*
*Tr: Felei*

**Ecology:** A small thorny tree found all over Africa in warm temperate and tropical areas as well as in Central America, Australia, southern Asia and Hawaii. In Eritrea, it grows in woodland, at forest edges and on hillsides of the central highlands and in the upper parts of the eastern and western escarpments, e.g. around Enda-abune-butseamlak (near Mai-edaga), Habela, Habrenkeka, Rora-mensa, Melebso and on Mt. Mrara, 1,300-2,500 m.

**Uses:** Firewood, **carving** (utensils, mortars, drums, bee-hives), medicine (bark, roots), **bee forage,** mulch, soil conservation, nitrogen fixation, ornamental, **live fence,** necklaces (seeds), curios (seeds), ceremonial, veterinary medicine (leaves).

**Description:** A deciduous tree with a short trunk and thick spreading branches and a rounded crown, 6-12 m. BARK: Deeply grooved, brown, thick and corky, with or without woody spines. LEAVES: Compound with 3 leaflets, **largest leaflet rounded to 15 cm;** branchlets and under leaves covered with **grey-brown hairs, veins and stalks sometimes prickly.** FLOWERS: **Orange-red heads,** often appearing on the bare tree. Both narrow calyx lobes and petals are coloured, each flower to 5 cm long. FRUIT: Woody pods, 4-16 cm long, hairy, strongly narrowed between seeds, opening to set free 1-10 **shiny red seeds** with a grey-black patch.

**Propagation:** Seedlings, cuttings, direct sowing.

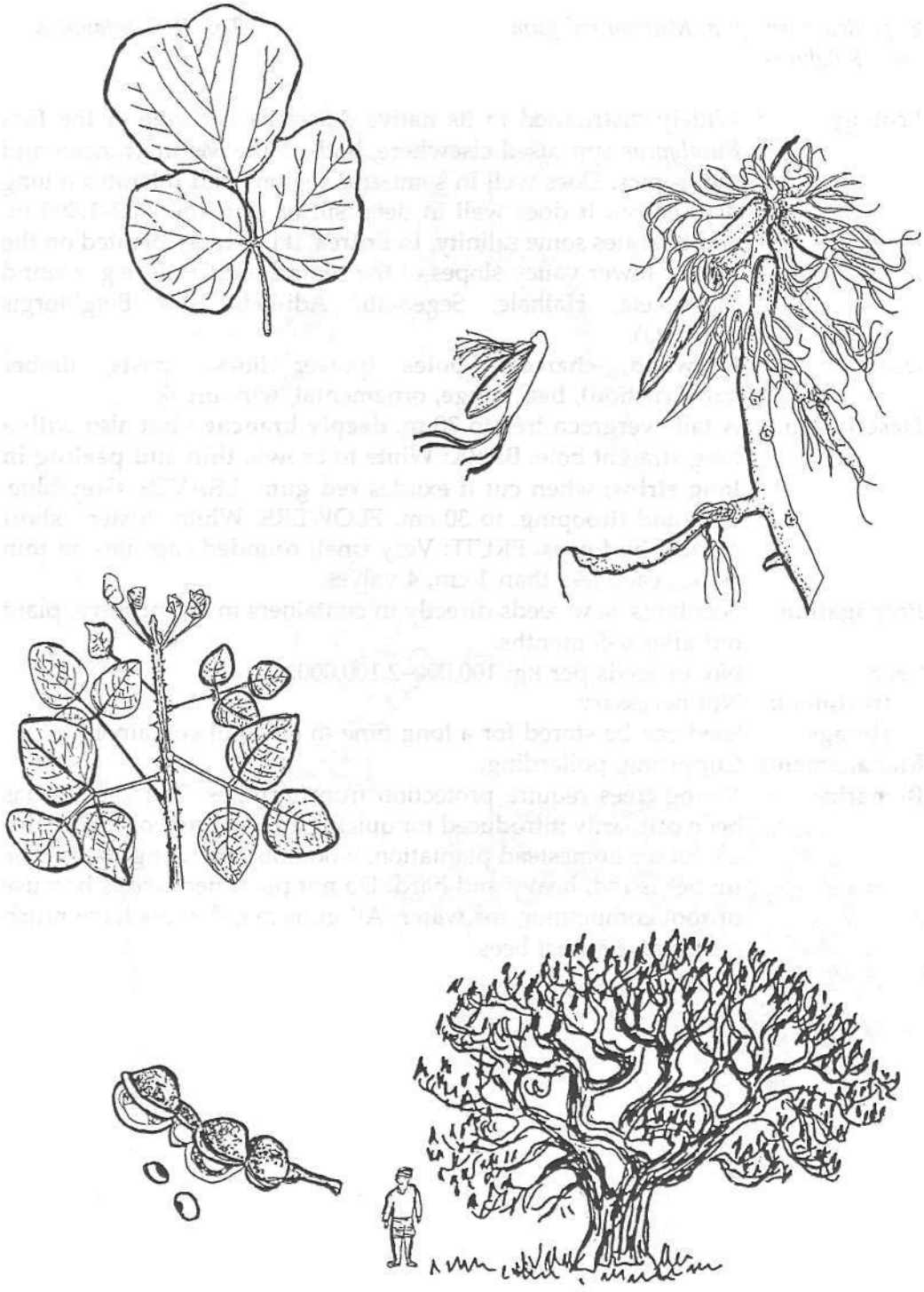
**Seed:** Low germination rate. No. of seeds per kg: ±6,800.

**treatment:** Not necessary.

**storage:** Seed stores for long periods if kept cool, dry and insect free.

**Management:** Pollarding, coppicing. Slow growing. Propagation from cuttings is successful if done immediately after the rainy season.

**Remarks:** The tree is resistant to fire and termites as the young trees establish a deep root system before stem growth. The soft white wood is a poor timber but can be carved fairly easily. The tree is used on stream banks and for soil-conservation terraces. The seeds contain a poison but it is only released if they are crushed. Leaves have been used to treat skin diseases in cattle.



## Eucalyptus camaldulensis *Myrtaceae*

Eastern Australia

*Eng: Red river gum, Murray red gum* *Tg: Keih-kelamitos*
*Tr: Kalabitos*

**Ecology:** Widely distributed in its native Australia and one of the first *Eucalyptus* spp. used elsewhere, both in the Mediterranean and the tropics. Does well in semi-arid regions and tolerates a long dry season. It does well in deep silt or clay soil, 900-1,800 m, and tolerates some salinity. In Eritrea, it is widely planted on the mid or lower valley slopes of the central highlands, e.g. around Mai-tekela, Halhale, Segenaiti, Adi-keih and Betghiorgis (Asmara).

**Uses:** **Firewood, charcoal, poles** (power lines), **posts,** timber (construction), **bee forage,** ornamental, windbreak.

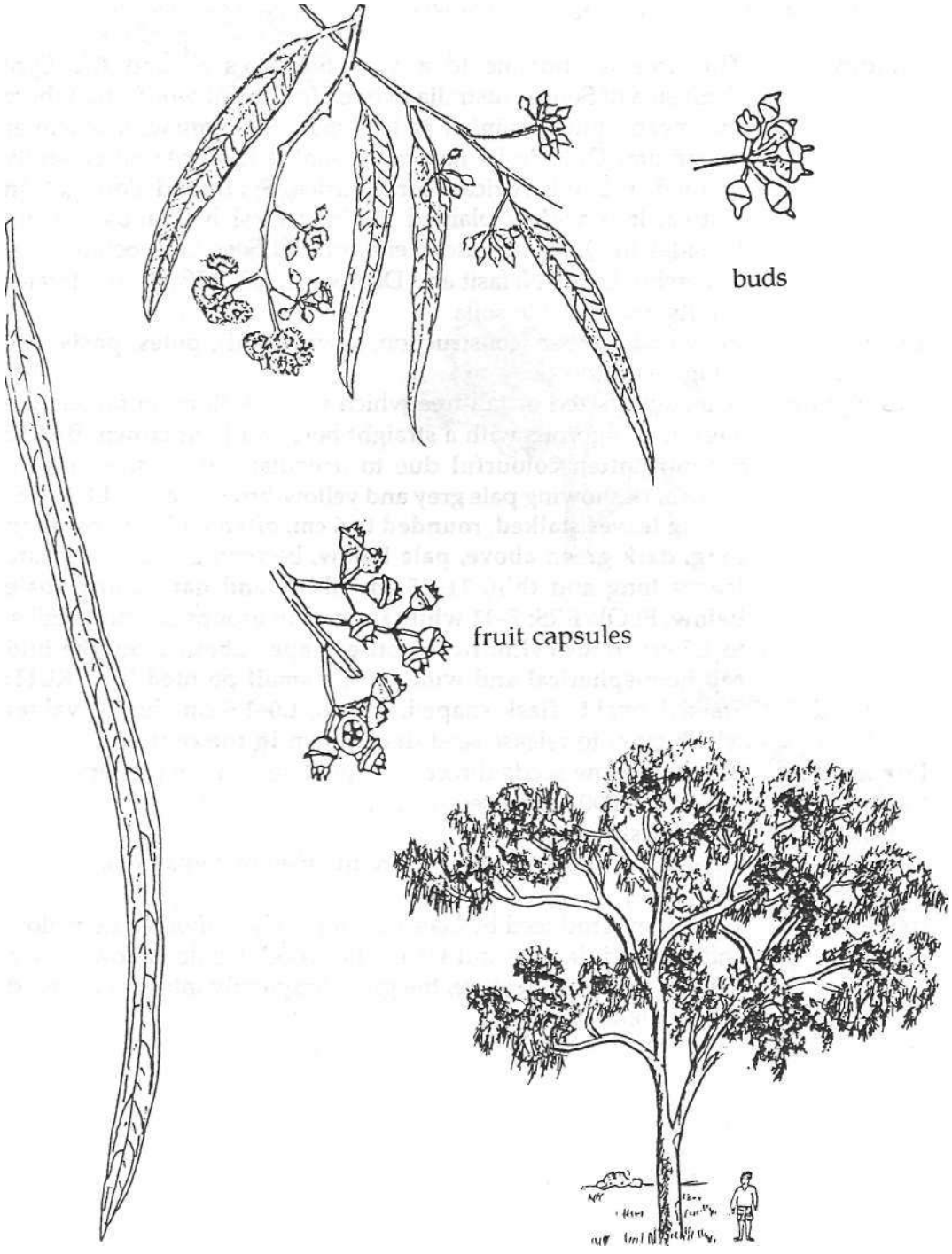
**Description:** A tall evergreen tree to 30 m, **deeply branched but** also with a long straight bole. BARK: White to brown, **thin and peeling in long strips;** when cut it exudes **red gum.** LEAVES: Grey-blue, long and drooping, to 30 cm. FLOWERS: White clusters, short **conical bud caps.** FRUIT: Very small rounded capsules on thin stalks, each less than 1 cm, 4 valves.

**Propagation:** Seedlings; sow seeds directly in containers in the nursery, plant out after 4-5 months.

**Seed:** No. of seeds per kg: 100,000-2,100,000.
**treatment:** Not necessary.
**storage:** Seed can be stored for a long time in air-tight containers.

**Management:** Coppicing, pollarding.

**Remarks:** Young trees require protection from termites. The species has been primarily introduced for quick-growing fuelwood. It is also useful for homestead plantation, woodlots and along roads. The timber is red, heavy and hard. Do not plant near crops because of root competition for water. All gum-tree flowers have much nectar and attract bees.


buds
fruit capsules

## Eucalyptus cladocalyx *Myrtaceae*

South Australia

*Eng: Sugar gum* *Tg: Keih-kelamitos* *Tr: Kalabitos*

**Ecology:** This tree is endemic to a very few sites around the Eyre Peninsula of South Australia in open forest and woodland where the mean annual rainfall is less than 600 mm with a winter maximum. Outside its natural habitat it has been successfully planted in South Africa, North Africa, Spain and Portugal. In Eritrea, it is widely planted in the central highlands, e.g. on hillsides in Quahaito catchment, around Segenaiti, Betghiorgis, Arberebu, Lessa, Nefasit and Dbarwa, 1,900-2,500 m. It tolerates acidity and infertile soils.

**Uses:** **Firewood,** timber (construction, sawn wood), **poles, posts,** bee forage, windbreak.

**Description:** A medium sized or tall tree which exceeds 30 m on favourable sites. It is vigorous with a straight bole and light crown. BARK: **Smooth, often colourful** due to irregular patchy shedding of outer bark showing pale grey and yellow-brown below. LEAVES: **Young leaves stalked, rounded to 6 cm, often wider across than long, dark green above, pale below,** becoming longer. **Mature leaves long and thin, 11-15 cm, shiny and dark above, pale below.** FLOWERS: **7-11 white flowers** in groups on short stalks, to 1.7 cm, **buds cylindrical-bottle-shaped about 1 cm, the bud cap hemispherical and wide with a small pointed tip.** FRUIT: Stalked, **oval to flask-shaped, ribbed, 1.0-1.5 cm,** the 3-4 **valves** which open to release seed **deep down in the centre.**

**Propagation:** Seedlings, sow seeds directly in containers in the nursery.

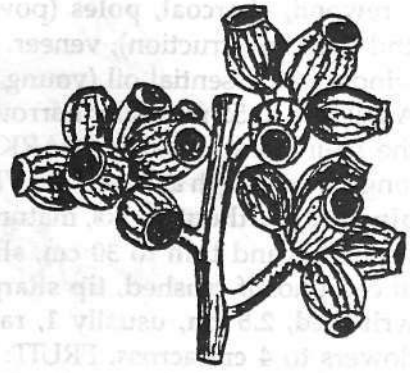
**Seed:** About 100,000 viable seeds per kg.

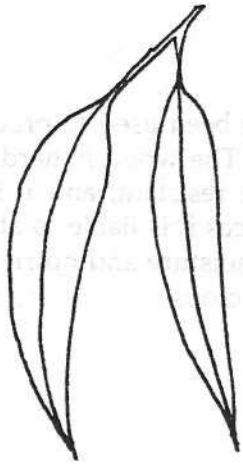
**treatment:** Not necessary.

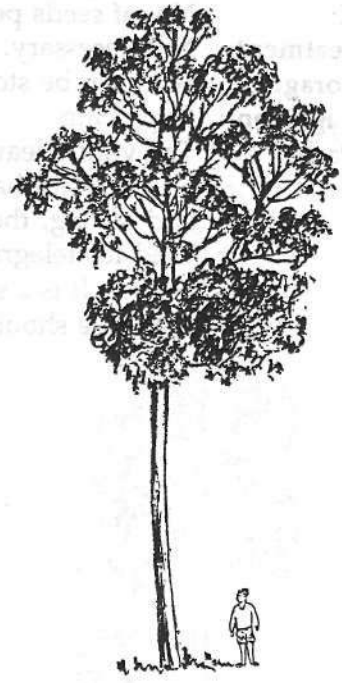
**storage:** Stores well at room temperature in air-tight containers.

**Management:** Coppicing

**Remarks:** The honey produced by bees visiting *E. cladocalyx* is pale yellow and of good density and taste. The wood is pale yellow-brown with fine uniform texture, the grain frequently interlocked, hard and moderately strong.







# Eucalyptus globulus subsp. globulus *Myrtaceae*

S.W. Australia

*Eng: Tasmanian blue gum Tg: Tsaeda-kelamitos Tr: Kalabitos*

**Ecology:** A gum tree which comes from the cooler and wetter parts of south-west Australia and is suitable for high-altitude areas as it tolerates frost. Widely planted in the central highlands of Eritrea in deep soils on lower valley slopes and in valley bottoms, e.g. around Senafe, Hawatsu, Maereba, Adi-hawisha, Tokor, Gheshnashim and Afdeyu, 2,000-3,200 m.

**Uses:** **Firewood, charcoal, poles** (power lines), **posts, timber** (heavy and light construction), veneer, plywood, medicine, bee forage, windbreak, essential oil (young leaves).

**Description:** A tall tree to 55 m, rather narrow, the crown rounded and open, the main stems straight. BARK: Blue-grey, smooth, peeling in long strips, rough at base. LEAVES: Young leaves, opposite, oval, **blue-grey without stalks,** mature leaves deep **blue-green,** shiny, very long and **thin to 30 cm, slightly curved,** stalked, smelling of camphor if crushed, **tip sharp.** FLOWERS: **Buds grey-green, wrinkled, 2.5 cm,** usually 1, rarely 2 or 3, together, the white flowers to **4 cm across.** FRUIT: Woody, **half spheres, rough, 3 cm across,** 4-angled, no stalks. Dull black seeds escape from slits.

**Propagation:** Seedlings, direct sowing at site.

**Seed:** No. of seeds per kg: 60,000-400,000.

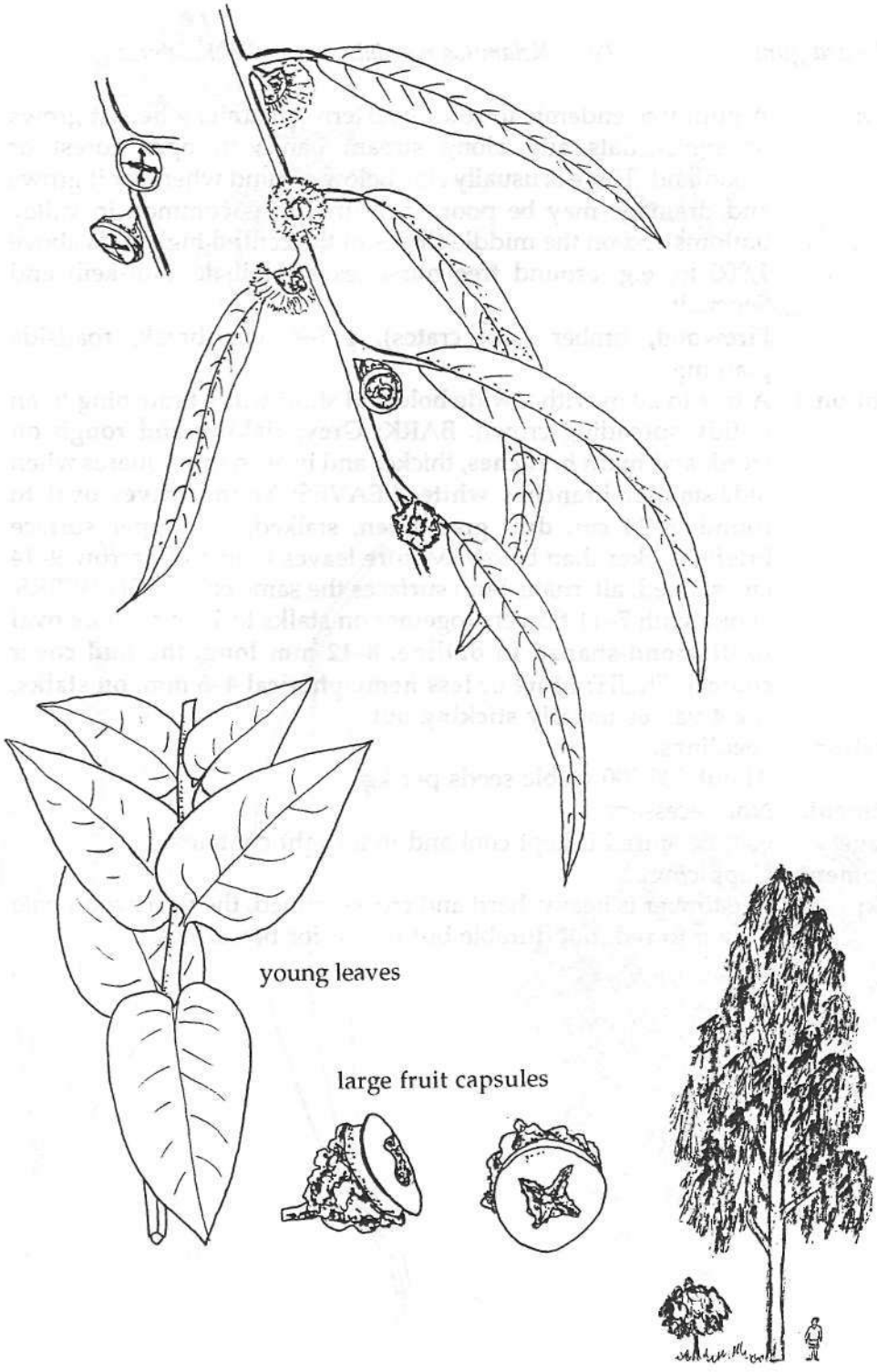
**treatment:** Not necessary.

**storage:** Seed can be stored for a long time.

**Management:** Coppicing.

**Remarks:** The young leaves of this species have been used to produce an oil used in pharmaceutical products. The wood is hard, heavy and strong, the oil making it termite resistant, and it is often used for telegraph poles. In some places it is liable to attack by beetles. It is a strong competitor for moisture and nutrients and therefore should not be planted with crops.

Eucalyptus globulus subsp. globulus *Myrtaceae*



## Eucalyptus rudis *Myrtaceae*

Western Australia

*Eng: Flooded gum* *Tg: Kelamitos megdalina* *Tr: Kalabitos*

**Ecology:** A gum tree endemic to south-western Australia where it grows on moist flats and along stream banks in open forest or woodland. There is usually clay below ground wherever it grows and drainage may be poor. In Eritrea, it is common in valley bottoms and on the middle slopes of the central highlands above 1,900 m, e.g. around tree nurseries at Halhale, Adi-keih and Segenaiti.

**Uses:** **Firewood,** timber (box crates), **poles,** windbreak, roadside planting.

**Description:** A tree to 20 m with a wide bole and short trunk branching to an untidy spreading crown. BARK: **Grey, flaking and rough on trunk and main branches,** thicker and broken into squares when old, **smaller branches white.** LEAVES: **Young leaves oval to round, 8-14 cm, dull grey-green,** stalked, the upper surface briefly darker than below. Mature leaves long and narrow 9-14 cm, stalked, alternate, both surfaces the same colour. FLOWERS: White with 7-11 flowers together on stalks to 1.5 cm. **Buds oval to diamond-shaped in outline, 8-12 mm long, the bud cover conical.** FRUIT: **More or less hemispherical 4-6 mm, on stalks, the 4 valves usually sticking out.**

**Propagation:** Seedlings.

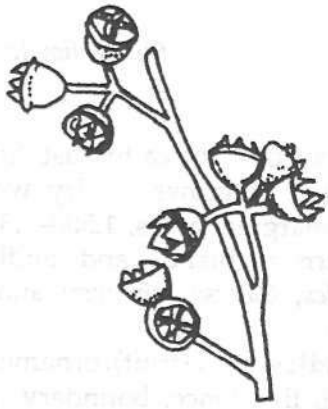
**Seed:** About 600,000 viable seeds per kg.

**treatment:** Not necessary.

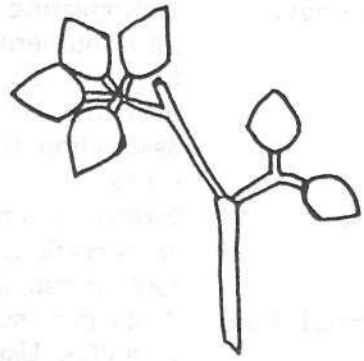
**storage:** Can be stored if kept cool and in airtight containers.

**Management:** Coppicing.

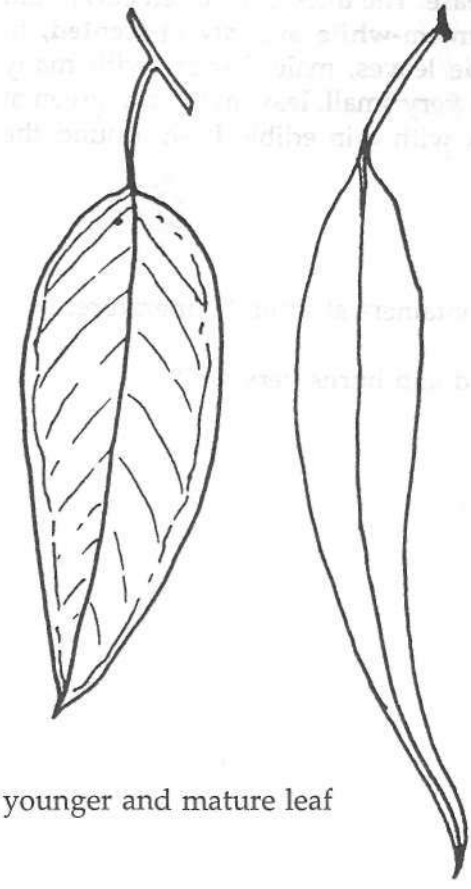
**Remark:** The timber is heavy, hard and cross-grained, the heartwood pale brown to red, not durable but useful for box crates.



mature open fruit



bud shapes



younger and mature leaf

## Euclea schimperi (E. racemosa) *Ebenaceae*

Indigenous

| | | |
|---|---|---|
| *Ar: Ugum* | *Bl: Kiliaw* | *Sh: Kiliawto* |
| *Tg: Kiliaw* | *Tr: Gum* | |

**Ecology:** A pioneering shrub that occurs from Eritrea to East Africa and into southern Africa. In Eritrea, it grows in dry woodland, bushland, riverine forest and marginal areas, 1,500-2,300 m all over the central and northern highlands and midlands in association with *Acacia ethbaica, Carissa schimperi* and *Carissa edulis.*

**Uses:** **Firewood, farm tools, tool handles,** food (fruit), ornamental, soil conservation, roofing material, live fence, boundary marking, tooth brush, smoke bath (like sauna), medicine.

**Description:** A shrub or small tree 3-4 m. BARK: Grey-black, rather smooth. LEAVES: Usually **opposite, shiny** and leathery, dark green above but **dull and pale below, long, oval, about** 5 **cm,** the tip rounded, narrowing to the base. The thick edge often curls right under. FLOWERS: Small, **cream-white and** sweet-scented, in short sprays to 8 cm, beside leaves, male flowers with many stamens. FRUIT: Round and very small, **less than 1 cm,** green at first, **ripening purple-black** with thin edible flesh around the seeds.

**Propagation:** Seedlings, wildings.

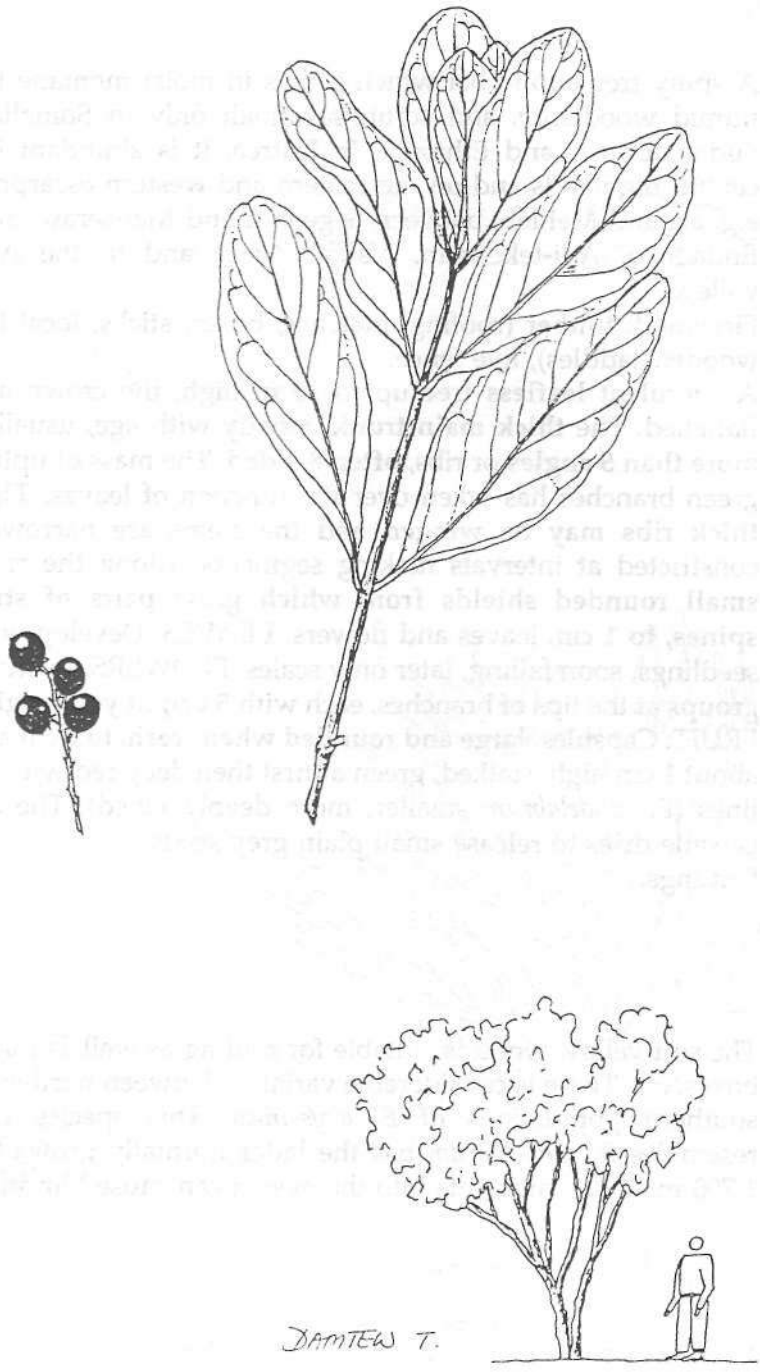
**Seed:**

**treatment:** Not necessary.

**storage:** Can be stored in air-tight containers at room temperature.

**Management:** Coppicing.

**Remarks:** The wood is heavy and hard and burns very well.


DAMTEW T.

## Euphorbia abyssinica *Euphorbiaceae*

Indigenous

*Ar: Shajaret al sim* *Bl: Kulankala* *Tg: Kolqual*
***Tr:*** *Kulunqual*

**Ecology:** A spiny tree euphorbia which grows in moist montane forest, humid woodlands and scrub savannah only in Somalia, the Sudan, Eritrea and Ethiopia. In Eritrea, it is abundant in the central highlands and on the eastern and western escarpments, e.g. around Mehlab, between Segenaiti and Mai-seraw, around Endadeko, Adi-tekelezan, Nakfa, Areza and in the Anseba valley.

**Uses:** Firewood, **timber** (roofing, matches, boxes, sticks, local tables, wooden saddles), live fence.

**Description:** A succulent **leafless tree** up to 10 m high, the crown almost flattened. The **thick main trunk,** woody with age, usually has **more than 5 angles** or ribs, **often 8-sided.** The mass of upturned green branches has taken over the function of leaves. **The 3-8 thick ribs may be winged** and the stems are narrowed or constricted at intervals making segments. Along the ribs are **small rounded shields from which grow pairs of straight spines, to 1 cm,** leaves and flowers. LEAVES: Develop only on seedlings, soon falling, later only scales. FLOWERS: In crowded groups at the tips of branches, each with **5 bright yellow glands.** FRUIT: Capsules, **large and rounded when fresh, to 2 cm across,** about 1 cm high, stalked, green at first then deep red with white lines (E. *candelabrum* smaller, more deeply lobed). The 3-part capsule dries to release small plain grey seeds.

**Propagation:** Cuttings.

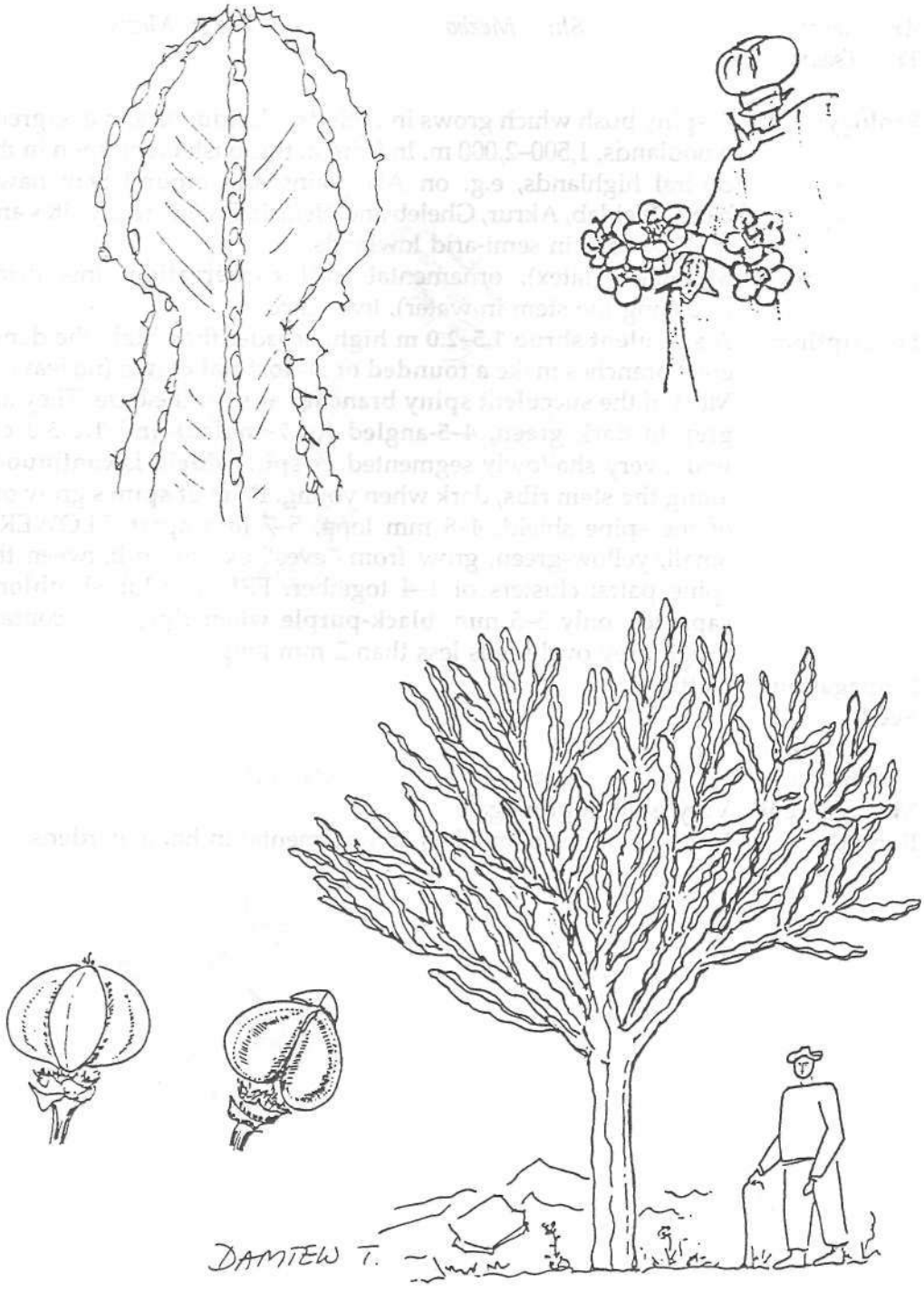
**Seed:**

**treatment:**

**storage:**

**Management:**

**Remarks:** The soft yellow wood is suitable for roofing as well as matches, boxes, etc. There is considerable variation between northern and southern populations of *E. abyssinica.* This species closely resembles E. *candelabrum* but the latter normally grows below 1,700 m. If the latex gets into the eyes it can cause blindness.


DAMTEW T.

## Euphorbia polyacantha *Euphorbiaceae*

Indigenous

*Ar: Kerat* *Sh: Mezba* *Tg: Mezba*
*Tr: Tsaan*

**Ecology:** A spiny bush which grows in both dry deciduous and evergreen woodlands, 1,500-2,000 m. In Eritrea, this bush is common in the central highlands, e.g. on Ala plains and around Semenawi-bahri, Mehlab, Akrur, Gheleb and Nefasit. Prefers rocky sites and shallow soils in semi-arid lowlands.

**Uses:** **Medicine** (latex), ornamental, **soil conservation,** insecticide (crushing the stem in water), live fence.

**Description:** A **succulent shrub 1.5-2.0 m high,** broader than high, the dense erect branches make a **rounded or almost flat crown** (no leaves). Most of the **succulent spiny branches** arise at the base. They are **grey to dark green, 4-5-angled (to 7-angled) and 1.2-3.0 cm wide,** very shallowly segmented. A **spine shield is continuous along the stem ribs,** dark when young. **Pairs of spines** grow out of the spine shield, 4-8 mm long, 5-7 mm apart. FLOWERS: Small, yellow-green, grow from "eyes" exactly in between the spine pairs; clusters of 1-4 together. FRUIT: **3-lobed, oblong capsules,** only 3-5 mm; **black-purple when ripe,** they contain rough grey oval seeds less than 2 mm long.

**Propagation:** Cuttings.

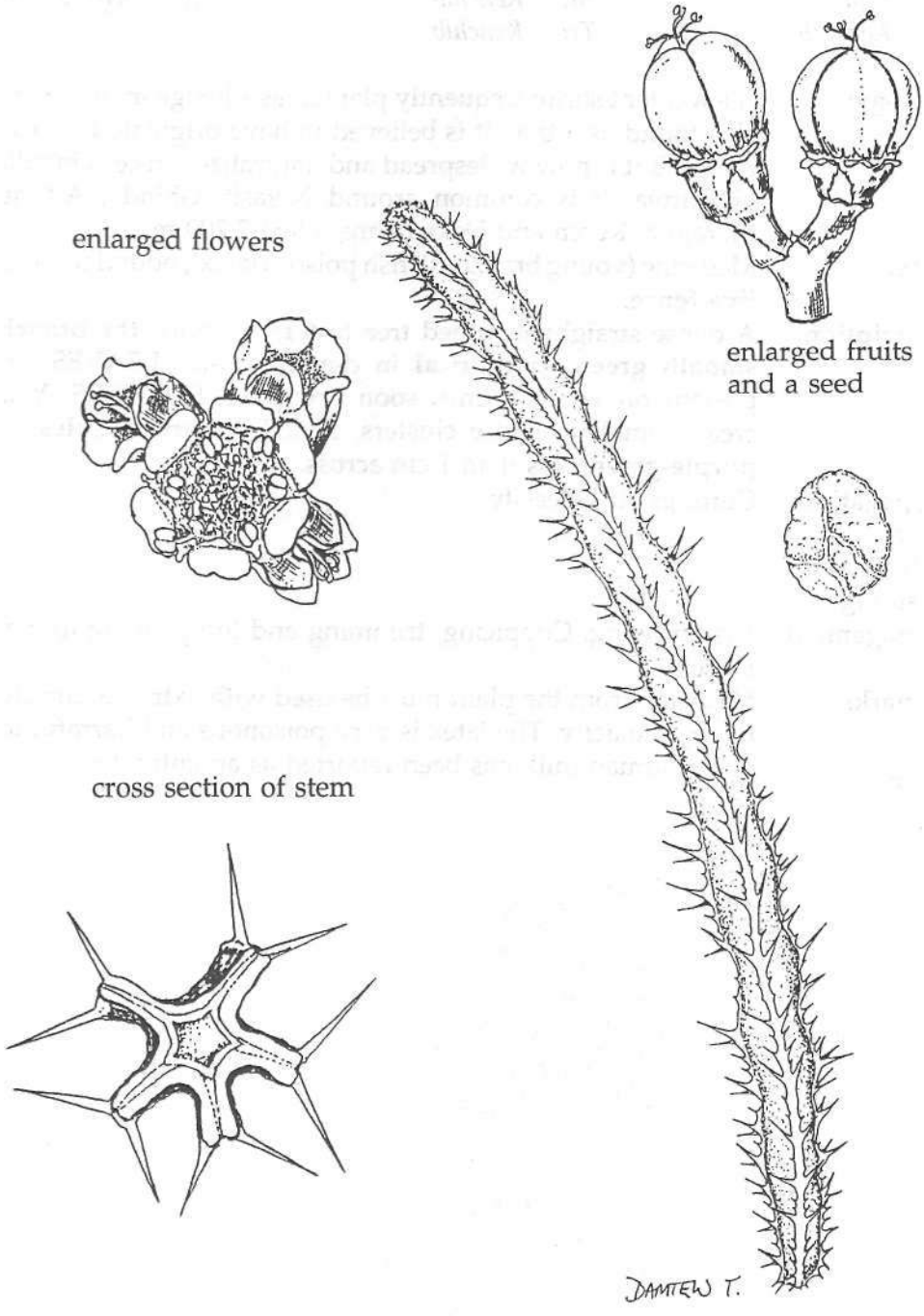
**Seed:**

**treatment:**

**storage:**

**Management:** Very easy to propagate.

**Remark:** It is sometimes planted as an ornamental in home gardens.


enlarged flowers
enlarged fruits
and a seed
cross section of stem
DAMTEW T.

## Euphorbia tirucalli *Euphorbiaceae*

Tropical Africa

| | | | | |
|---|---|---|---|---|
| *Ar:* | *Injil* | *Bh* | *Kenchib* | *Eng: Finger euphorbia* |
| *Tg:* | *Kenchib* | *Tr:* | *Kenchib* | |

**Ecology:** A succulent shrub frequently planted as a hedge in dry areas but also found as a tree. It is believed to have originated in tropical Africa, but is now widespread and naturalized in certain villages of Eritrea. It is common around Nefasit, Ghinda, Adi-quala, Meraguz, Keren and Dekemhare, 1,500-2,200 m.

**Uses:** Medicine (young branches), fish poison (latex), boundary marker, **live fence.**

**Description:** A dense straight-stemmed tree to 6 m or more, **the branchlets smooth green, cylindrical** in dense masses. LEAVES: Small, present on young stems, soon dropping. FLOWERS: Yellow-cream, small in dense clusters. FRUIT: **3-part capsules, hard, purple-green,** less than 1 cm across.

**Propagation:** Cuttings strike easily.

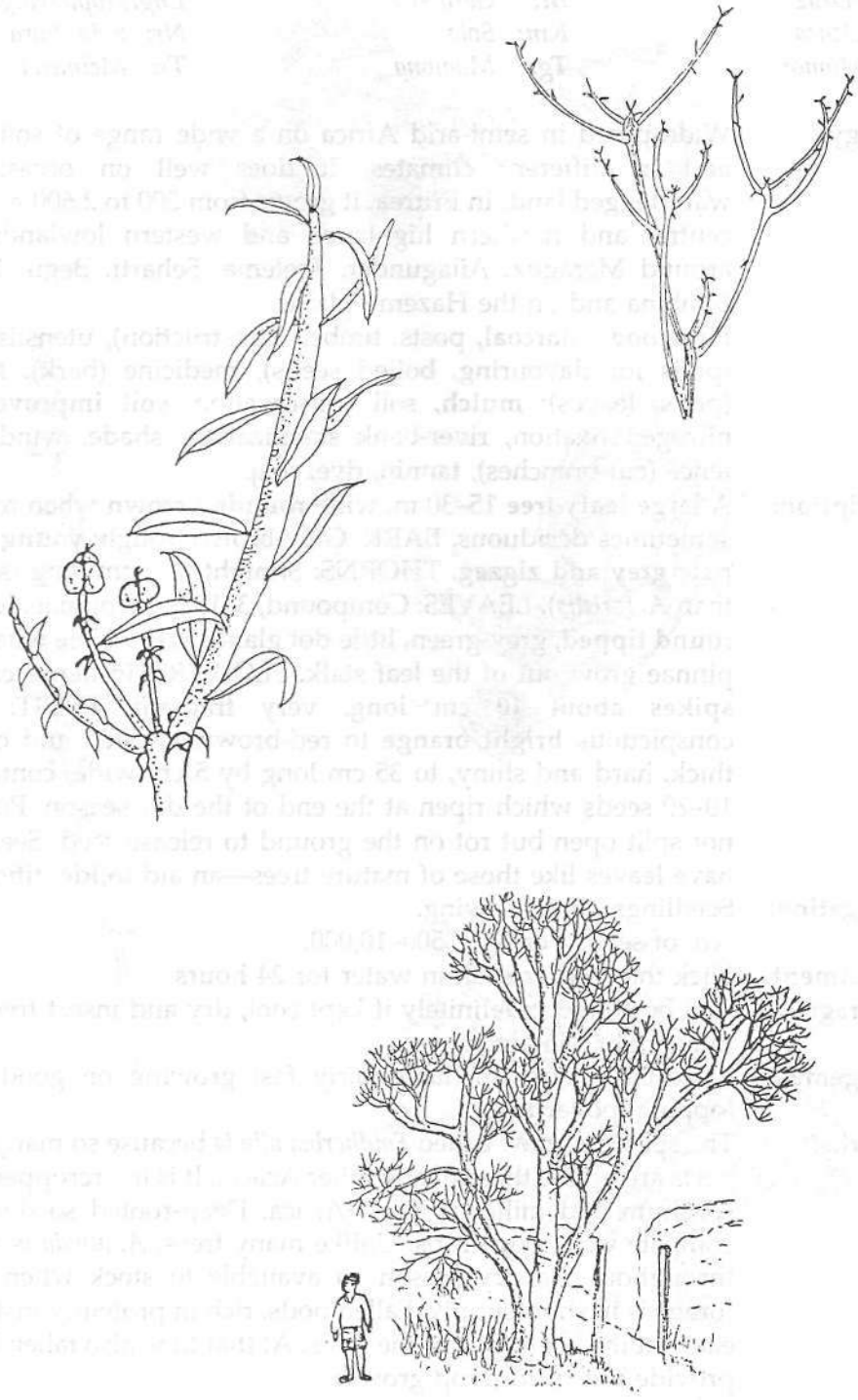
**Seed:**

**treatment:**

**storage:**

**Management:** Fast growing. Coppicing, trimming and top pruning to make a fence.

**Remarks:** Medicine from the plant must be used with extreme care due to its high toxicity. The latex is very poisonous and harmful to the eyes. Human milk has been reported as an antidote.



## Faidherbia albida (Acacia albida) *Mimosoideae*

Indigenous

| | | |
|---|---|---|
| *Ar: Haraz* | *Bl: Gerbesha* | *Eng: Apple-ring acaci a* |
| *Hd: Ochea* | *Km: Sola* | *Nr: Sola, Sora* |
| *Sh: Momon* | *Tg: Momona* | *Tr: Melmelet* |

**Ecology:** Widespread in semi-arid Africa on a wide range of soil types and in different climates. It does well on occasionally waterlogged land. In Eritrea, it grows from 500 to 2,600 m in the central and northern highlands and western lowlands, e.g. around Meraguz, Ailagundet, Tselema, Seharti, Begu, Nakfa, Bimbina and on the Hazemo plains.

**Uses:** **Firewood, charcoal,** posts, timber (construction), utensils, food (pods for flavouring, boiled seeds), medicine (bark), **fodder** (pods, leaves); **mulch,** soil conservation, **soil improvement,** nitrogen fixation, river-bank stabilization, shade, windbreak, fence (cut branches), tannin, dye, soap.

**Description:** A **large leafy tree** 15-30 m, wide **rounded crown** when mature, sometimes deciduous. BARK: Grey-brown, rough; **young twigs pale grey and zigzag.** THORNS: Straight to 2 cm long (shorter than *A. tortilis).* LEAVES: Compound, 3-10 pairs pinnae, **leaflets round tipped,** grey-green, little dot glands just visible where the pinnae grow out of the leaf stalk. FLOWERS: In dense **creamy spikes about 10 cm long,** very fragrant. FRUIT: Pods conspicuous **bright orange** to red-brown, twisted and curled, thick, hard and shiny, to 35 cm long by 5 cm wide, containing 10-20 seeds which ripen at the end of the dry season. Pods do not split open but rot on the ground to release seed. Seedlings have leaves like those of mature trees—an aid to identification.

**Propagation:** Seedlings, direct sowing.

**Seed:** No. of seeds per kg: 7,500-10,000.

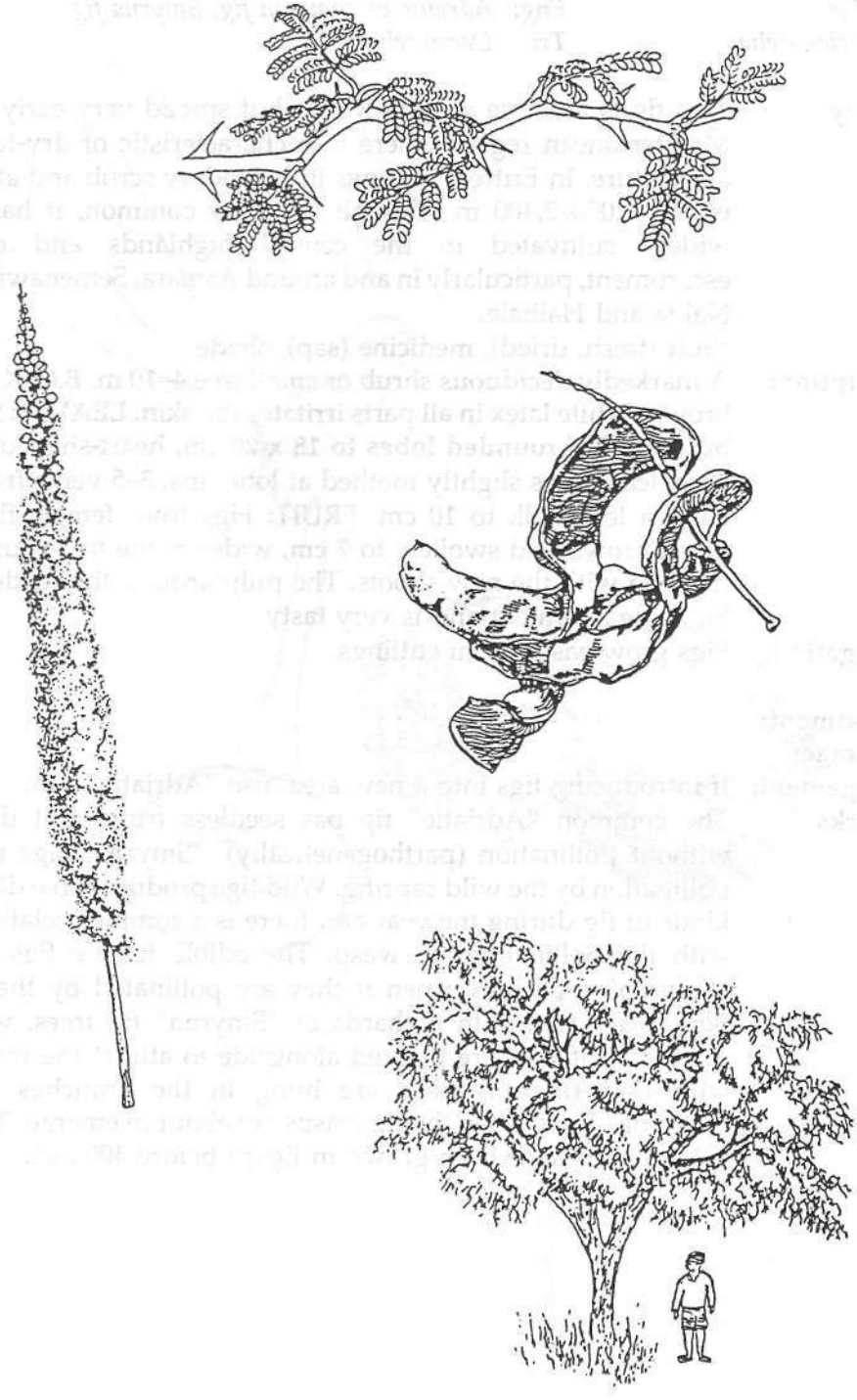
**treatment:** Nick the seed or soak in water for 24 hours.

**storage:** Can be stored indefinitely if kept cool, dry and insect free; best in air-tight containers.

**Management:** Slow initial growth, later fairly fast growing on good sites; lopping, pollarding.

**Remarks:** The species is now called *Faidherbia albida* because so many of its parts are unlike those of any other Acacia. It is intercropped with sorghum and millet in West Africa. Deep-rooted so does not compete with food crops. Unlike many trees, *A. albida* is in leaf throughout the dry season so available to stock when other forage is in short supply. Fallen pods, rich in protein, can also be eaten at the beginning of the rains. At that time also fallen leaves provide mulch for crop growth.

Faidherbia albida (Acacia albida) *Mimosoideae*



# Ficus carica *Moraceae*

N.W. Turkey, Eastern Mediterranean

*Ar:* *Tin*
*Beles -telian*

*Eng:* *Adriatic or common fig, Smyrna fig*
*Tr:* *Daero-telian*

Ecology: This fig is a native of Asia Minor but spread very early to the Mediterranean region where it is characteristic of dry-farming agriculture. In Eritrea, it grows in secondary scrub and at forest edges, 1,000-2,400 m. Though not very common, it has been widely cultivated in the central highlands and eastern escarpment, particularly in and around Asmara, Semenawi-bahri, Nakfa and Halhale.

Uses: Fruit (fresh, dried), medicine (sap), shade.

Description: A markedly deciduous shrub or small tree 4-10 m. BARK: Grey-brown. White latex in all parts irritates the skin. LEAVES: Simple but with 3-5 rounded lobes to 18 x 20 cm, heart-shaped at the base, leaf edges slightly toothed at lobe tips, 3-5 veins from the base, a leaf stalk to 10 cm. FRUIT: Figs from female flowers, green-brown and swollen, to 7 cm, wider at the tip. Young figs develop with the new shoots. The pulp around the seeds has a high sugar content and is very tasty.

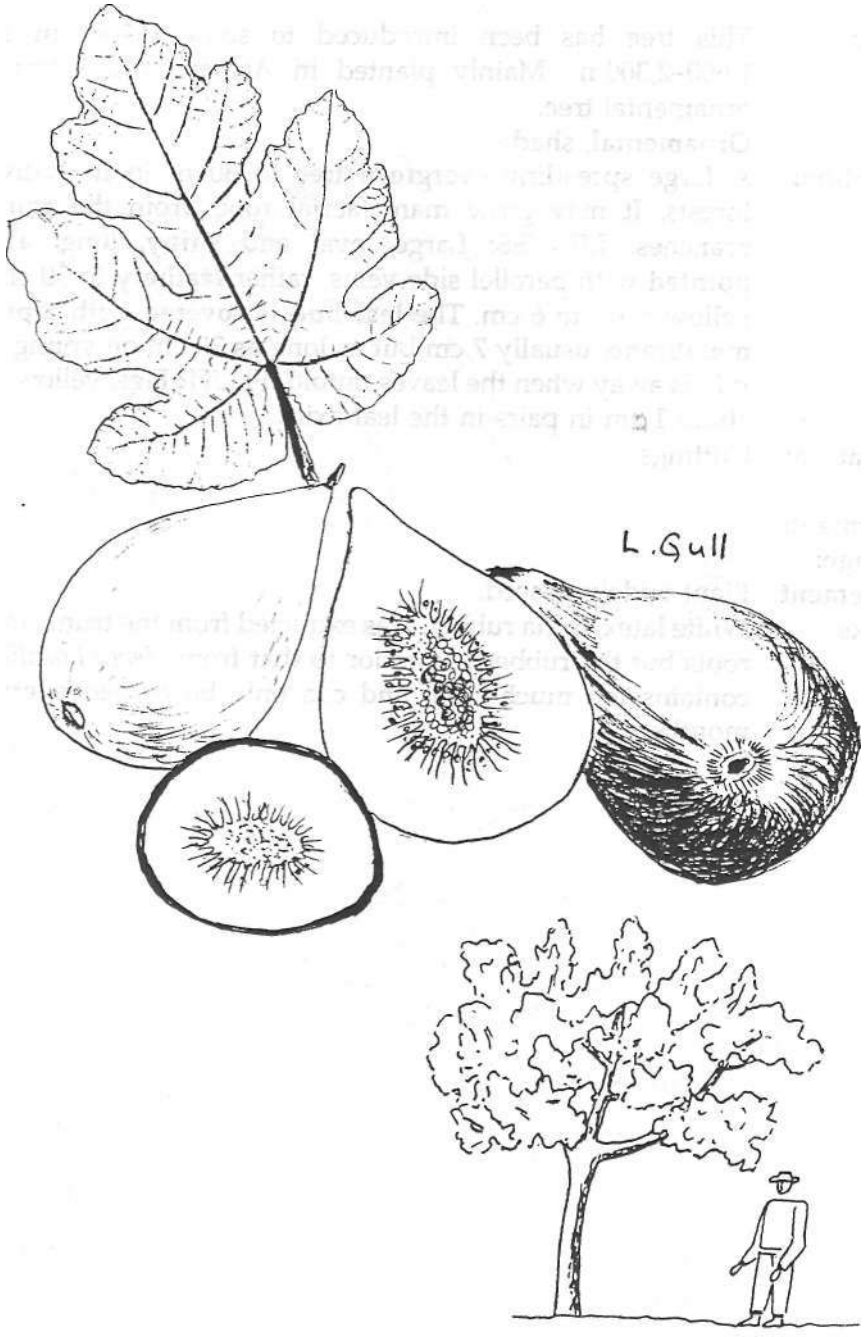
Propagation: Figs grow easily from cuttings.

Seed:
treatment:
storage:

Management: If introducing figs into a new area, use "Adriatic" figs.

Remarks: The common "Adriatic" fig has seedless fruits that develop without pollination (parthogenetically). "Smyrna" figs require pollination by the wild caprifig. Wild figs produce three different kinds of fig during the year and there is a complex relationship with the pollinating fig wasp. The edible female figs of the "Smyrna" type only ripen if they are pollinated by the wasp *Blastophaga psenes.* In orchards of "Smyrna" fig trees, wild or male "caprificus" are planted alongside to attract the wasps or wild flowering branches are hung in the branches of the "Smyrna" trees when the fig wasps are about to emerge. This fig is known to have been grown in Egypt before 4000 BC.

Ficus carica *Moraceae*



## Ficus elastica *Moraceae*

Malaysia, India

*Eng: India rubber tree, Rubber plant*

**Ecology:** This tree has been introduced to some places in Eritrea, 1,600-2,300 m. Mainly planted in Asmara and Sabur as an ornamental tree.

**Uses:** **Ornamental,** shade.

**Description:** A large spreading evergreen tree to 30 m in its native rain forests. It may grow many aerial roots from the trunk and branches. LEAVES: Large, oval and **shiny,** long, **abruptly pointed** with parallel side veins, rather **leathery** to 30 cm, on a yellow stalk to 6 cm. The **leaf bud is covered with a pink-red membrane,** usually 7 cm but as long as 30 cm on young plants. It falls away when the leaves unfold. FRUIT: Figs, yellow oblong about 1 cm in pairs in the leaf axils.

**Propagation:** Cuttings.

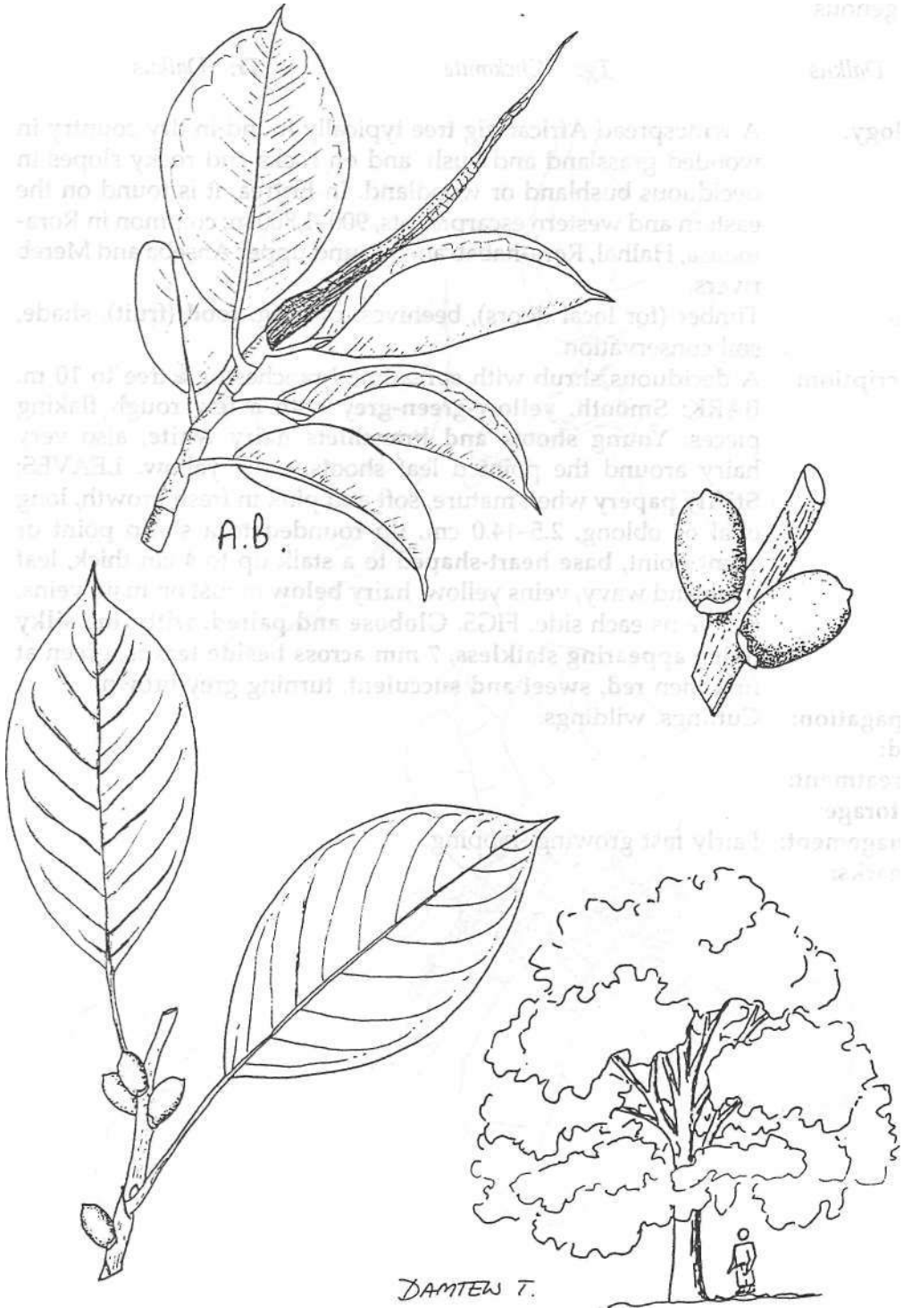
**Seed:**

**treatment:**

**storage:**

**Management:** Plant widely spaced.

**Remarks:** White latex, India rubber, was extracted from the trunk and prop roots but the rubber is inferior to that from *Hevea brasiliensis.* It contains too much resin and can only be tapped every three months.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## Ficus glumosa *Moraceae*

Indigenous

*Bl: Dalkus* *Tg: Chekomte* *Tr: Dalkus*

**Ecology:** A widespread African fig tree typically found in dry country in wooded grassland and bush, and on rocks and rocky slopes in deciduous bushland or woodland. In Eritrea, it is found **on** the eastern and western escarpments, 900-1,800 m; common in Rora-mensa, Halhal, Rora-habab and around upper Anseba and Mereb rivers.

**Uses:** Timber (for local doors), beehives, **carving, food** (fruit), shade, soil conservation

**Description:** A deciduous shrub with spreading branches or a tree to 10 m. BARK: **Smooth, yellow-green-grey** with a few rough flaking pieces. **Young shoots and branchlets hairy white,** also very hairy around the pointed leaf shoots, long, yellow. LEAVES: Stiffly **papery** when mature, soft and pink in fresh growth, long oval or oblong, 2.5-14.0 cm, tip rounded to a sharp point or blunt point, **base heart-shaped** to a stalk up to 4 cm thick, leaf thick and wavy, veins yellow, **hairy below** or just on main veins, 6-7 veins each side. FIGS: **Globose and paired, with fine silky hairs, appearing stalkless, 7 mm across beside leaves,** green at first then **red, sweet and succulent,** turning grey-brown.

**Propagation:** Cuttings, wildings.

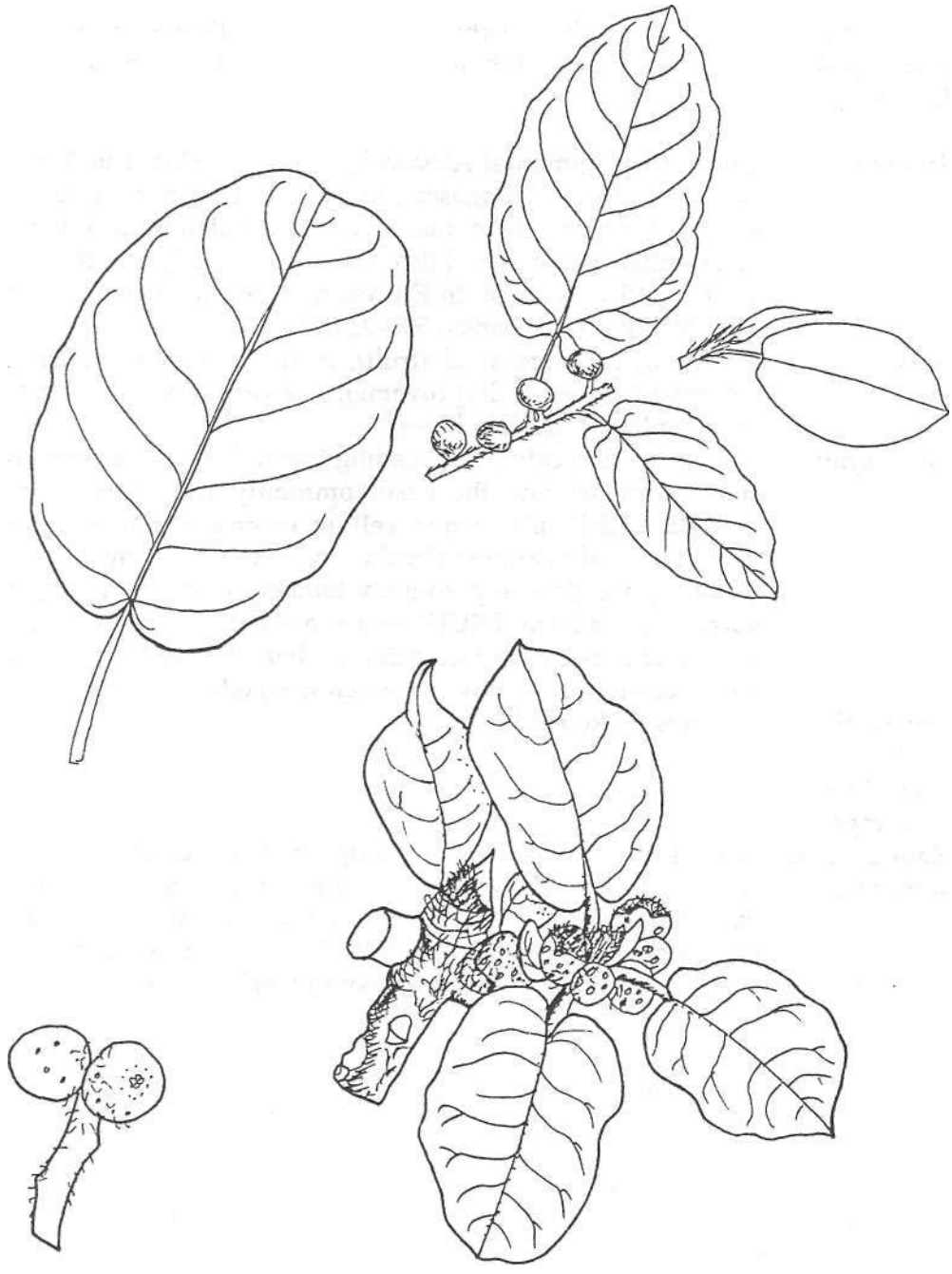
**Seed:**

**treatment:**

**storage:**

**Management:** Fairly fast growing, lopping.

**Remarks:**



## Ficus sycomorus *Moraceae*

Indigenous

| | | |
|---|---|---|
| *Af: Subula* | *Bl: Bamba* | *Eng: Sycamore fig* |
| *Km: Saghila* | *Sh: Subula* | *Tg: Saghla* |
| *Tr: Shaghla* | | |

**Ecology:** One of the commonest African fig trees occurring from Egypt to Namibia and in Madagascar, often in drier country and found along rivers and lake margins, in woodlands and wooded grasslands, evergreen bushlands, forest edges and forest clearings, 500-2,400 m. In Eritrea, it grows all over the country mainly along river banks, 500-2,100 m.

**Uses:** Firewood, carvings, food (fruit), **medicine** (latex), mulch, soil conservation, **soil improvement, river-bank stabilization,** ornamental, shade, bee hives.

**Description:** A large semi-deciduous spreading tree to 25 m, sometimes with stem buttresses and the **base commonly spreading over the ground.** BARK: Distinctive **yellow to cream-brown, smooth.** LEAVES: Oval to **almost circular,** to 15 cm, upper surface rough to touch, margin wavy, roughly toothed, **base heart shaped,** a **hairy stalk to 3 cm.** FRUIT: In leaf axils or in dense clusters on main branches and trunk, **each rounded, usually to 2.5 cm long, wider at the tip, yellow-red when ripe,** edible.

**Propagation:** Cuttings strike readily.

**Seed:**

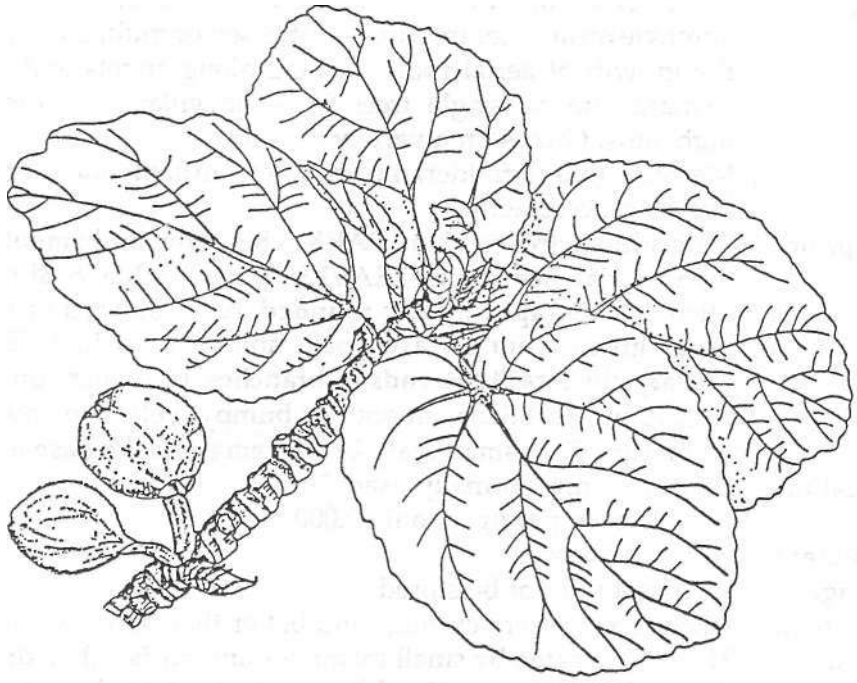
**treatment:**

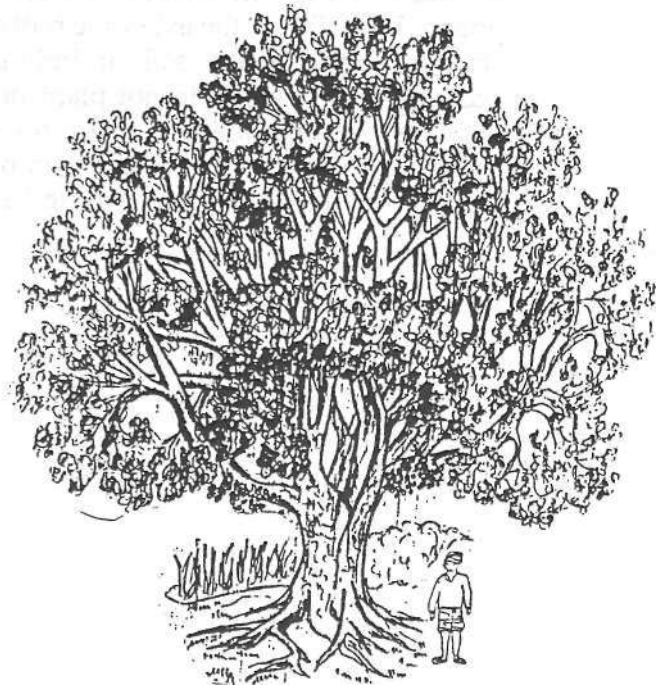
**storage:**

**Management:** Fairly fast growing. Pruning, lopping to reduce shade.

**Remarks:** A sacred tree for various communities. Figs are eaten by livestock, birds and wild animals. They can also be dried and have a good flavour and high food value. Can be planted with crops. The wood is pale and easy to work.

Ficus sycomorus *Moraceae*





## Ficus thonningii *Moraceae*

Africa

*Sh: Gerina* *Tg: Shibaka* *Tr: Dalgus*

Ecology: Widespread in Africa, 1,000-2,500 m, often starting as an epiphyte on another tree, then buttressed or multi-stemmed from the growth of aerial roots. Planted along streets and roads in Asmara and as single trees in some villages in the central highlands. Grows on a variety of soils.

**Uses:** Medicine (bark), fodder, mulch, **shade, ornamental,** fibres, glue, live fence, ceremonial.

**Description:** A deciduous tree to 12 m. BARK: Thin, **grey and smooth, often many aerial stem roots.** LEAVES: Very variable, **oval to** 12 cm, often smaller, **apex mostly rounded,** base rounded or tapering, shiny green, young leaves pale and hairy below FRUIT: In **axillary clusters at the ends of branches,** prominent on the bare tree, **round to 1.5 cm,** smooth or bumpy, **yellow or purple-red when ripe. Two small leafy bracts remain at the base of the fig.**

**Propagation:** Large cuttings normally used.

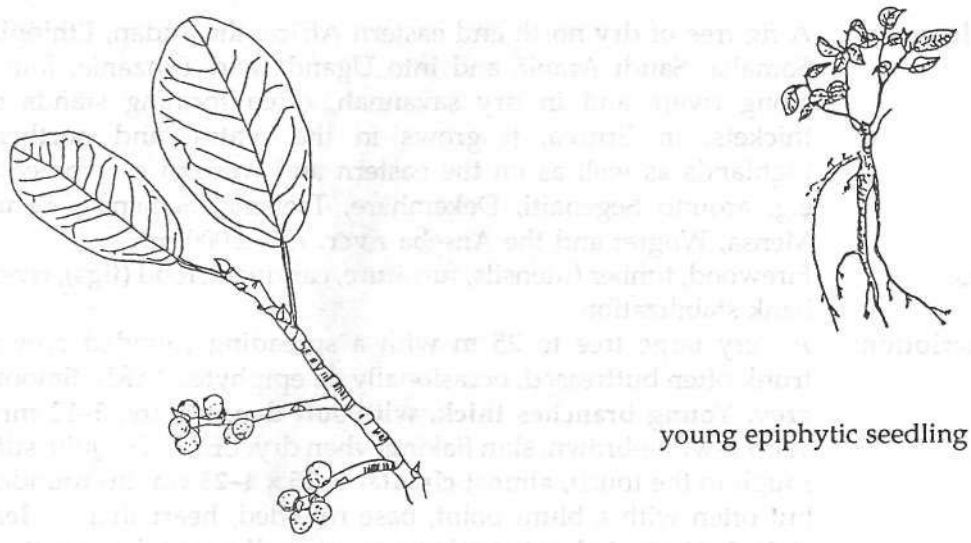
**Seed:** No. of seeds per kg: about 90,000.

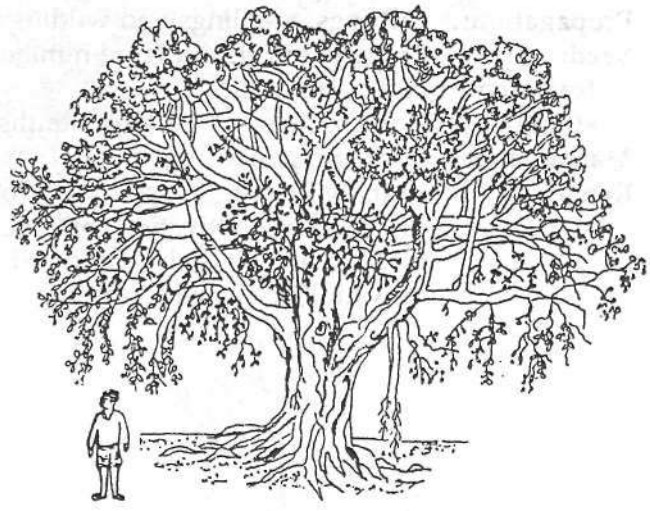
**treatment:** Not necessary

**storage:** Seeds should not be stored.

**Management:** Fast growing from cuttings and better than seed; pollarding.

**Remarks:** The fruit is eaten by small mammals and birds—thus dispersing the seed. The species should be protected from browsing when young. Like all figs, the extensive root system penetrates into the smallest crack in the soil or buildings where water might accumulate, therefore do not plant near buildings as the roots may crack the foundations. Fig roots probably have a stronger suction force to draw in water than other trees—a reason why parasitic plants do not grow on fig trees.


young epiphytic seedling



# Ficus vasta *Moraceae*

Indigenous

| | | |
|---|---|---|
| *Af: Maraito* | *Ar: Deleb* | *Bl: Deghuna* |
| *Hd: Mentaro* | *Nr: Shaile* | *Sh: Enaerto* |
| *Tg: Daero* | *Tr: Daero* | |

**Ecology:** A fig tree of dry north and eastern Africa, the Sudan, Ethiopia, Somalia, Saudi Arabia and into Uganda and Tanzania, found along rivers and in dry savannah, often forming stands **or** thickets. In Eritrea, it grows in the central and northern highlands as well as on the eastern and western escarpments, e.g. around Segenaiti, Dekemhare, Tselema, Semenawi-bahri, Mensa, Wogret and the Anseba river, 750-2,000 m.

**Uses:** Firewood, timber (utensils, furniture, carvings), food (figs), river-bank stabilization.

**Description:** A very large tree to 25 m with a spreading rounded crown, trunk often buttressed, occasionally an epiphyte. BARK: Smooth grey. **Young branches thick, with soft dense hairs,** 5-12 mm, yellow-white-brown, skin flaking when dry. LEAVES: Quite stiff, rough to the touch, **almost circular 8-25 x 4-23 cm,** tip rounded but often with a blunt point, base rounded, heart-shaped, **leaf stalk 3-12 cm, hairy;** hairy below with well-marked veins, the **2 outer veins reaching up to the middle of the leaf,** all forked clearly at the edge. FIGS: 1-2 together beside or just below leaves, **hardly stalked,** almost round, about 2 cm across when fresh, **green with pale spots when ripe, hairy, the opening clear.** Figs appear in conspicuous clusters on the branches.

**Propagation:** Cuttings, seedlings and wildings.

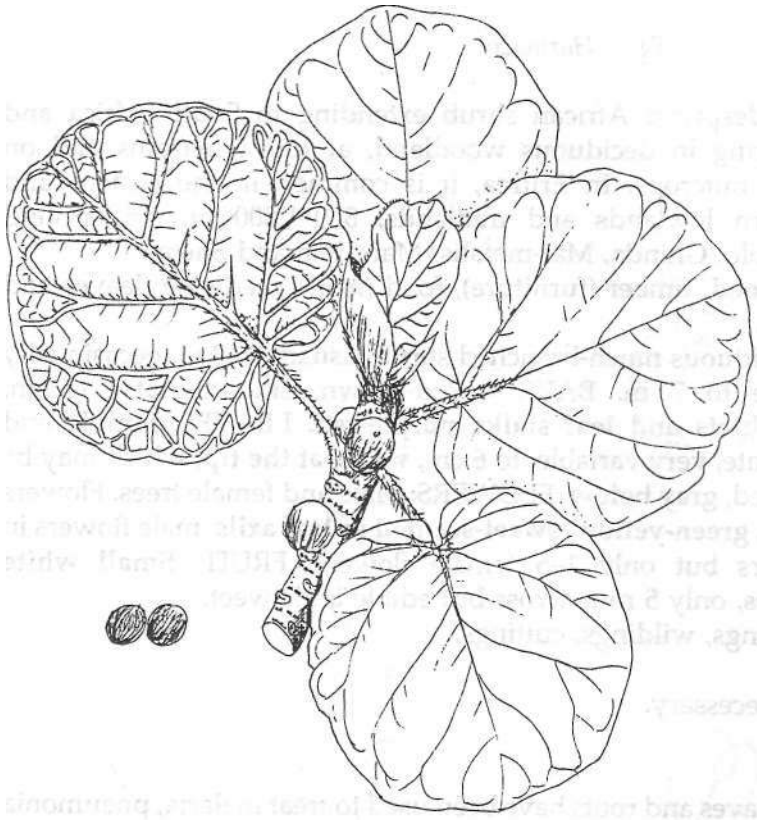
**Seed:** Produced in figs in large numbers, to be extracted and dried.

**treatment:** Not necessary.

**storage:** Can be stored up to two months.

**Management:** Lopping, pollarding.

**Remarks:** In its wild state F. *vasta* has provided food in times of famine. Therefore its cultivation could be encouraged. The figs are either eaten when half dry or dried completely, stored and eaten stewed. Plant at wide spacing.



## Flueggia virosa (Securinega virosa) *Euphorbiaceae*

Indigenous

*Sh: Kekea* *Tg: Harmazo*

**Ecology:** A widespread African shrub extending to South Africa and occurring in deciduous woodland, at forest margins and on rocky outcrops. In Eritrea, it is common in the eastern and western lowlands and midlands, 300-1,800 m, e.g. around Dongolo, Ghinda, Mai-mefalis, Mai-dima and Shetel.

**Uses:** **Firewood,** timber (furniture), food (fruit), medicine (leaves and roots).

**Description:** A deciduous much-branched shrub, usually 1-3 m, occasionally a tree to 7 m. BARK: Red-brown, smooth, later rough. **Branchlets and leaf stalks purple-red.** LEAVES: Simple and alternate, very variable, to 6 cm, **wider at the tip,** which may be notched, **grey below.** FLOWERS: Male and female trees. Flowers **small, green-yellow, sweet-scented in leaf axils,** male flowers in clusters but only 1-5 female flowers. FRUIT: **Small white berries,** only 5 mm across but edible and sweet.

**Propagation:** Seedlings, wildings, cuttings.

**Seed:**

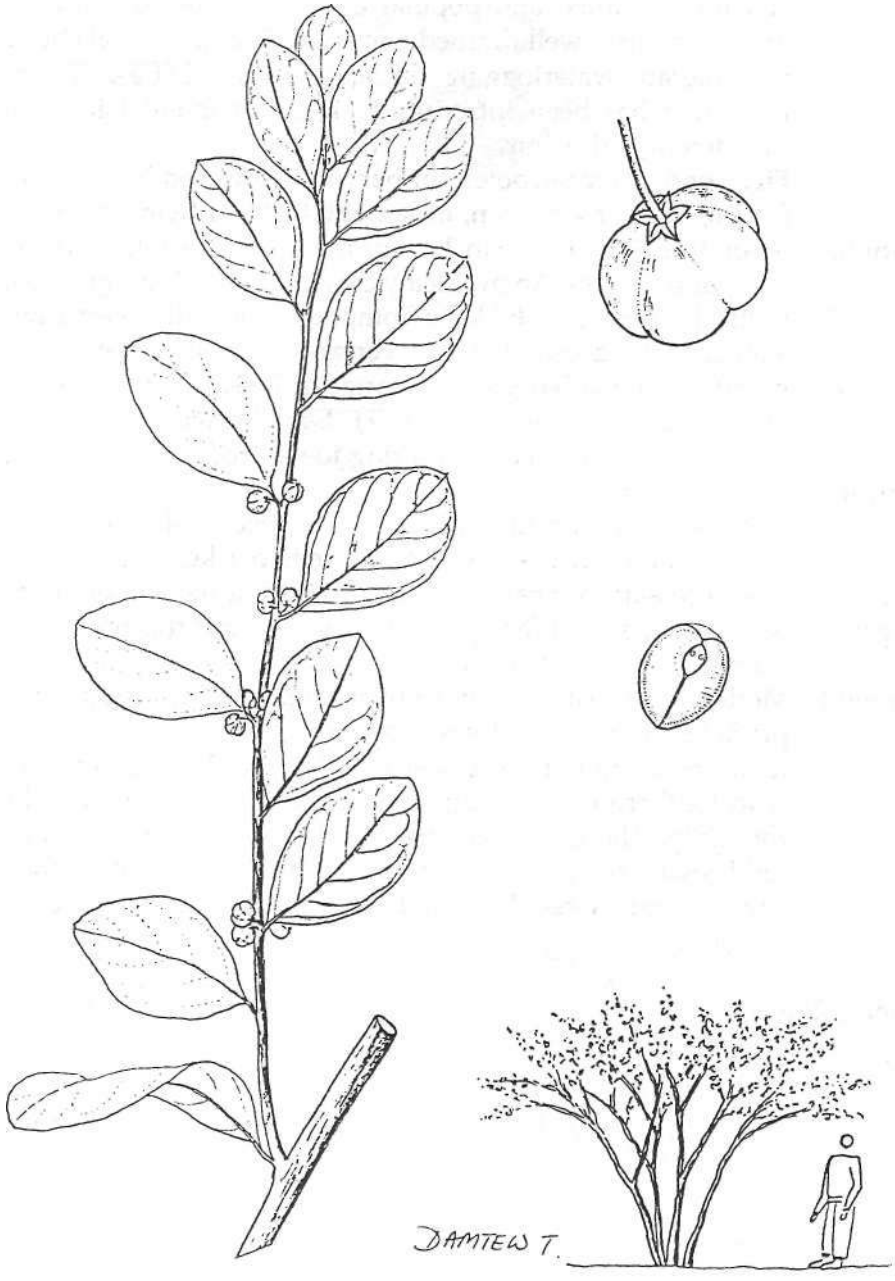
**treatment:** Not necessary.

**storage:**

**Management:**

**Remarks:** The leaves and roots have been used to treat malaria, pneumonia and diarrhoea. Elsewhere pounded leaves have been used as an insect repellent.

Flueggia virosa (Securinega virosa) *Euphorbiaceae*



## Grevillea robusta *Proteaceae*

Eastern Australia

*Eng:* *Silky oak*

Ecology: A widely planted and popular exotic all over Africa, this tree grows on fairly well drained and neutral to acidic soils but does not tolerate waterlogging or heavy clays, 1,500-2,700 m. In Eritrea, it has been introduced as an ornamental in Asmara, Mendefera and Sabur.

Uses: **Firewood,** charcoal, poles, **timber** (furniture), fodder (leaves), bee forage, soil conservation, **ornamental, shade,** windbreak.

Description: A semi-deciduous tree to 20 m or more with a straight trunk and angular branches. An oval leafy crown. BARK: Dark grey, rough, vertically grooved. LEAVES: Compound, **fern-like, very divided,** leathery pale green above, **silver-grey below.** FLOWERS: Very many, in **one-sided golden-orange spikes,** much nectar which attracts bees and sunbirds. FRUIT: Dark brown capsule, about 1 cm, with a slender beak, splitting to set free 2 winged seeds.

Propagation: Wildings, seedlings.

Seed: The species is a prolific seeder but the seed is difficult to collect. Germination rate 30-90%. No. of seeds per kg: 7,000-110,000.

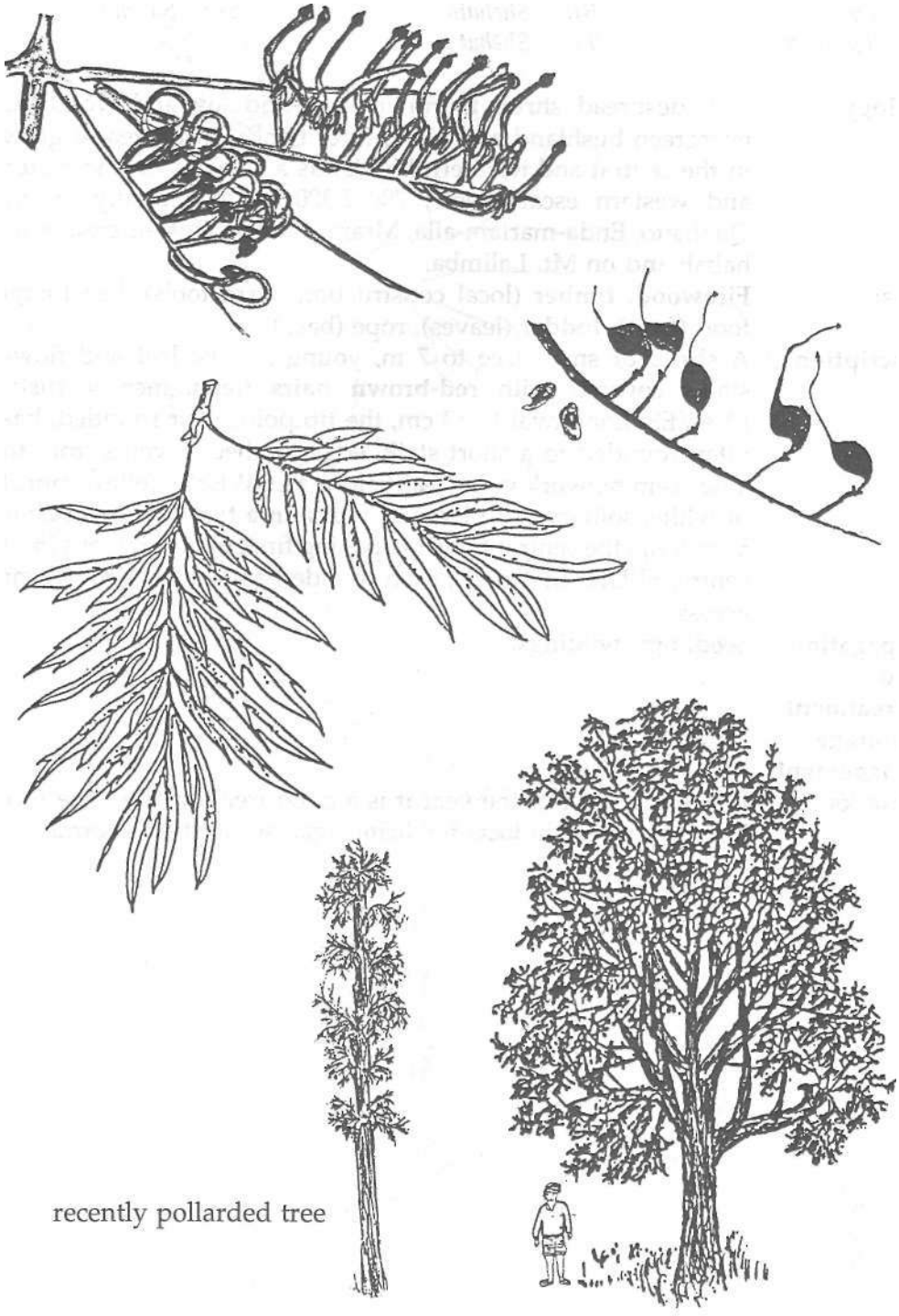
**treatment:** Not necessary but can be soaked in cold water for 24 hours.

storage: Seed can be stored for up to three months, but this period can be extended if it is refrigerated.

Management: Moderate to fast growing; pollarding, lopping, coppicing and pruning. Only young trees coppice well.

Remarks: It can be an important dry-season fodder. The tree grows well with food crops if managed to reduce shade, but leaves do not rot easily. The timber is hard and has an attractive grain—the red-brown colour and silky surface being like that of the true oak, Quercus. Grevillea is not recommended for woodlots.

Grevillea robusta *Proteaceae*


recently pollarded tree

## Grewia ferruginea *Tiliaceae*

Indigenous

| | | |
|---|---|---|
| *Af: Fo* | *Bl: Shehata* | *Sh: Sakeho* |
| *Tg: Tsenqua* | *Tr: Shehat* | |

**Ecology:** A widespread shrub found in semi-arid lowland woodland, evergreen bushland and along river banks. In Eritrea, it grows in the central and northern highlands as well as on the eastern and western escarpments, 700-2,300 m, dominantly around Quahaito, Enda-mariam-aila, Mrara, Ghinda, Rora-mensa, Rora-habab and on Mt. Lalimba.

Uses: **Firewood, timber** (local construction, farm tools), bee forage, food (fruit), **fodder** (leaves), rope (bark).

**Description:** A shrub or small tree to 7 m, young shoots, leaf and flower stalks covered with **red-brown hairs** (ferruginea = rusty). LEAVES: Long oval to 13 cm, the tip pointed or rounded, base often rounded to a short stalk, edge toothed, 3 veins from the base, vein network very clear below. FLOWERS: Yellow, purple or white, solitary or in **twos or fours, in a terminal head** about 5 cm long, the central flowers opening first, many stamens in the centre, FRUIT: In 4 parts, each rounded and fleshy about 5 mm across.

**Propagation:** Seedlings, wildings.

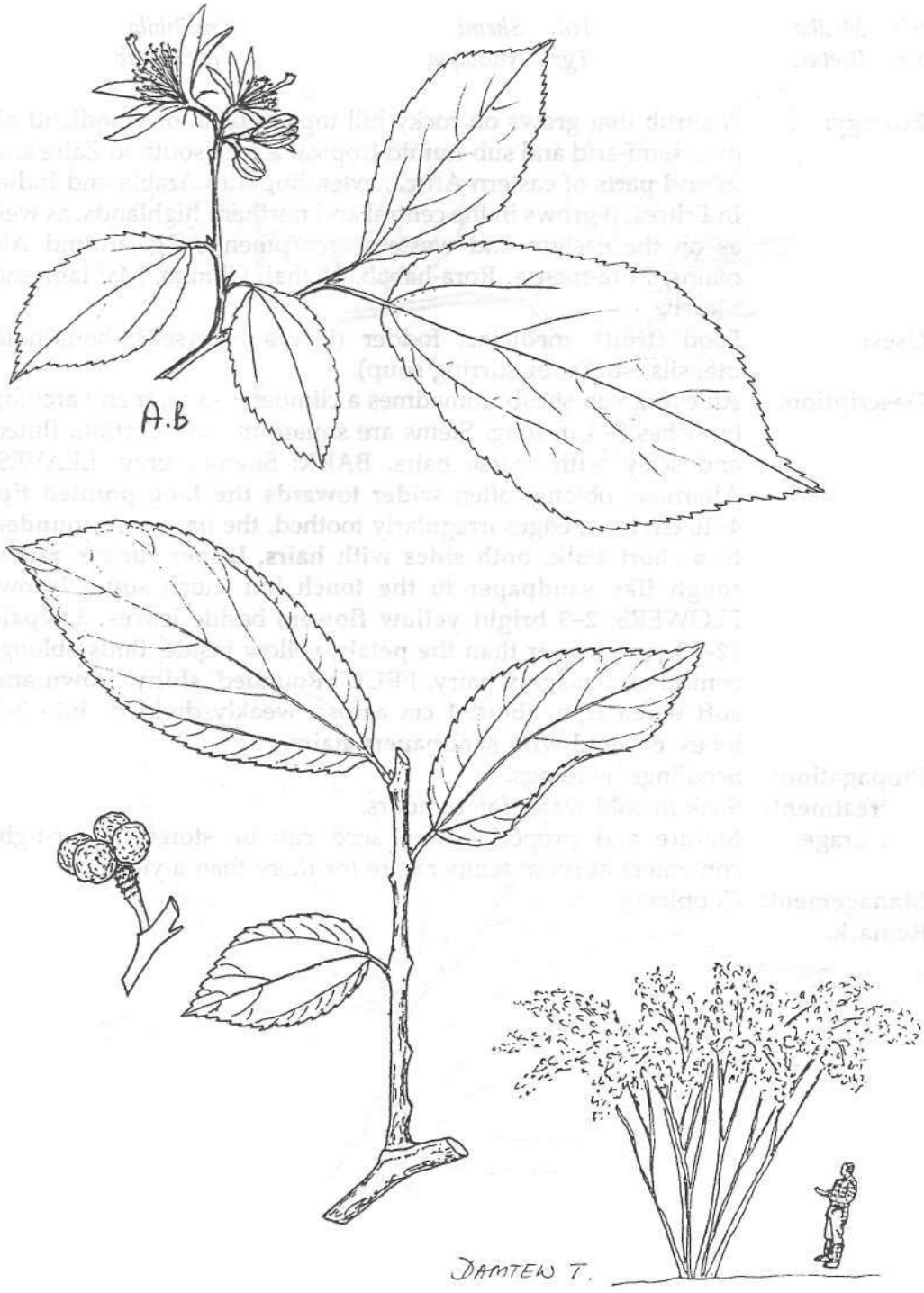
**Seed:**

**treatment:**

**storage:**

**Management:**

**Remarks:** Flowering most of the year it is a good tree for bees. The roots have been used in local medicine against intestinal worms.


A.B
DAMTEW T.

## Grewia flavescens *Tiliaceae*

Indigenous

| | | |
|---|---|---|
| *Bl: Medka* | *Hd: Shemi* | *Km: Bibila* |
| *Sh: Bretaro* | *Tg: Mosoqua* | *Tr: Rakub* |

**Ecology:** A shrub that grows on rocky hill tops in bush or woodland all over semi-arid and sub-humid tropical Africa south to Zaire and in arid parts of eastern Africa, extending into Arabia and India. In Eritrea, it grows in the central and northern highlands, as well as on the eastern and western escarpments, e.g. around Ala plains, Rora-mensa, Rora-habab, Halhal, Ghinda, Mai-lam and Mereb.

**Uses:** Food (fruit), medicine, fodder (leaves browsed), household utensils (sticks for stirring soup).

**Description:** An evergreen shrub, sometimes a climber, 1-3 m; many arching branches 3-4 m long. Stems are square in cross-section, fluted and scaly with coarse hairs. BARK: Smooth grey. LEAVES: Alternate, oblong, often **wider towards the long pointed tip,** 4-10 cm long, edges irregularly toothed, the **base well rounded to a short stalk, both sides with hairs. Upper surface rather rough like sandpaper to the touch** but much softer below. FLOWERS: **2-3 bright yellow flowers** beside leaves, **5 sepals 12-20 mm, longer than the petals,** yellow inside. Buds oblong-conical and roughly hairy. FRUIT: Rounded, **shiny brown and soft when ripe, about 1 cm across,** weakly divided into 2-4 lobes, **covered with sandpapery hairs.**

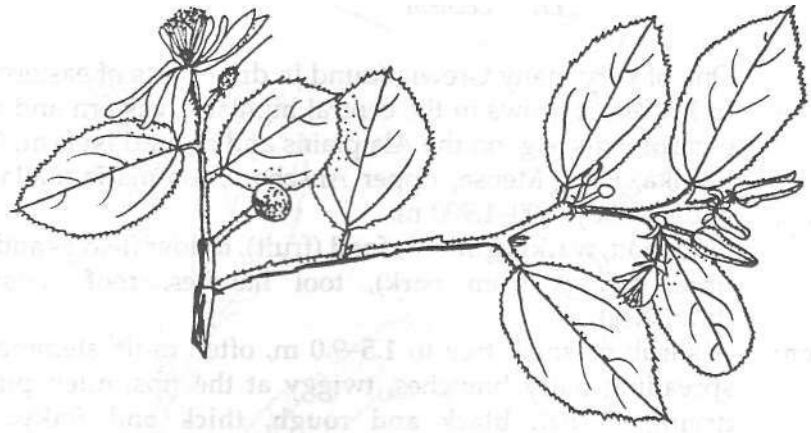
**Propagation:** Seedlings, wildings.

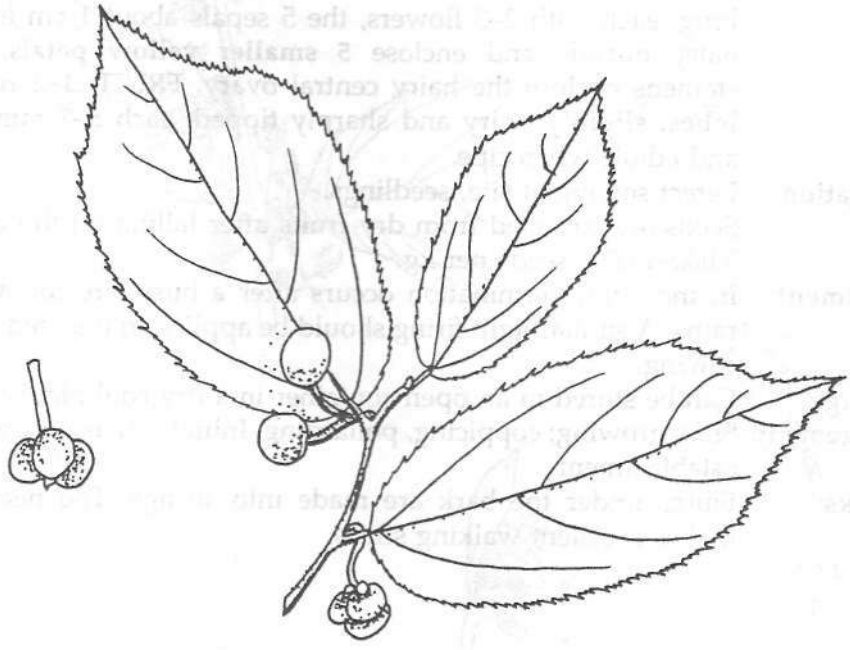
**treatment:** Soak in cold water for 12 hours.

**storage:** Mature and properly dried seed can be stored in air-tight containers at room temperature for more than a year.

**Management:** Coppicing.

**Remark:**





## Grewia mollis *Tiliaceae*

Indigenous

| | | |
|---|---|---|
| *Af: Daiva* | *Ar: Basham* | *Bl: Senker* |
| ***Km:*** Uba | *Nr: Asegho* | *Sh: Dawa* |
| *Tg: Ova* | *Tr: Lechem* | |

**Ecology:** One of very many Grewia found in drier parts of eastern Africa. In Eritrea, it grows in the central highland, eastern and western escarpments, e.g. on the Ala plains and around Nefasit, Ghinda, Boroka, Filfil, Mensa, upper Anseba, Enda-mariam-aila and in Hidai valley, 600-1,900 m.

**Uses:** Firewood, **walking sticks, food** (fruit), fodder (leaves and fruits), fibre (strings from bark), tool handles, roof construction (branches).

**Description:** A shrub or small tree to 1.5-9.0 m, often multi-stemmed, with spreading hairy branches, twiggy at the tips, often purple on drying. BARK: **black and rough, thick and flaky, deeply fissured, a yellow-green fibrous undersurface.** LEAVES: **pale green above but grey-white silky hairs cover the lower surface,** long oval 4-12 cm, 3 veins from the base, side veins clear and the parallel veins between, **edge clearly toothed,** tip pointed, shortly stalked. FLOWERS: beside leaves on **1-3 stalks over 1 cm long,** each with 2-3 flowers, the 5 sepals about 1 cm long are hairy outside and enclose **5 smaller yellow petals.** Many stamens enclose the hairy central ovary. FRUIT: **1-2 rounded lobes, slightly hairy** and sharply tipped, each 5-7 **mm,** black and edible when ripe.

**Propagation:** Direct sowing at site, seedlings.

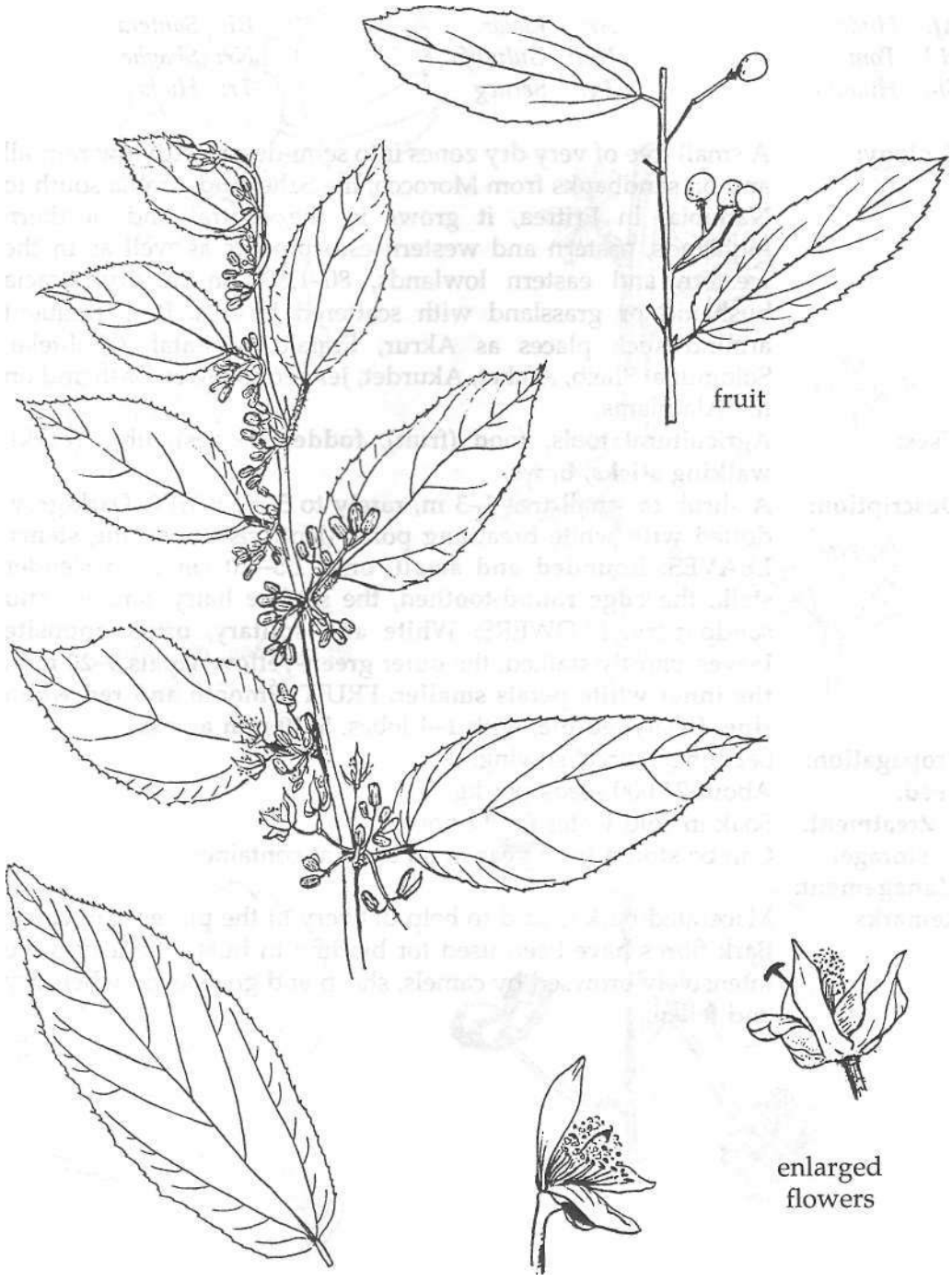
**Seed:** Seeds are collected from dry fruits after falling on the ground. 5,000-15,000 seeds per kg.

**treatment:** In the wild, germination occurs after a bush fire followed by rains. A similar light firing should be applied to the seeds before sowing.

**storage:** Can be stored in an open container in a dry cool place.

**Management:** Slow growing; coppicing, pollarding. Initial care is necessary for establishment.

**Remarks:** Fibres under the bark are made into strings. The heartwood makes excellent walking sticks.


fruit
enlarged
flowers

Indigenous

| | | |
|---|---|---|
| *Af: Huda* | *Ar: Kadar* | *Bl: Sahtera* |
| *Hd: Tom* | *Km: Gulumfa* | *Nr: Shaghe* |
| *Sh: Hudato* | *Tg: Serneg* | *Tr: Huda* |

**Ecology:** A small tree of very dry zones into semi-desert with low rainfall and on sandbanks from Morocco, the Sahel and Arabia south to Namibia. In Eritrea, it grows in the central and northern highlands, eastern and western escarpments as well as in the western and eastern lowlands, 80-1,800 m in dry Acacia bushland or grassland with scattered bushes. It is frequent around such places **as** Akrur, Erafale, Mai-atal, Ghahtelai, Solomuna, Sheib, Afabet, Akurdet, Jengeren, lower Gash and on the Ala plains.

**Uses:** Agricultural tools, **food (fruit), fodder** (leaves), fibre (bark), **walking sticks, bows.**

**Description:** A shrub or small tree 1-3 m, rarely to 5 m. BARK: Dark-grey, dotted with white breathing pores (lenticels) on young stems. LEAVES: **Rounded and small, only 1.5-4.0 cm** on a slender stalk, the **edge round-toothed,** the surface hairy, smooth and sandpapery. FLOWERS: **White and solitary, often opposite leaves,** shortly stalked, the **outer green-yellow sepals 9-20 mm, the inner white petals smaller.** FRUIT: **Smooth and red when ripe, fleshy, edible,** with *1-4* lobes, 5-10 **mm across.**

**Propagation:** Seedlings, direct sowing.

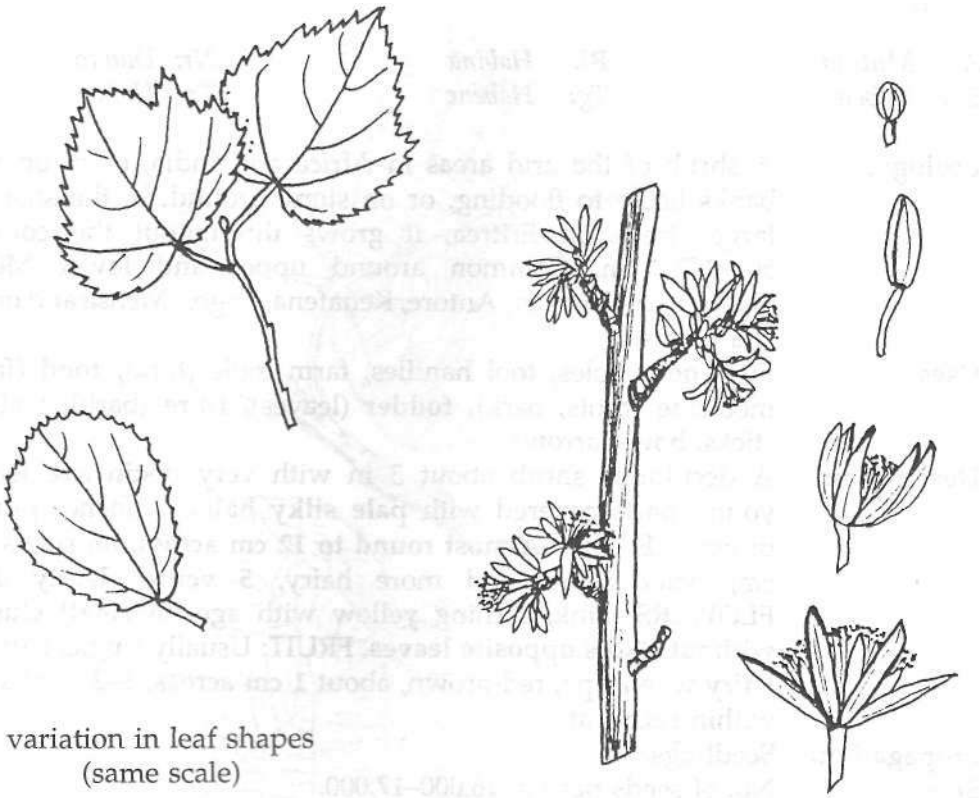
**Seed:** About 21,000 seeds per kg.

**treatment:** Soak in cold water for 12 hours.

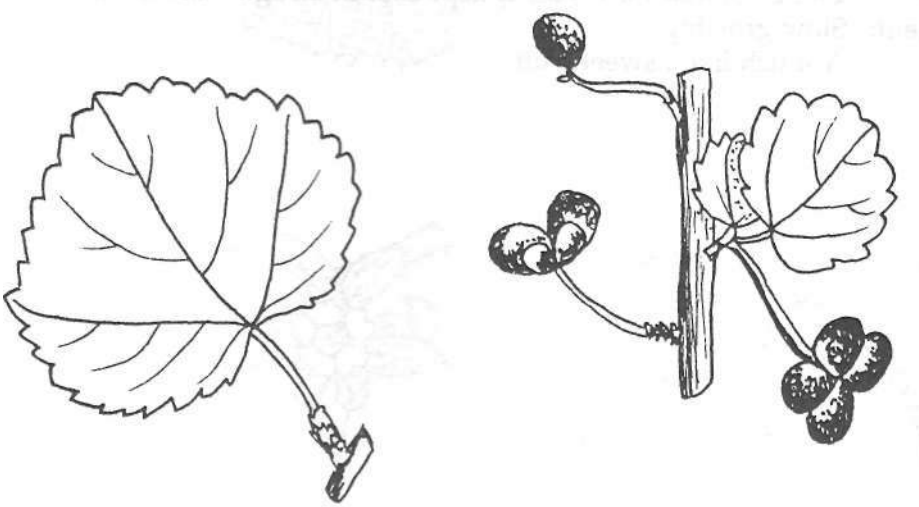
**storage:** Can be stored for a year in an airtight container.

**Management:**

**Remarks:** Macerated bark is said to help delivery of the placenta in cows. Bark fibres have been used for binding in huts. The leaves are intensively browsed by camels, sheep and goats even when dry and fallen.



variation in leaf shapes
(same scale)



## Grewia villosa *Tiliaceae*

Indigenous

| | | |
|---|---|---|
| *Ar: Mutraq* | *Bl: Habina* | *Nr: Dawro* |
| *Sh: Habeno* | *Tg: Habene* | *Tr: Hafule* |

**Ecology:** A shrub of the arid areas in Africa and India, often on river banks liable to flooding, or on stony ground, in the shade of larger trees. In Eritrea, it grows throughout the country, 500-1,700 m. Common around upper and lower Mereb, Shambuko, Omhajer, Antore, Kenafena, Bogos, Mensa and on the Ala plains.

**Uses:** **Firewood,** poles, tool handles, farm tools (fork), **food** (fruit), medicine (roots, bark), **fodder** (leaves), **fibre** (bark), walking sticks, bows, arrows.

**Description:** A deciduous shrub about 3 m with very distinctive leaves; young parts covered with **pale silky hairs,** branches purple-brown. LEAVES: **Almost round to 12 cm across,** on stalks to 4 cm; paler below and more hairy, **5 veins clearly seen.** FLOWERS: Pink, turning yellow with age, in **small clusters without stalks opposite leaves.** FRUIT: Usually single, **soft and hairy** when ripe, red-brown, about 1 **cm** across, 1-2 hard seeds within each nut.

**Propagation:** Seedlings.

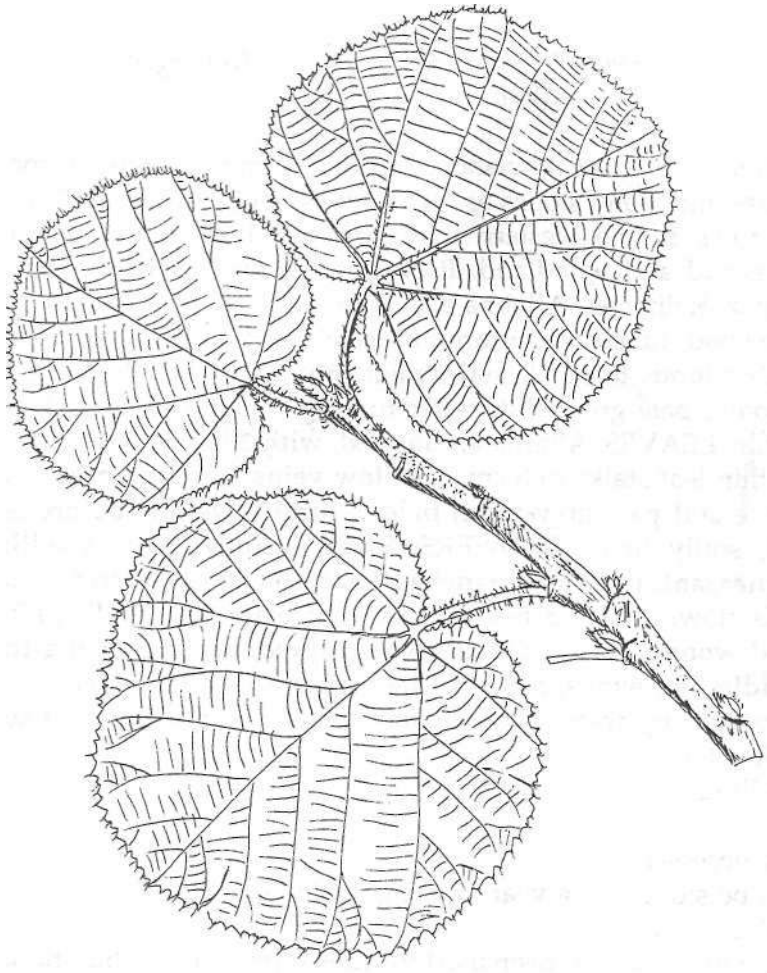
**Seed:** No. of seeds per kg: 16,000-17,000.

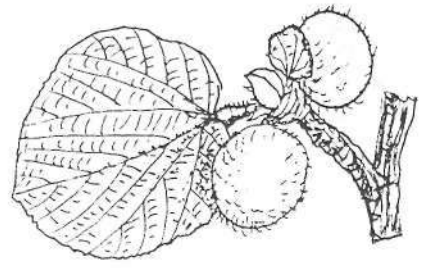
**treatment:** Soak in cold water for 12 hours. Germination is good and completed after 6 weeks.

**storage:** Can be stored for a year if kept cool in airtight containers.

**Management:** Slow growing.

**Remarks:** A much-liked sweet fruit.





## Gyrocarpus americanus (G. jacquinii) *Hernandiaceae*

Indigenous

*Bl: Atenka, Kilheb* *Eng: Propeller tree* *Km: Agaga*
*Nr: Soreb* *Tr: Kilheb*

**Ecology:** A tree of hot dry lowlands, woodland and thickets or rocky ridges and stony slopes as far south as South Africa. In Eritrea, it grows in the western lowlands, 600-1,400 m, in wooded grassland and woodland. It is common around Begu, Gonge, Hagaz, Kelhamet, Adobha and Barentu.

**Uses:** Firewood, timber (furniture), **bracelets** (fruits).

**Description:** A deciduous tree, tall and straight to 20 m, often less. BARK: Smooth, pale grey-white, later turning rough and dark. Twigs brittle. LEAVES: Alternate, **rounded, with 3 lobes, 10 cm across** on thin leaf stalks to 8 cm, **3 yellow veins from the base,** dark above and **pale grey-green below, turning yellow before leaf fall,** softly hairy. FLOWERS: **Small, yellow-green, smelling unpleasant,** in **dense branched heads on the bare tree,** many male flowers with a few bisexual or female flowers. FRUIT: A hard **woody oval nut,** veins well marked, bearing **2 long thin paddle-like wings,** 5-8 cm. The fruit breaks off the tree and is dispersed by wind as the wings rotate through the air like a helicopter.

**Propagation:** Seedlings.

**Seed:**

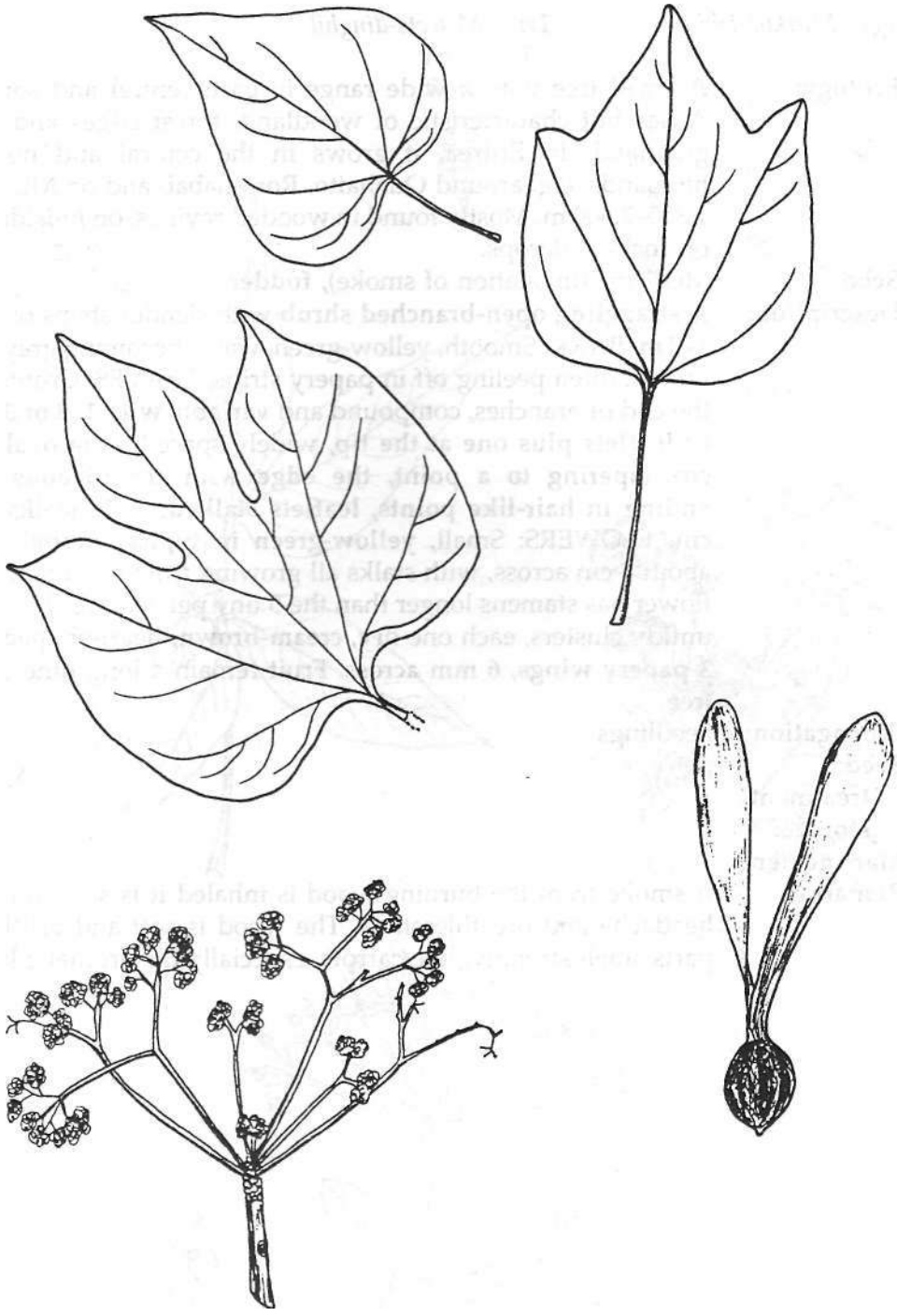
**treatment:** Not necessary.

**storage:** Can be stored for a year in airtight containers.

**Management:** Fast growing.

**Remarks:** The white latex has been used for rubber production, but the soft white wood is a poor timber. Elsewhere bark has been used for medicinal purposes. The subspecies *africanus* is recorded in Eritrea.

Gyrocarpus americanus (G. jacquinii) *Hemandiaceae*



## Heteromorpha arborescens (H. trifoliata) *Umbelliferae*

Indigenous

*Tg: Murkus-tebi* *Tr: Mewets-dinghil*

**Ecology:** A small tree with a wide range in east, central and southern Africa but characteristic of woodland, forest edges and rocky grassland. In Eritrea, it grows in the central and northern highlands, e.g. around Quahaito, Rora-habab and on Mt. Bizen, 1,800-2,500 m. Mostly found in wooded ravines, on hillsides and on rocky outcrops.

**Seed:** Medicine (inhalation of smoke), **fodder.**

**Description:** **A straggling open-branched shrub** with slender stems or a tree 1-7 m. BARK: Smooth, yellow-green, waxy, becoming grey-dark brown, often peeling off in papery strips. LEAVES: Crowded at the end of branches, compound and **variable with 1, 2 or 3 pairs of leaflets plus one at the tip,** widely spaced, long oval, 3-11 cm, **tapering to a point, the edge with conspicuous teeth ending in hair-like points, leaflets stalked,** main stalks to 10 cm. FLOWERS: Small, **yellow-green in typical umbel heads** about 8 cm across, with stalks all growing from one point. Each flower has stamens longer than the 5 tiny petals. FRUIT: In large untidy clusters, each one dry, **cream-brown, heart-shaped with 3 papery wings, 6 mm across.** Fruit remain a long time on the tree.

**Propagation:** Seedlings.

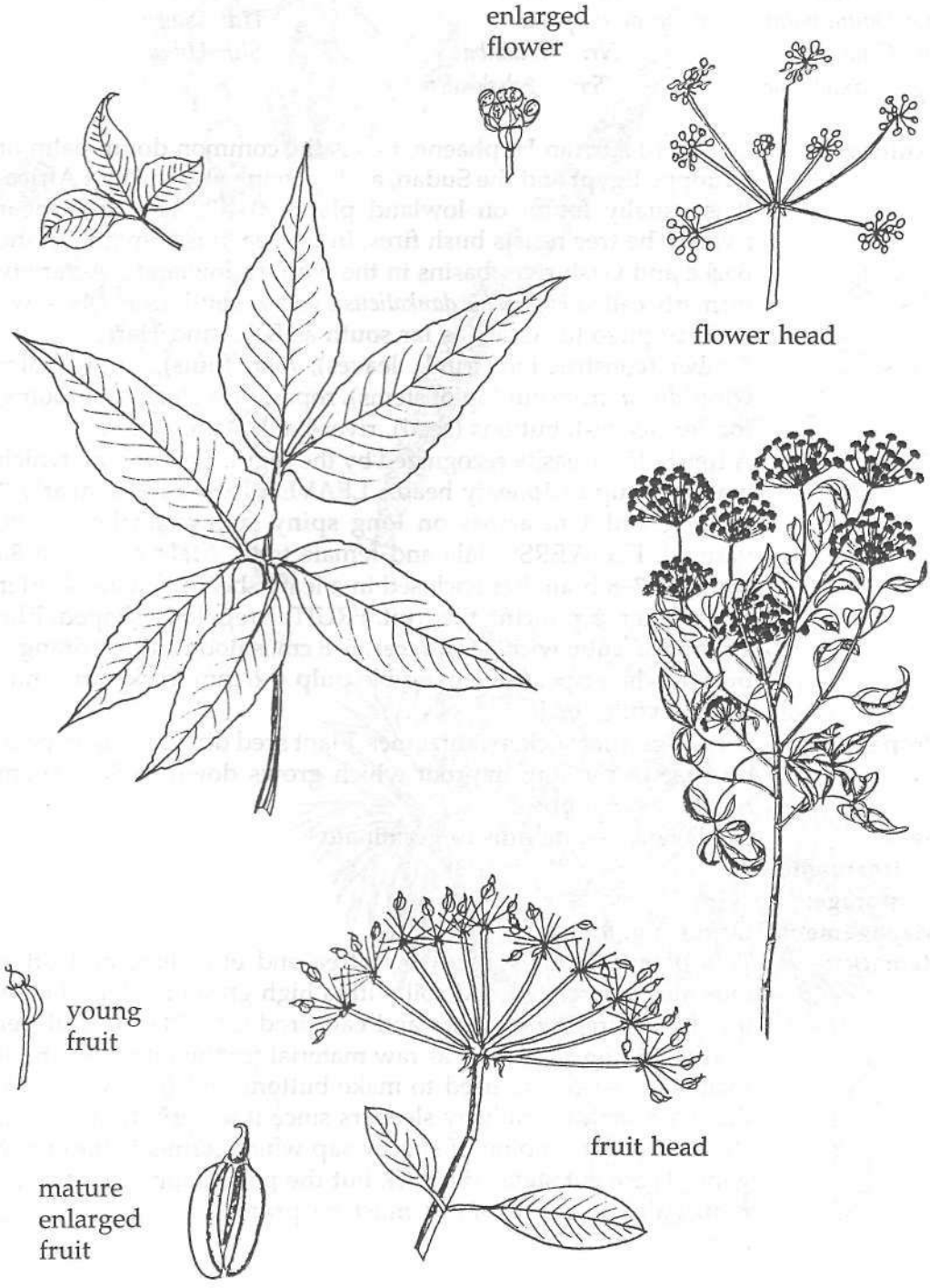
**Seed:**

**treatment:**

**storage:**

**Management:**

**Remarks:** If smoke from the burning wood is inhaled it is said to relieve headache and breathlessness. The wood is soft and brittle. **All** parts smell strongly, like carrots, especially the aromatic leaves.


enlarged flower
flower head
young fruit
fruit head
mature enlarged fruit

## Hyphaene thebaica (H. dankaliensis) *Palmae*

Indigenous

| | | |
|---|---|---|
| *Af: Garaito* | *Ar: Dom* | *Bl: Arkobkobai* |
| *Eng: Doum palm, Egyptian doum palm* | | *Hd: Weika* |
| *Km: Oma* | *Nr: Ghamba* | *Sh: Unga* |
| *Tg: Arkobkobai* | *Tr: Arkobkobai* | |

**Ecology:** One of 10 African Hyphaene, this is the common doum palm of Ethiopia, Egypt and the Sudan, and growing also in West Africa. It is usually found on lowland plains, 0-1,300 m, often near rivers. The tree resists bush fires. In Eritrea, it is common in the Barka and Gash river basins in the western lowlands. A variety formerly called *Hyphaene dankaliensis* grows south from Massawa and Hirghigo to Assab, as far south as Belul and Harsile.

**Uses:** Timber (construction; trunk, leaves), food (nuts), drink (palm wine, *duma*, from cut top of stems), ropes (fibre, leaves), brooms, fodder (leaves), buttons (seed), river-bank stabilization.

**Description:** A tree 8-15 m, easily recognized by the **regular branching** which may form up to 16 leafy heads. LEAVES: **Fan-shaped, nearly 2 m long and 1 m across on long spiny stalks** (smaller in the variety). FLOWERS: Male and female trees. **Male spikes to 80 cm with 7-8 branches** enclosed in a leafy sheath, female shorter and thicker, producing the fruit. FRUIT: Irregularly shaped, **like a rounded cube with 2 flat faces,** 6-8 cm, smooth, **shiny orange-brown** when ripe, 6-8 cm. Edible pulp 4-6 mm thick surrounds 1 hard white seed.

**Propagation:** Seedlings, root suckers, rhizomes. Plant seed directly, not in pots, because of the long taproot which grows down to 50-100 cm before leaves appear.

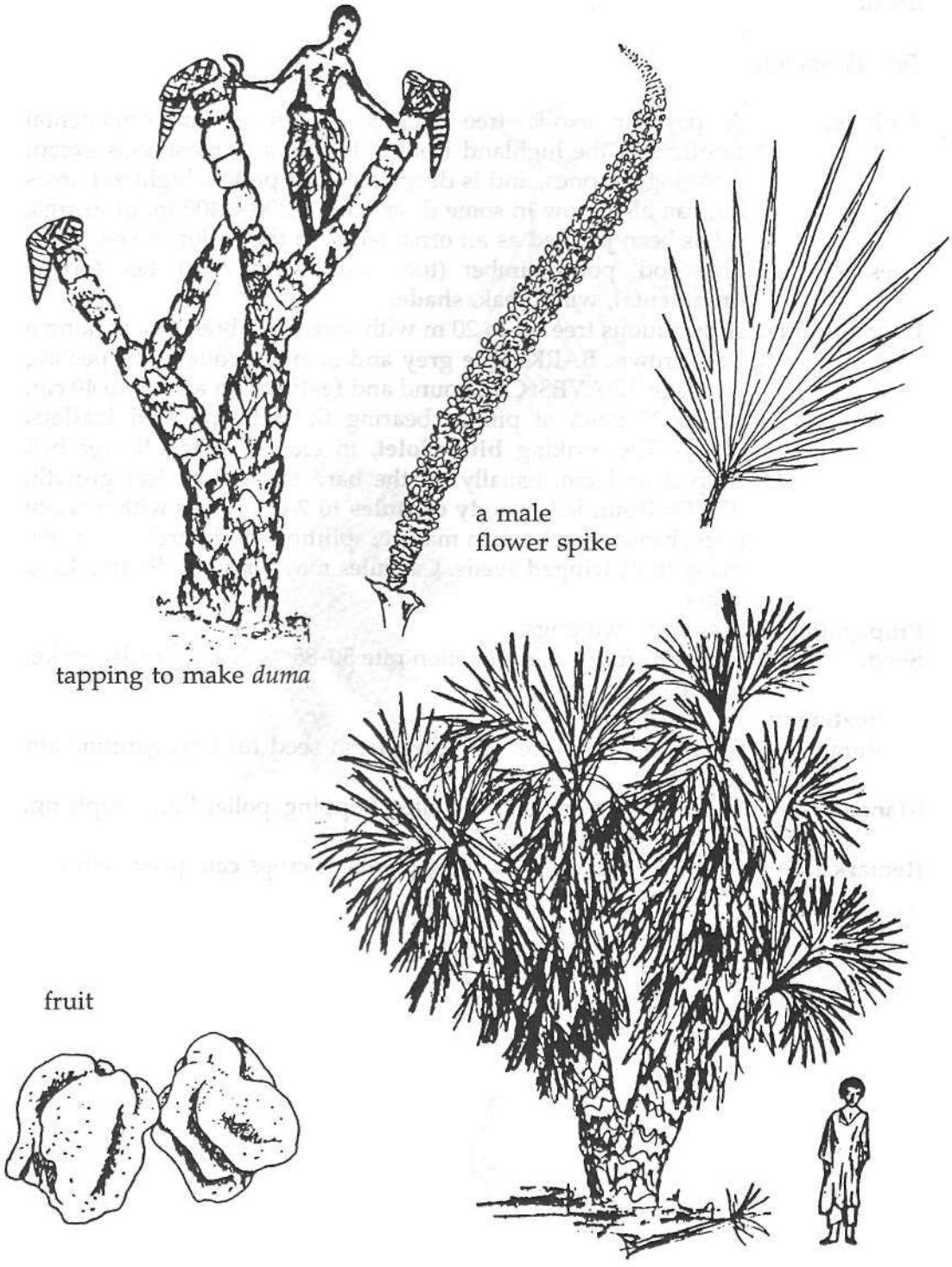
**Seed:** Seeds take 5-6 months to germinate.

**treatment:**

**storage:**

**Management:** Coppicing, lopping.

**Remarks:** This palm is widely used in Eritrea and elsewhere and often indicates an area of good soil with a high groundwater table. A tree is mature in 6-8 years and can produce 50 kg of fruit per year. Leaf fibres are used as raw material for the manufacture of sacks. The seeds are used to make buttons and the wood from the male stem for railway sleepers since it is very durable. The stem is cut for tapping of sugary sap which ferments into palm wine. These cut stems die back but the palm coppices from the root. Palms used for *duma* must be protected from browsing camels.


a male
flower spike
tapping to make *duma*
fruit

## Jacaranda mimosifolia *Bignoniaceae*

Brazil

*Tg: Palasandro*

**Ecology:** A popular exotic tree widely grown as an ornamental throughout the highland tropics. It grows in most soils except waterlogged ones, and is deep rooted. It prefers highland areas but can also grow in some drier ones, 1,300-2,400 m. In Eritrea, it has been planted as an ornamental in the major towns.

**Uses:** Firewood, poles, timber (tool handles, carving), bee forage, **ornamental,** windbreak, **shade.**

**Description:** A deciduous tree up to 20 m with spreading branches making a light crown. BARK: **Pale grey and smooth,** rough and peeling with age. LEAVES: Compound and **feathery on a stalk to 40 cm,** up to 30 pairs of pinnae bearing the little **pointed leaflets.** FLOWERS: Striking **blue-violet,** in clusters, each flower bell shaped to 4 cm, usually on the bare tree before leaf growth. FRUIT: **Rounded, woody capsules to 7 cm** across with a wavy edge, brown-black when mature, splitting on the tree to set free many light **winged seeds.** Capsules may hang on the tree for 2 years.

**Propagation:** Seedlings, wildings.

**Seed:** Seeds profusely. Germination rate 50-85 %. No. of seeds per kg: 63,000-80,000.

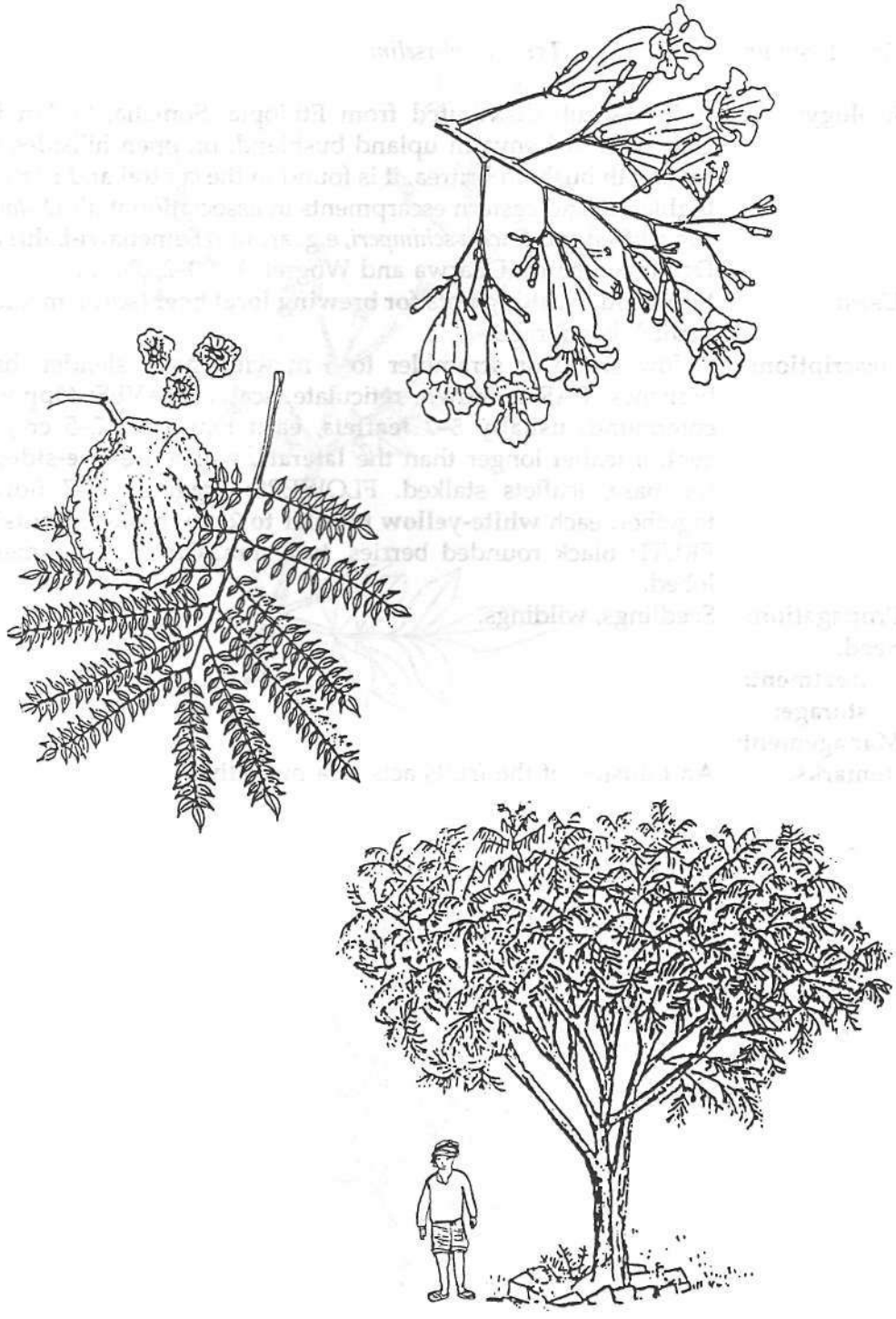
**treatment:** Not necessary.

**storage:** Seed does not store well. Sow fresh seed for best germination results.

**Management:** Very fast growing on good sites. Lopping, pollarding, coppicing, pruning (young trees).

**Remarks:** A greedy feeder so that few plants or crops can grow below.

Jacaranda mimosifolia *Bignoniaceae*



## Jasminum floribundum *Oleaceae*

Indigenous

*Ar: Yasimum* *Tg: Habi-tselim*

**Ecology:** A low shrub distributed from Ethiopia, Somalia, Sudan into Uganda and Kenya in upland bushland, on open hillsides and savannah bush. In Eritrea, it is found in the central and northern highlands and eastern escarpments in association with *Dodonaea angustifolia* and *Euclea schimperi*, e.g. around Semenawi-bahri and Debubawi-bahri, Dbarwa and Wogret, 1,300-2,400 m.

**Uses:** **Firewood, washing pots for brewing local beer** *(sewa)*, medicine (fruits), bee forage.

**Description:** A low shrub or scrambler to 3 m with many slender, hairy branches. BARK: Brown, reticulate, scaly. LEAVES: **Opposite,** compound, **usually 5-7 leaflets,** each long oval 2-5 cm, the central leaflet longer than the laterals, which are **one-sided** at the base, leaflets stalked. FLOWERS: **Fragrant,** 3-7 flowers together, each **white-yellow tubular to 2 cm, pink-red outside.** FRUrT: Black rounded berries, to 8 mm across, sometimes 2-lobed.

**Propagation:** Seedlings, wildings.

**Seed:**

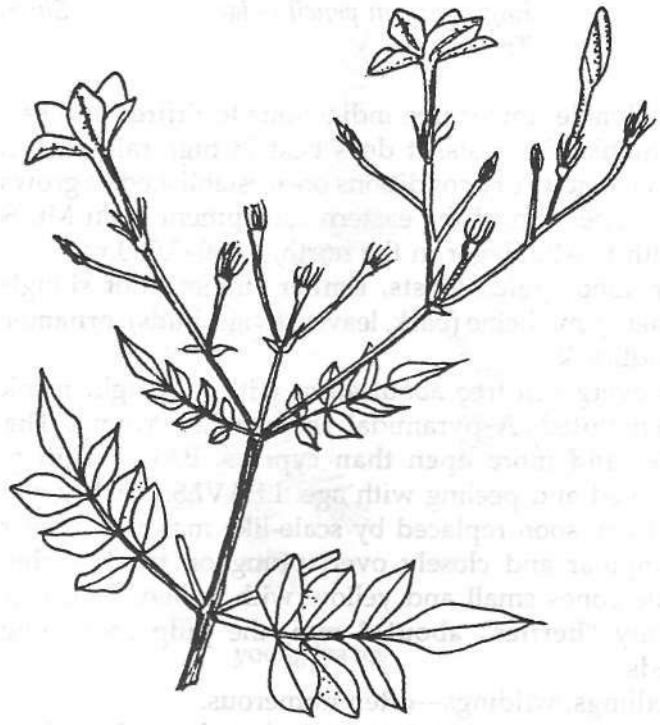
**treatment:**

**storage:**

**Management:**

**Remarks:** An infusion of the fruits acts as a purgative.

Jasminum floribundum *Oleaceae*



## Juniperus procera *Cupressaceae*

Indigenous

*Ar: Arar* *Eng: African pencil cedar* *Sh: Seredo*
*Tg: Tsihdi* *Tr: Nered*

**Ecology:** A valuable timber tree indigenous to Eritrea and eastern Africa in highland forests. It does best in high-rainfall areas but can survive quite dry conditions once established. It grows mostly on the upper rim of the eastern escarpment from Mt. Soira in the south to Mt. Hager in the north, 2,000-3,000 m.

**Uses:** Firewood, **poles, posts, timber** (floors, roof shingles, pencils, joinery), medicine (bark, leaves, twigs, buds), **ornamental,** shade, windbreak.

**Description:** An evergreen tree about 40 m with a straight trunk, although often fluted. A pyramidal shape when young. The foliage **is finer and more open than cypress.** BARK: Thin grey-brown, grooved and peeling with age. LEAVES: **Prickly, young leaves to 1** cm, soon replaced by scale-like mature leaves, blue-green, triangular and closely overlapping on the branchlets. FRUIT: Male cones small and yellow with pollen, female **purple-blue fleshy "berries" about 8 mm,** the pulp containing 1-4 hard seeds.

**Propagation:** Seedlings, wildings—often numerous.

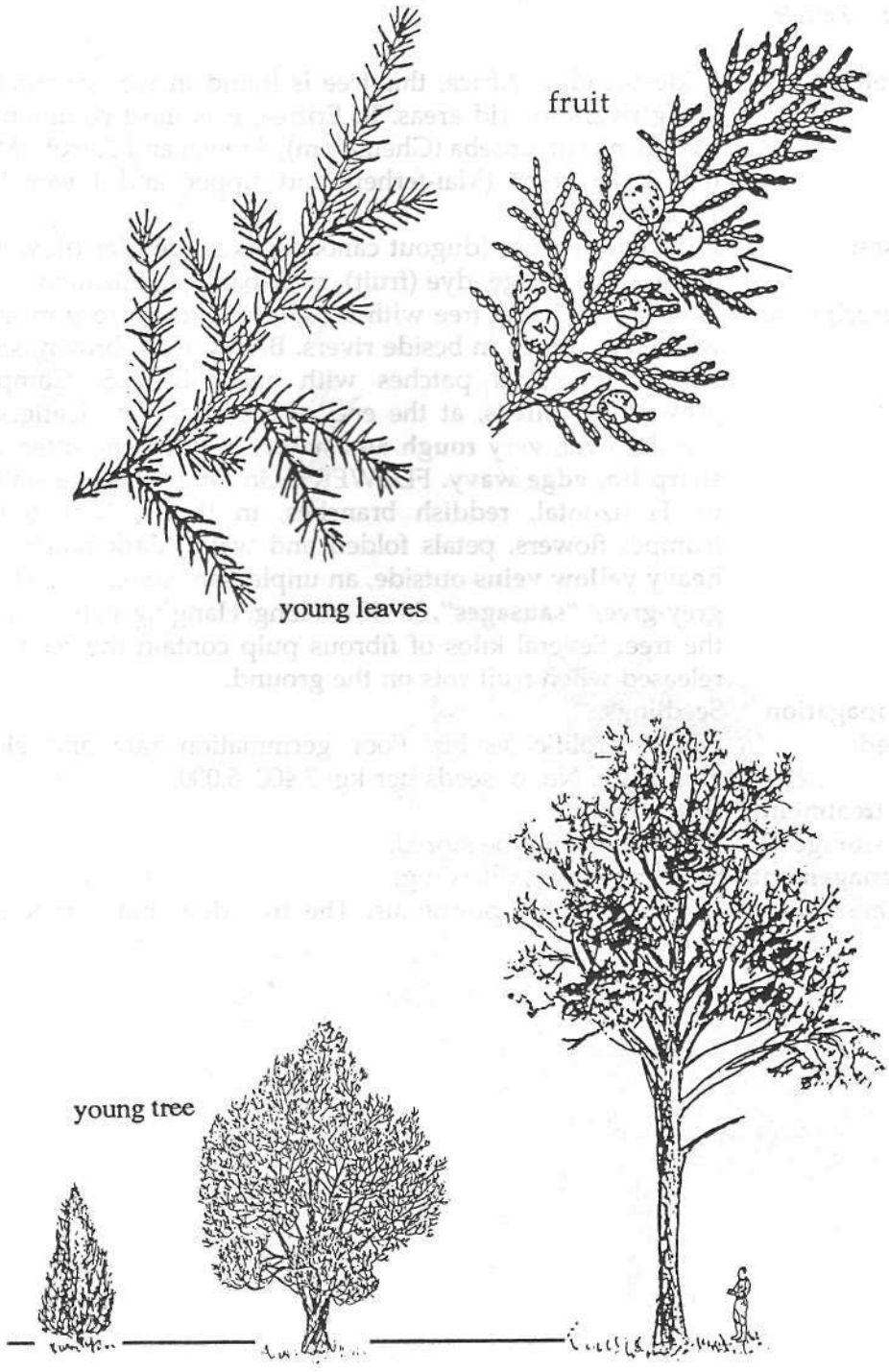
**Seed:** Germination rate 20-30%. No. of seeds per kg: 40,000-50,000.

**treatment:** Not necessary.

**storage:** Up to a year if stored in a cool, dry place.

**Management:** Fairly fast growing in the open but otherwise slow. Prune and thin trees for timber and poles.

**Remarks:** Litter fall from this tree makes the soil acid so it should not be grown with crops. It regenerates well and deserves high priority in reafforestation. The wood is termite resistant. The tree is now rare due to over-exploitation. Although belonging to the cypress family, this subgroup has **no** dry cones like Cupressus.


fruit
young leaves
young tree

## Kigelia africana (K. aethiopum, K. pinnata) *Bignoniaceae*

Indigenous

*Bl: Jungule* **Eng:** *Sausage tree* *Tg: Mederba*
*Tr: Zelzele*

**Ecology:** Widespread in Africa, this tree is found in wet savannah and along rivers in arid areas. In Eritrea, it is most common along river banks of Anseba (Ghenfelom), Arewai and Kuruh (Mensa), the Barka river (Mai-ferhet) and upper and lower Mereb, 1,300-1,600 **m.**

**Uses:** **Firewood,** timber (dugout canoes, yokes), **fodder** (flowers and leaves), bee forage, dye (fruit), river-bank stabilization.

**Description:** A semi-deciduous tree with a rounded crown, to 9 m in open woodland but 18 m beside rivers. BARK: Grey-brown, smooth, flaking in round patches with age. LEAVES: Compound, **growing in threes,** at the end of branches, few leaflets, each broadly oval, **very rough and hard, up to 10 cm,** often with a **sharp tip, edge wavy.** FLOWERS: On long rope-like stalks 2-3 m. Horizontal, reddish branches, in threes, bear upturned trumpet flowers, petals folded and wavy, **dark maroon with heavy yellow veins** outside, an unpleasant smell. FRUIT: Large **grey-green "sausages",** 30-60 cm long. Hanging stalks remain on the tree. Several kilos of fibrous pulp contain the seeds—only released when fruit rots on the ground.

**Propagation:** Seedlings.

**Seed:** Not a prolific seeder. Poor germination rate and slow to germinate. No. of seeds per kg: 3,400-6,000.

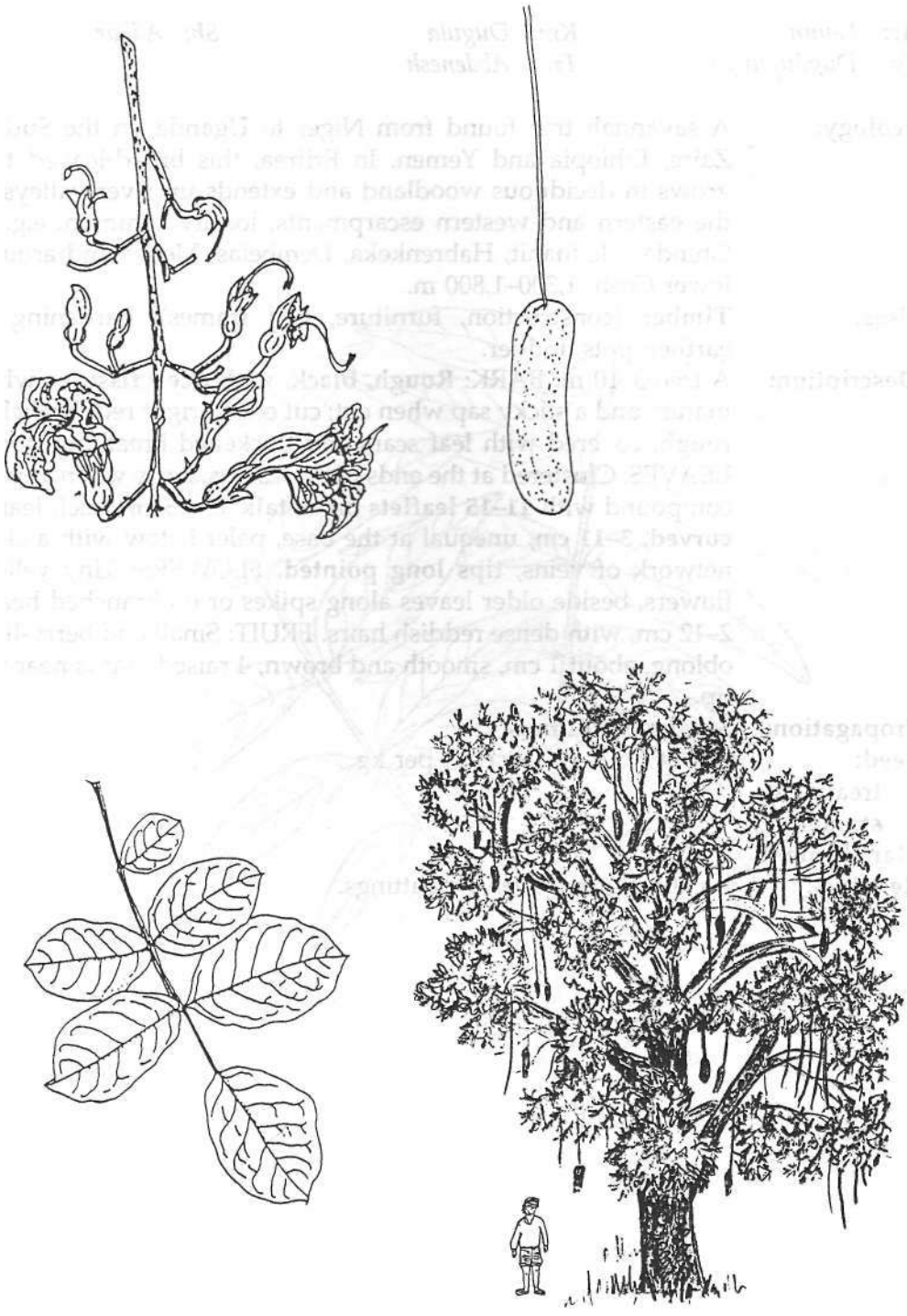
**treatment:** Not necessary.

**storage:** Seed should not be stored.

**Management:** Slow growing, pollarding.

**Remarks:** Unripe fruit are poisonous. The tree does not compete with crops.

Kigelia africana (K. aethiopum, K. pinnata) *Bignoniaceae*



## Lannea fruticosa *Anacardiaceae*

Indigenous

| | | |
|---|---|---|
| *Ar: Leyun* | *Km: Dugula* | *Sh: Adhar* |
| *Tg: Dugdugunga* | *Tr: Abdenesh* | |

**Ecology:** A savannah tree found from Niger to Uganda, in the Sudan, Zaire, Ethiopia and Yemen. In Eritrea, this broad-leaved tree grows in deciduous woodland and extends up river valleys in the eastern and western escarpments, locally common, e.g. in Ghinda, Medhanit, Habrenkeka, Dembelas, Mensa and around lower Gash, 1,300-1,800 m.

**Uses:** **Timber** (construction, furniture, bed frames), hardening of earthen pots, fodder.

**Description:** A tree 3-10 m. BARK: **Rough, black, with deep fissures** when mature and a sticky sap when cut; cut edge bright red. **Branches rough,** covered with leaf scars and thickened breathing pores. LEAVES: Clustered at the ends of branchlets, hairy when young, compound with **11-15 leaflets on a stalk 15-25 cm,** each leaflet curved, **3-11 cm,** unequal at the base, paler below with a clear network of veins, **tips long pointed.** FLOWERS: Tiny yellow flowers, beside older leaves along spikes or on branched heads 2-12 cm, with dense reddish hairs. FRUIT: Small and berry-like, oblong, about 1 cm, smooth and brown, 4 raised marks near the tip.

**Propagation:** Seedlings, cuttings.

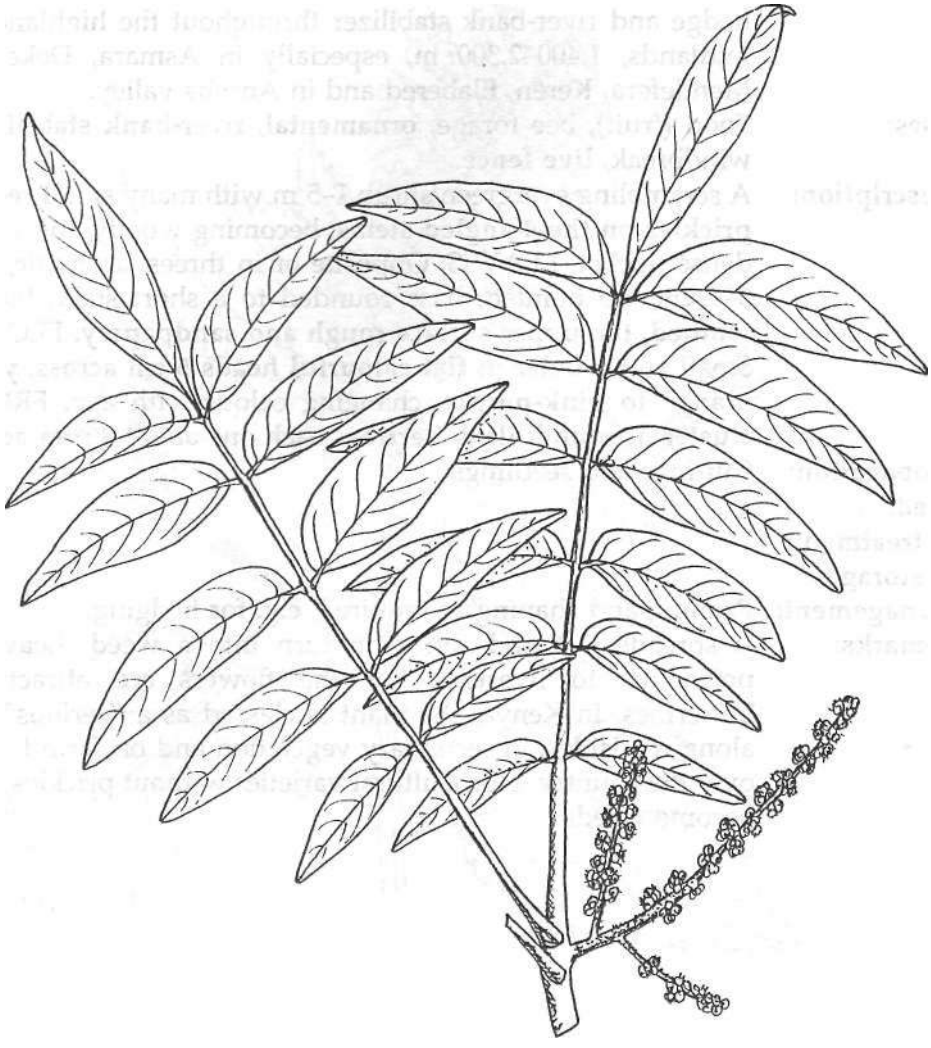
**Seed:** About 5,000-8,000 seeds per kg.

**treatment:**

**storage:**

**Management:**

**Remarks:** It is best propagated by cuttings.



## Lantana camara *Verbenaceae*

South America

*Eng: Lantana* *Tg: Bun tilian*

**Ecology:** A South American exotic often used as an attractive hedge in the tropics. In Eritrea, the shrub is cultivated as an ornamental hedge and river-bank stabilizer throughout the highlands and midlands, 1,400-2,300 m, especially in Asmara, Dekemhare, Mendefera, Keren, Elabered and in Anseba valley.

**Uses:** Food (fruit), bee forage, **ornamental, river-bank stabilization,** windbreak, **live fence.**

**Description:** A scrambling evergreen shrub 1-5 m with many **small recurved prickles on the 4-angled stems,** becoming woody and forming dense thicket. LEAVES: Opposite or in threes, **aromatic, ovate, 3-9 cm,** tip pointed, base rounded to a short stalk, the **edge toothed, the upper surface rough and sandpapery.** FLOWERS: Small and tubular in **flat colourful heads 5 cm across, yellow-orange to pink-purple,** changing colour with age. FRUIT: **A cluster of round black berries,** each one about 8 **mm** across.

**Propagation:** Cuttings and seedlings.

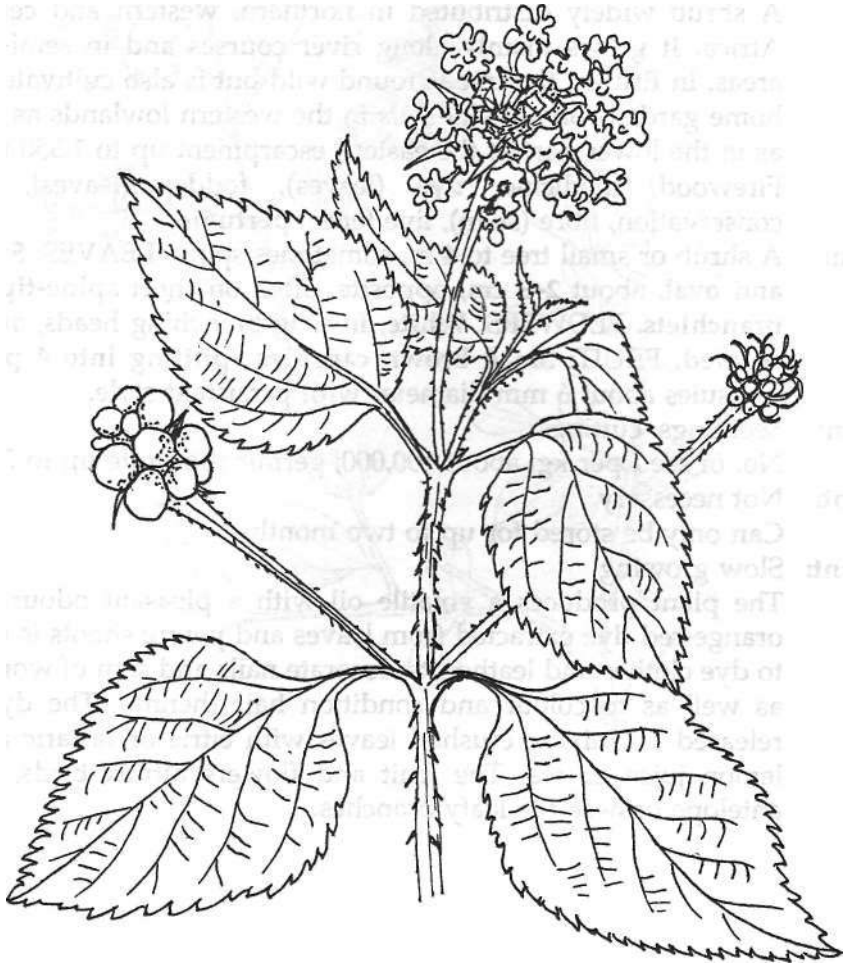
**Seed:**

**treatment:**

**storage:**

**Management:** Pruning and shaping as required, e.g. for hedging.

**Remarks:** It spreads fast and can soon turn into a weed. Leaves are poisonous to livestock but the flowers are attractive to butterflies. In Kenya, the plant is classed as a "serious" weed along roadsides, in secondary vegetation and on farm lands all over the country. Horticultural varieties without prickles do not become weeds.



## Lawsonia inermis *Lythracea*

Indigenous

| | | |
|---|---|---|
| *Ar: Hena* | *Bl: Hena* | *Eng:Henna* |
| *Km: Inna* | *Sh: Hena* | *Tg: Elam, Hina* |
| *Tr: Hena* | | |

**Ecology:** A shrub widely distributed in northern, western and central Africa. It grows mainly along river courses and in semi-arid areas. In Eritrea, the tree is found wild but is also cultivated in home gardens on alluvial soils in the western lowlands as well as in the lower part of the eastern escarpment up to 1,350 m.

**Uses:** Firewood, medicine, **dye** (leaves), fodder (leaves), soil conservation, fibre (stem), live fence, **perfume.**

**Description:** A shrub or small tree to 4 m, sometimes spiny. LEAVES: **Small and oval,** about **2-3 cm,** opposite, often on short **spine-tipped branchlets.** FLOWERS: **White,** in long branching heads, **sweet scented.** FRUIT: Small **brown capsules splitting into 4 parts.** Capsules about 6 mm diameter with persistent style.

**Propagation:** Seedlings, cuttings.

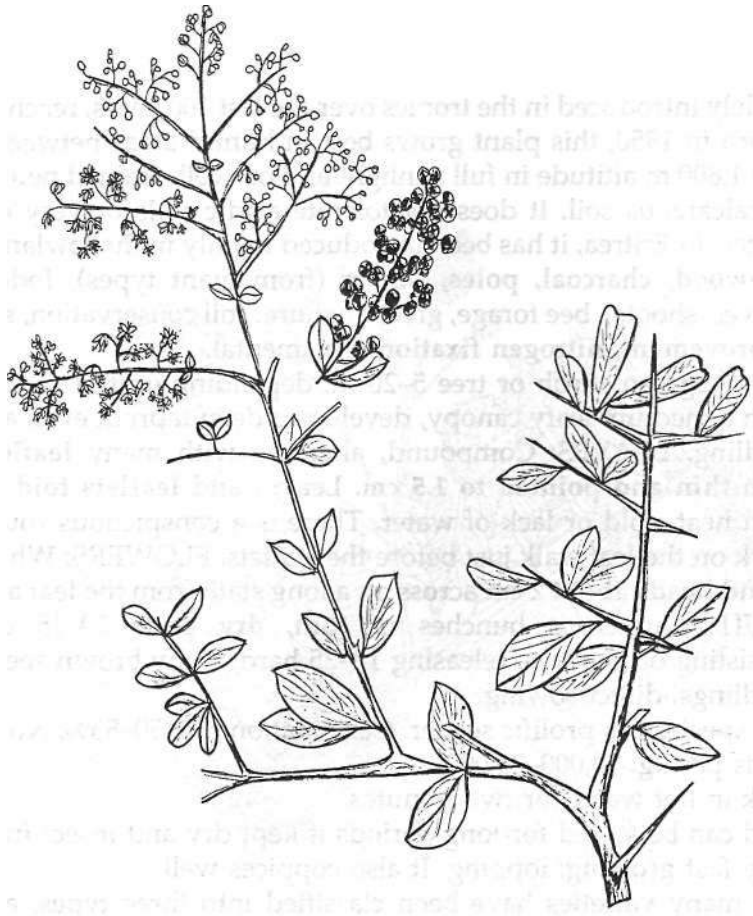
**Seed:** No. of seed per kg: about 100,000; germination rate up to 70%.

**treatment:** Not necessary

**storage:** Can only be stored for up to two months.

**Management:** Slow growing.

**Remarks:** The plant produces a volatile oil with a pleasant odour. An orange-red dye extracted from leaves and young shoots is used to dye clothes and leather, to decorate nails and skin of women, as well as to colour and condition hair (henna). The dye is released by mixing crushed leaves with citric or tartaric acid, lemon juice or tea. The fruit and flowers attract birds, and antelope browse the leafy branches.



enlarged fruit

Central America

*Tg: Lucina*

**Ecology:** Widely introduced in the tropics over the last 100 years, reaching Africa in 1950, this plant grows best in humid areas between 0 and 1,600 m altitude in full sunlight and on well-drained neutral or calcareous soil. It does not tolerate acidic soils or very dry places. In Eritrea, it has been introduced mainly in the lowlands.

**Seed:** **Firewood, charcoal, poles,** timber (from giant types), fodder (leaves, shoots), bee forage, green manure, soil conservation, **soil improvement, nitrogen fixation,** ornamental.

**Description:** An evergreen shrub or tree 5-20 m, depending on the variety, with a medium leafy canopy, develops a deep taproot even as a seedling. LEAVES: Compound, alternate with many **leaflets, each thin and pointed to 1.5 cm.** Leaves and **leaflets fold up** with heat, cold or lack of water. There is a conspicuous round mark on the leaf stalk just before the leaflets. FLOWERS: **White, round heads about 2 cm** across on a long stalk from the leaf axil. FRUTT: Numerous bunches of **thin, dry pods** 10-15 cm, persisting on the tree, releasing 12-25 hard, shiny brown seeds.

**Propagation:** Seedlings, direct sowing.

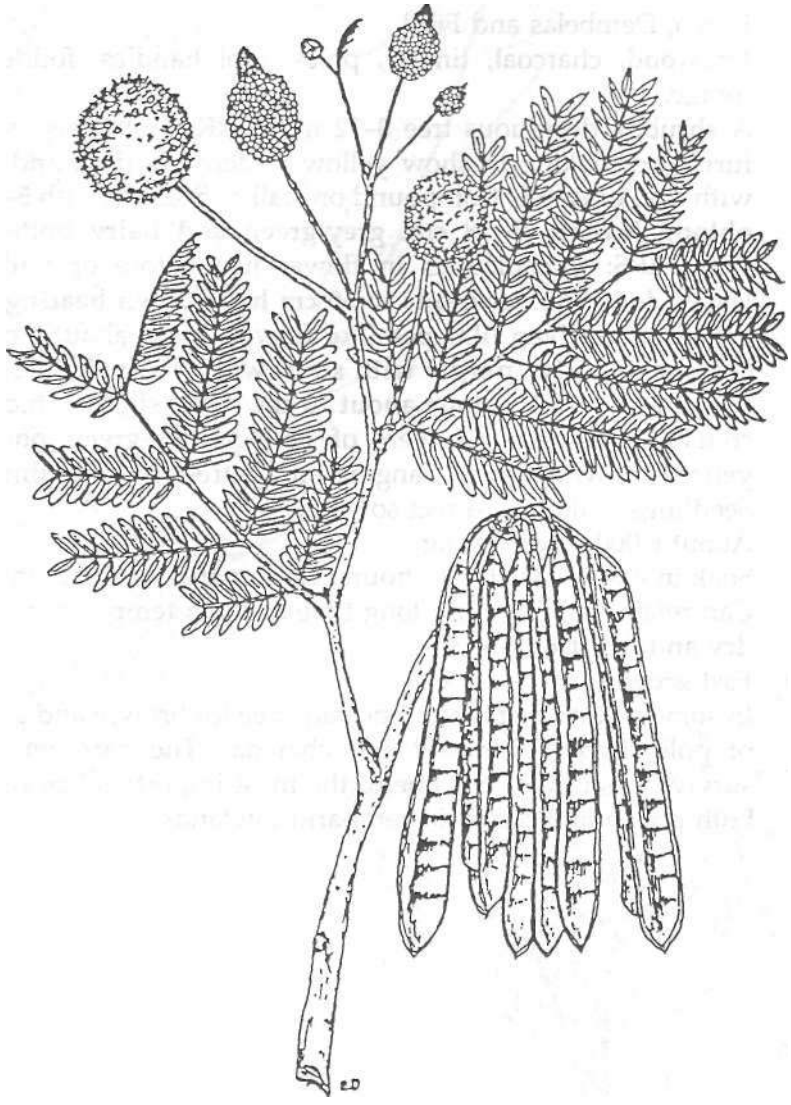
**Seed:** The species is a prolific seeder. Germination rate 50-85%. No. of seeds per kg: 13,000-34,000.

**treatment:** Soak in hot water for two minutes.

**storage:** Seed can be stored for long periods if kept dry and insect free.

**Management:** Very fast growing; lopping. It also coppices well.

**Remarks:** The many varieties have been classified into three types, and preferably the giant types (K8 and K28) should be used. The tree is a potential weed due to prolific seed production and the aggressive root system, especially in hot, humid conditions. Mimosine in the leaves can cause hair loss and stomach problems in livestock. Total feed should not contain more than 20% of Leucaena. Root nodules are very active in fixing nitrogen under suitable conditions.



## Lonchocarpus bussei (L. laxiflorus) *Papilionoideae*

Indigenous

*Ar: Khashkhash* *Tg: Zengherefa*

**Ecology:** A tree distributed in savannah areas from the Sudan and Uganda westward to Senegal, and also occurring in Ethiopia and Kenya. In Eritrea, it grows in wooded grassland and woodlands and in arid areas, 700-1,900 m, e.g. at Dongolo, Ghinda, Nefasit, Keren, Dembelas and Filfil.

**Uses:** **Firewood,** charcoal, timber, poles, tool handles, fodder, bee forage.

**Description:** A shrubby deciduous tree 3-12 m. BARK: Light grey, slightly furrowed, flaking to show yellow underbark, dark and rough with age. LEAVES: Compound on stalks *15-A5* cm with **5-7 long oblong leaflets,** 5-18 cm, **grey-green and hairy both sides.** FLOWERS: Conspicuous in flower just before or with new leaves, **loose flower heads to 60 cm hang down bearing many pink-mauve-deep lilac pea-like flowers,** each about 1 cm, the bell-shaped **calyx purple with short white hairs.** FRUIT: **Thin, flat pods, narrow oblong about 10 cm,** edges slightly thickened, contain 1-4 seeds. Showers of **pale yellow-green pods dry yellow-brown, papery,** hanging on the tree for some time.

**Propagation:** Seedlings, wildings, direct sowing.

**Seed:** About 6,000 seeds per kg.

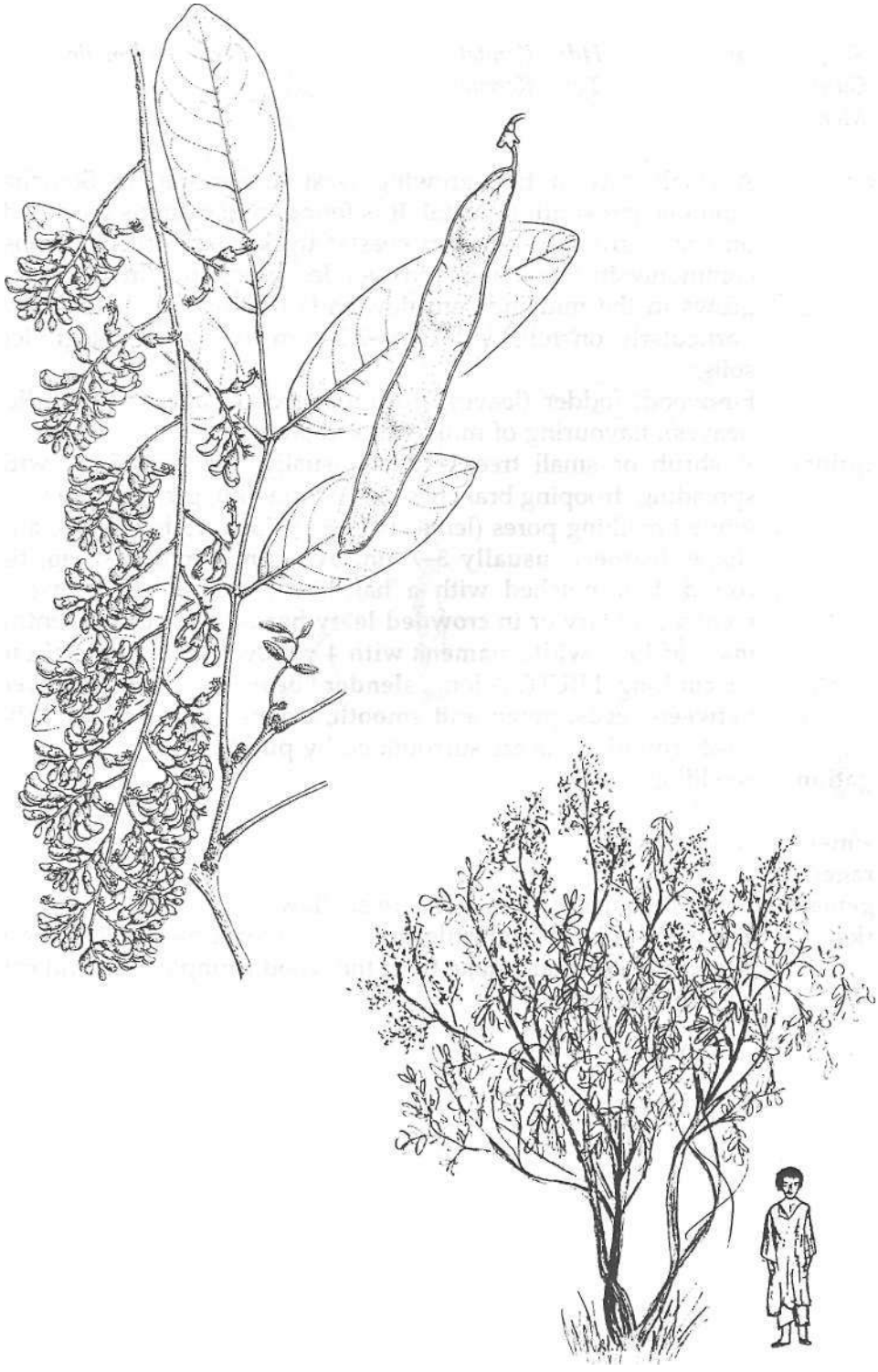
**treatment:** Soak in cold water for 12 hours. Germination is good and fast.

**storage:** Can retain viability for a long time at room temperature if kept dry and free from insects.

**Management:** Fast growing.

**Remark:** In sonne countries it is an important tree for browse and a source of pole timber, firewood and charcoal. The hard wood can survive bush fires. It is one of the most important bee trees for both pollen and nectar in semi-arid lowlands.

Lonchocarpus bussei (L. laxiflorus) *Papilionoideae*



## Maerua angolensis *Capparidaceae*

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *At:* | *Shajar-al-zaref* | *Hd:* | *Kemtet* | *Nr:* | *Arembile* |
| *Sh:* | *Garomo* | *Tg:* | *Keremo* | | |
| *Tr:* | *Meraat* | | | | |

**Ecology:** A small African tree growing west to Senegal, in Somalia, Ethiopia and south to Natal. It is found in deciduous bushland, on rocky ground and even coastal thicket on coral, but most commonly in woodland and wooded grassland. In Eritrea, it grows in the midlands and lowlands throughout the country, particularly on hillsides, 1,200-2,200 m. It tolerates degraded soils.

**Uses:** Firewood, fodder (leaves), furniture, bee forage, milk curdler (leaves), flavouring of milk (smoked wood).

**Description:** A shrub or small tree 1-10 m, usually less than 5 m, with spreading drooping branches. BARK: Smooth, grey, dotted with white breathing pores (lenticels). LEAVES: Variable in size and shape, **leathery, usually 3-7 cm, oval, on a stalk 1-3 cm,** tip rounded or notched with a hair-like tip. FLOWERS: Sweet-scented, solitary or in **crowded leafy heads,** no petals, a central **mass of long white stamens with 4 yellow-green sepals about 1.5 cm long.** FRUIT: A long, **slender "bean" 2-16 cm, narrowed between seeds, green and smooth,** drying yellow-brown. The 10-20 round seeds are surrounded by pulp.

**Propagation:** Seedlings.

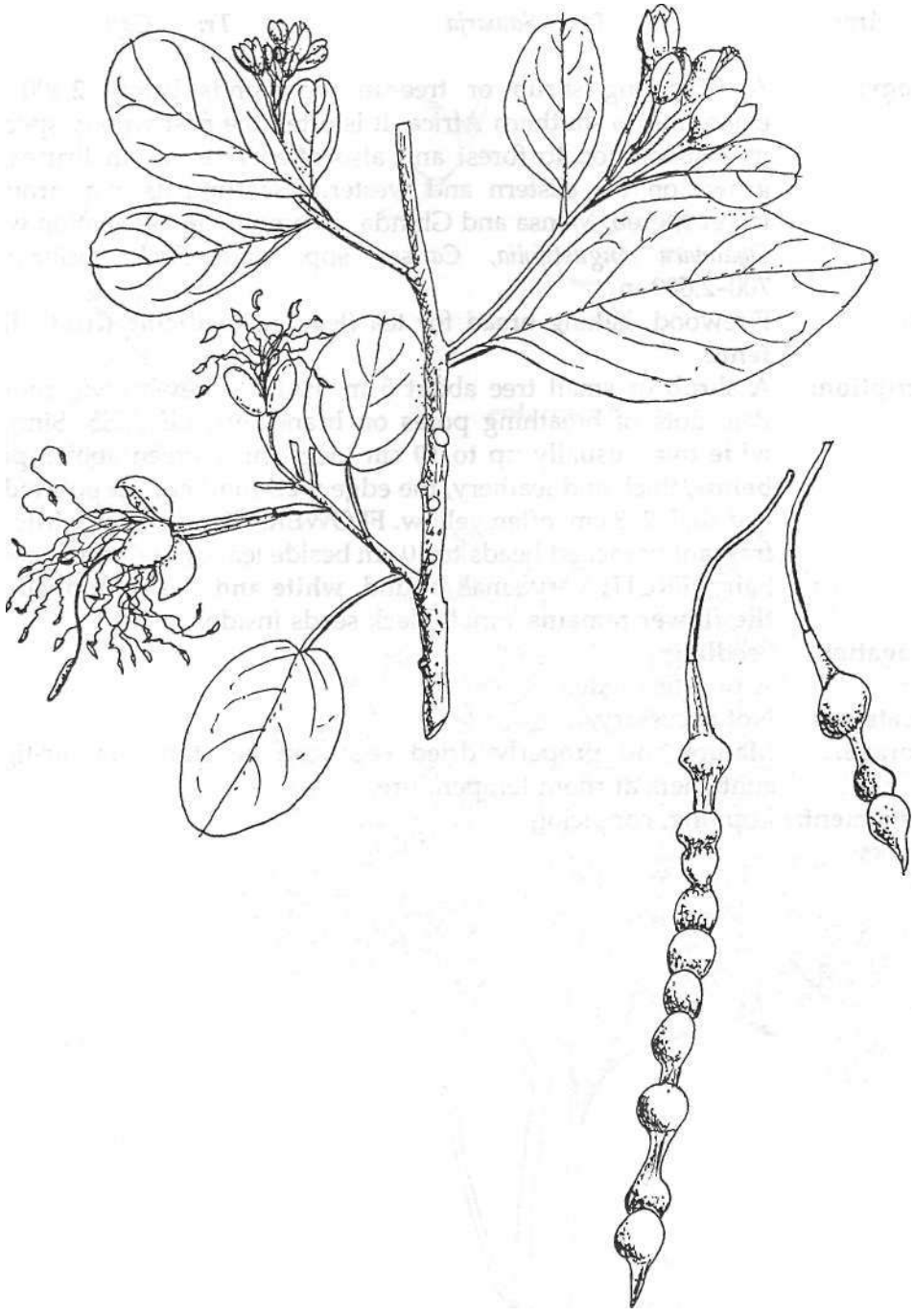
**Seed:**

**treatment:** Not necessary.

**storage:**

**Management:** A fast colonizer where soils are shallow.

**Remarks:** The wood is hard but brittle, and is used for furniture. The Tigre people believe that smoke from the wood is unpleasant and can lead to divorce.



## Maesa lanceolata *Myrsinaceae*

Indigenous

*Ar:* *Arar* *Tg:* *Sawarja* *Tr:* *Cafta*

**Ecology:** A straggling shrub or tree in woodlands below 2,400 m, extending to southern Africa. It is often the first woody species in a succession to forest and also often riverine. In Eritrea, it grows on the eastern and western escarpments, e.g. around lower Mereb, Mensa and Ghinda, commonly in association with *Dodonaea angustifolia, Carissa* spp. and *Euclea schimperi,* 700-2,000 m.

**Uses:** Firewood, baking bread for tea (leaves), **medicine** (fruit), **live fence.**

**Description:** A shrub or small tree about 5 m. BARK: Grey-brown, rough. Pale dots of breathing pores on branchlets. LEAVES: Simple, **wide oval,** usually up to **10 cm** long, shiny green above, **pale below,** thick and leathery, the edge **well toothed, tip pointed,** a leaf stalk 2-3 cm, often yellow. FLOWERS: Tiny cream-white, in fragrant branched heads to 10 cm beside leaves; stalks and calyx hairy. FRUIT: Very small, round, **white and fleshy, topped by the flower remains.** Small black seeds inside.

**Propagation:** Seedlings.

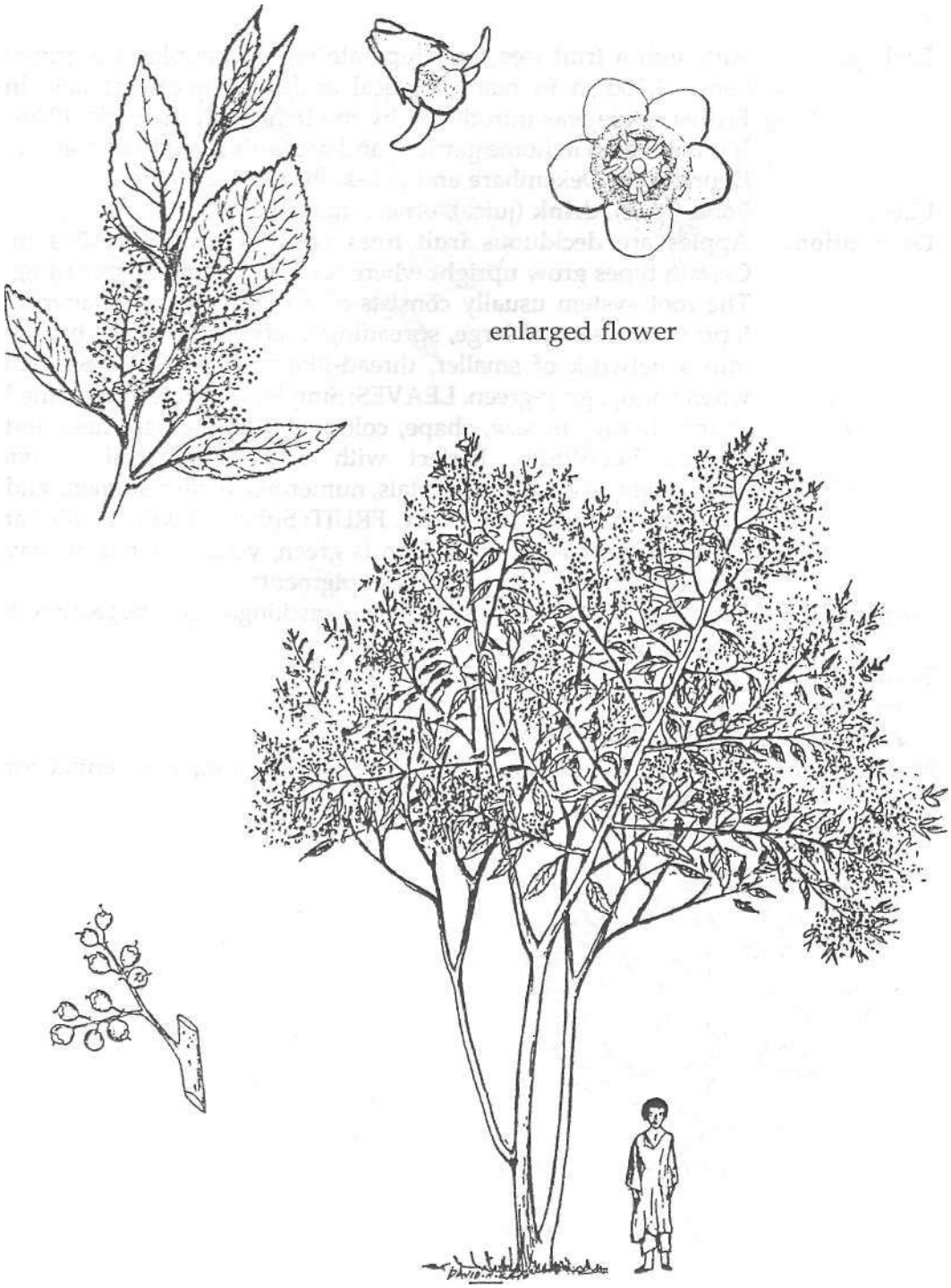
**Seed:** A prolific seeder.

**treatment:** Not necessary.

**storage:** Mature and properly dried seed can be stored in air-tight containers at room temperature.

**Management:** Lopping, coppicing.

**Remarks:**


enlarged flower

## Malus domestica *Rosaceae*

Cultivated hybrid

*Ar:* *Tufah* *Eng:* *Apple* *Tg:* *Tufah*
*Tr:* *Tufah*

**Ecology:** Although a fruit tree for temperate regions, apples are grown above 1,300 m in many tropical and subtropical regions. In Eritrea apple was introduced by the Italians in the early 1900s. It is cultivated in home gardens and orchards, mainly in Asmara, Debrebizen, Dekemhare and Adi-keih, 1,900-2,400 m.

**Uses:** **Food** (fruit), **drink** (juice), ornamental, shade.

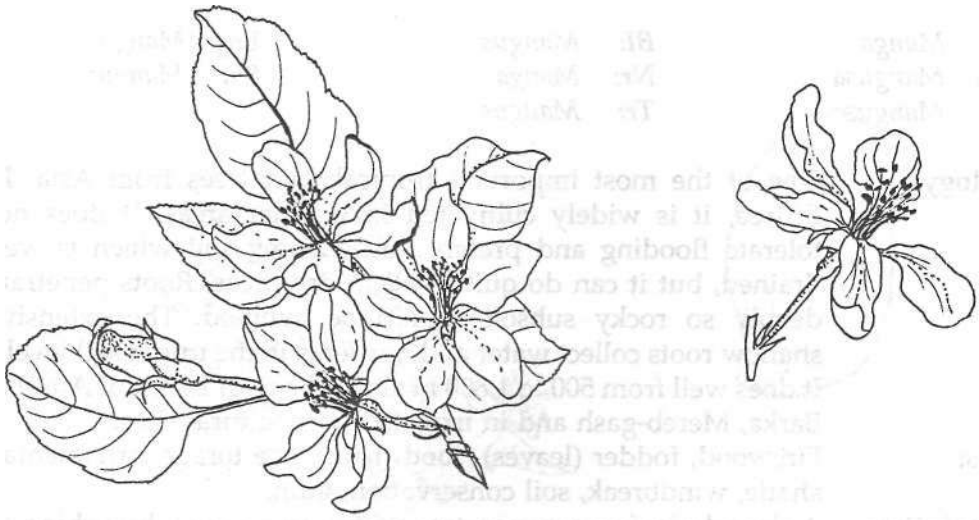
**Description:** Apples are deciduous fruit trees which grow up to 3-4 m. Certain types grow upright whereas others are more spreading. The root system usually consists of a relatively short tapering taproot and several large, spreading lateral roots which branch into a network of smaller, thread-like roots. BARK: Smooth when young, grey-green. LEAVES: Simple, alternate and toothed or lobed, vary in size, shape, colour, thickness, hairyness and texture. FLOWERS: Perfect with a five-lobed calyx, five moderately large separate petals, numerous distinct stamens and a five-celled, five-styled ovary. FRUIT: Spherical with cavities at the basal and apical ends. Skin is green, yellow or red or may develop two or all three of these pigments.

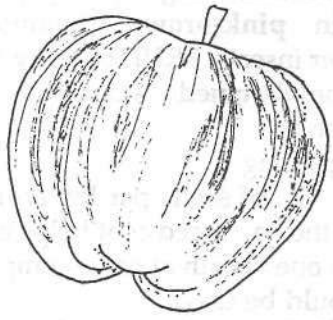
**Propagation:** Budding, grafting into other seedlings or vegetatively reproduced root stock.

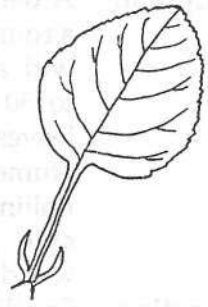
**Seed:**
**treatment:**
**storage:**

**Management:** Fertilization, irrigation and corrective pruning is essential for high yield.

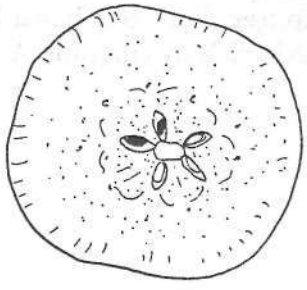
**Remarks:**

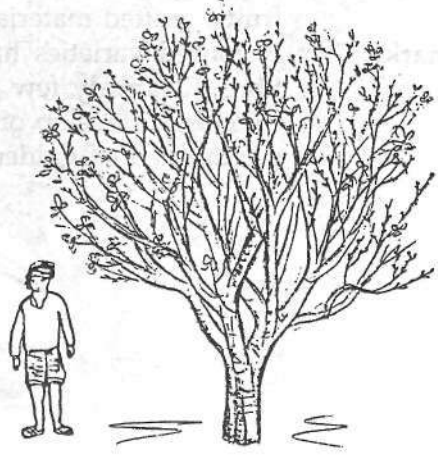






fruit section





## Mangifera indica *Anacardiaceae*

Northern India, Burma

| | | |
|---|---|---|
| *Ar: Manga* | *Bl: Mangus* | *Eng: Mango* |
| *Km: Mangusa* | *Nr: Manga* | *Sh: Mangus* |
| *Tg: Mangus* | *Tr: Mangus* | |

**Ecology:** One of the most important tropical fruit trees from Asia. In Eritrea, it is widely cultivated in warmer areas. It does not tolerate flooding and prefers sandy-loamy soil which is well drained, but it can do quite well in dry areas. Roots penetrate deeply so rocky subsoil should be avoided. The extensive shallow roots collect water and nutrients in the upper soil levels. It does well from 500 to 1,800 m along the river banks of Anseba, Barka, Mereb-gash and in irrigated horticultural sites.

**Uses:** Firewood, fodder (leaves), **food** (fruit), bee forage, ornamental, **shade,** windbreak, soil conservation, gum.

**Description:** A densely leafy evergreen tree with a trunk soon branching to a rounded crown, usually 10-15 m. BARK: Dark brown, cracking with age. LEAVES: Dark green, crowded at the ends of branches, to 30 cm long, smelling of turpentine when crushed. Young leaves soft, **copper-coloured** and **hanging limply.** FLOWERS: Numerous and small in **pink-brown pyramidal heads.** Pollination by flies and other insects. FRUIT: **Fleshy 8-15 cm,** the **skin green-red-yellow,** the flattened "stone" is fibrous and woody around the large seed.

**Propagation:** Seedlings, direct sowing, grafting.

**Seed:** Germination rate 60-90 %. No. of seeds per kg: around 50.

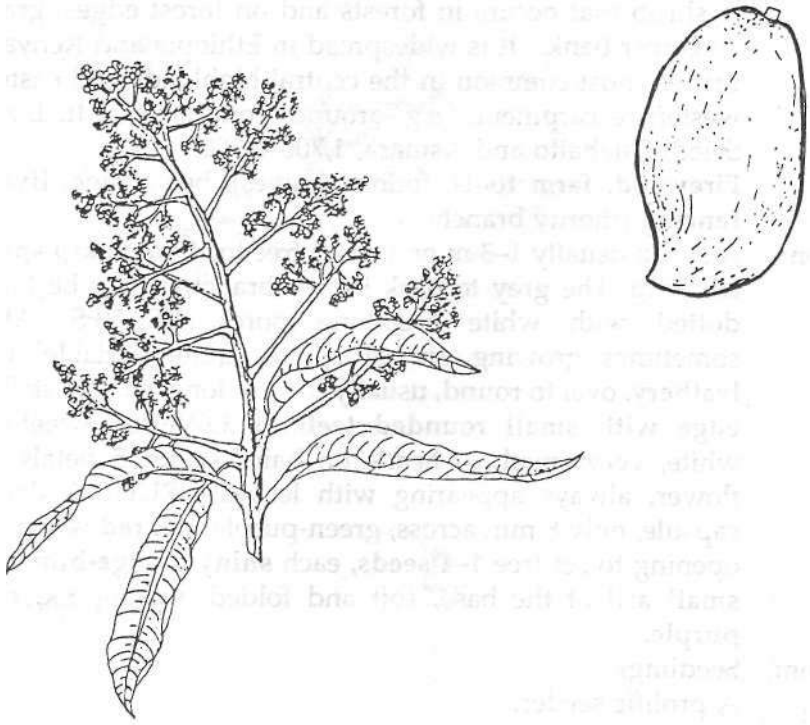
**treatment:** Not necessary, but nicking the hard seed coat helps germination.

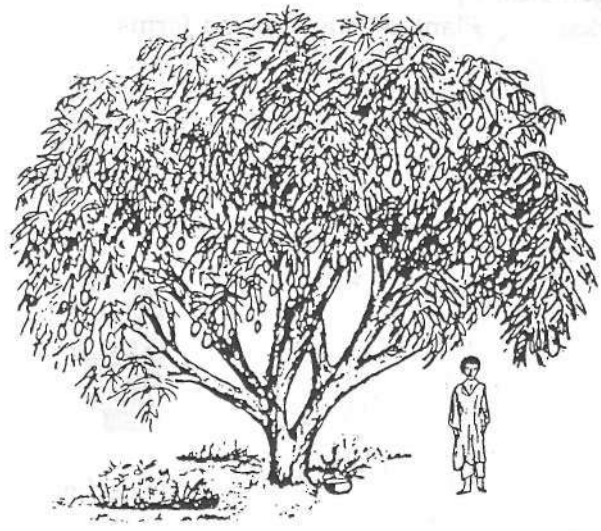
**storage:** Seed can be stored for only one month at room temperature. For best results, fresh seed should be used.

**Management:** Lopping, grafting. For quicker growth and early production of fruits, grafted material should be used.

**Remarks:** Favoured varieties have fruits with a good flavour and little fibre. Relatively few flowers are pollinated but even so up to 1,000 fruit develop on a mature tree. Each one has a large seed surrounded by golden juicy flesh, rich in vitamins A and C.

Mangifera indica *Anacardiaceae*





## Maytenus arbutifolia *Celastraceae*

Indigenous

*Sh:* *Adad* *Tg:* *Atat* *Tr:* *Hergitte*

**Ecology:** A shrub that occurs in forests and on forest edges, grasslands and river banks. It is widespread in Ethiopia and Kenya and in Eritrea most common in the central highlands and eastern and western escarpments, e.g. around Rora-habab, Mt. Bizen, Mt. Seled, Quahaito and Asmara, 1,700-2,700 m.

**Uses:** **Firewood, farm tools,** fodder (leaves), bee forage, **live fence, fencing** (thorny branches).

**Description:** A shrub usually 1-3 m or **a** small tree to 12 m. **Sharp spines 4-7 cm long.** The grey to dark brown branches may be hairy and dotted with white breathing pores. LEAVES: Alternate, sometimes growing out of spines, quite variable, **hard or leathery,** oval to round, usually to 6 cm long, shortly stalked, the **edge with small rounded teeth.** FLOWERS: Sweet-scented, white, very small, in heads on hairy stalks, 5 petals in each flower, always appearing with leaves. FRUIT: A dry 3-part capsule, only 8 mm across, green-purple, but **red when mature,** opening to set free **1-4 seeds,** each **shiny orange-brown** with a **small aril** at the base, soft and folded, white-pink, **ripening purple.**

**Propagation:** Seedlings.

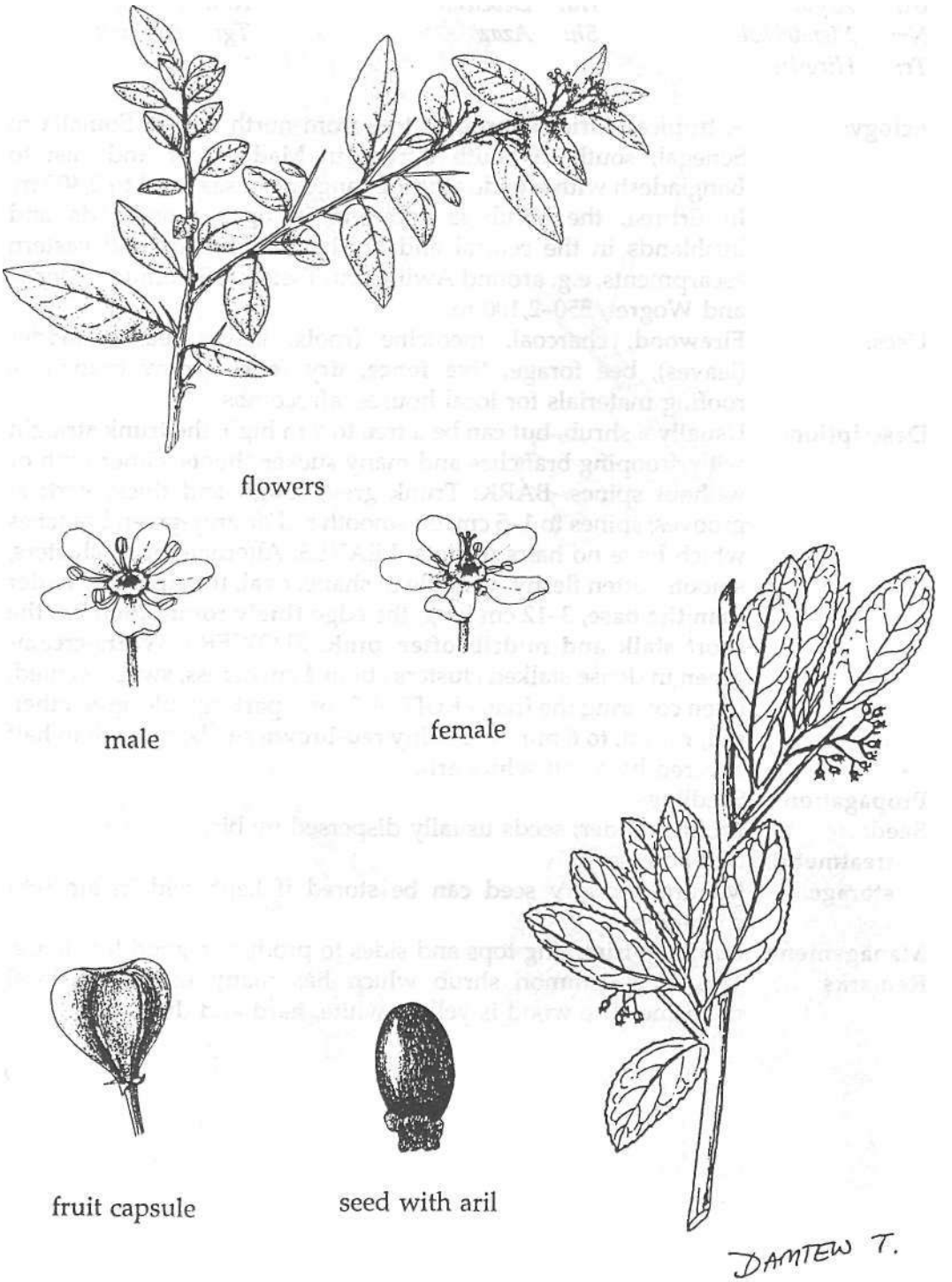
**Seed:** A prolific seeder.

**treatment:** Not necessary.

**storage:** Can be stored if kept cold in air-tight containers.

**Management:**

**Remarks:** Planted as a fence on farms.


flowers
male
female
fruit capsule
seed with aril
DAMTEW T.

## Maytenus senegalensis *Celastraceae*

Indigenous

| | | |
|---|---|---|
| *Bl: Argudi* | *Hd: Debeleab* | *Km: Aikota* |
| *Nr: Mendebkal* | *Sh: Azaz* | *Tg: Arghudi* |
| *Tr: Hirgitte* | | |

**Eclogy:** A tropical African shrub or tree from north Africa, Somalia to Senegal, south to South Africa, in Madagascar and east to Bangladesh with a wide altitude range from sea level to 2,400 m. In Eritrea, the shrub is common in open woodlands and bushlands in the central and northern highlands and eastern escarpments, e.g. around Awli-tseru, Tselema, Solomuna, Mensa and Wogret, 550-2,100 m.

**Uses:** **Firewood,** charcoal, medicine (roots, leaves, bark), fodder (leaves), bee forage, **live fence, dry fence** (spiny branches), roofing materials for local houses, afrocombs.

**Description:** Usually a shrub, but can be a tree to 8 m high, the trunk straight with drooping branches and many sucker shoots, either with or without spines. BARK: Trunk grey, rough and thick, vertical grooves; spines to 1-5 cm, on smooth red or grey-green branches which have no hairs or dots. LEAVES: Alternate or in clusters, smooth, often fleshy, variable in shape, oval, the **tip often wider than the base,** 3-12 cm long, the edge **finely round toothed,** the short **stalk and midrib often pink.** FLOWERS: **White-cream-green** in dense stalked clusters about 4 cm across, sweet scented, often covering the tree. FRUIT: A 2- or 3-part capsule, green then **red, round, to 6 mm, 1-2 shiny red-brown seeds,** more than half covered by a soft **white aril.**

**Propagation:** Seedlings.

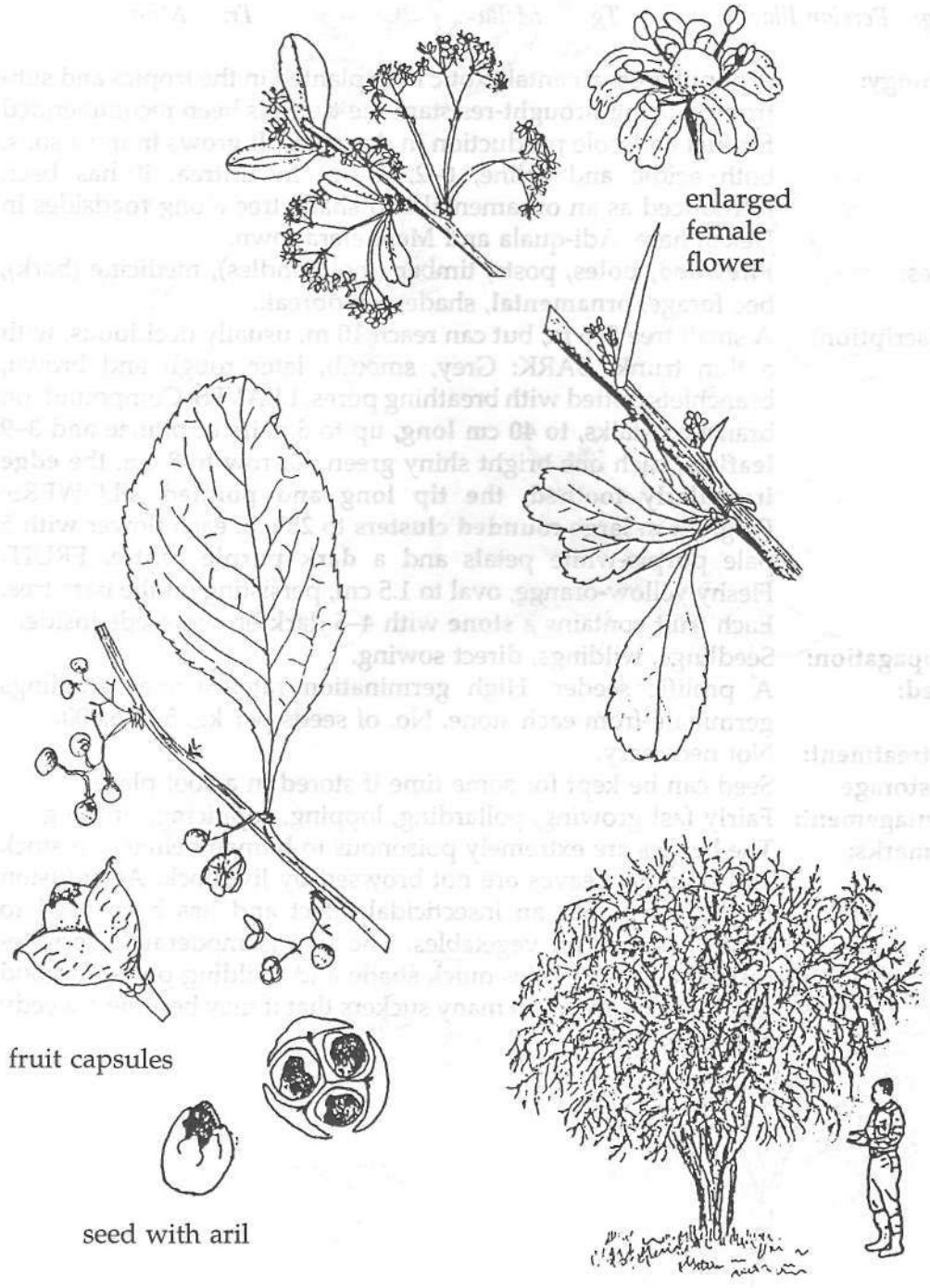
**Seed:** Prolific seeder; seeds usually dispersed by birds.

**treatment:** Not necessary.

**storage:** Mature and dry seed can be stored if kept cold in air-tight containers.

**Management:** Lopping, trimming tops and sides to produce a good live fence.

**Remarks:** This is a common shrub which has many uses as a local medicine. The wood is yellow-white, hard and durable.


enlarged
female
flower
fruit capsules
seed with aril

## Melia azedarach *Meliaceae*

Western Asia, Himalayas

*Eng: Persian lilac* *Tg: Melia* TV: *Mini*

**Ecology:** A popular ornamental exotic long planted in the tropics and sub-tropics. Being drought-resistant the tree has been recommended for fuel and pole production in dry areas. It grows in most soils, both acidic and saline, 0-2,400 m. In Eritrea, it has been introduced as an ornamental and shade tree along roadsides in Dekemhare, Adi-quala and Mendefera town.

**Uses:** **Firewood, poles,** posts, timber (tool handles), medicine (bark), bee forage, **ornamental,** shade, windbreak.

**Description:** A small tree 5-6 m, but can reach 10 m, usually deciduous, with a thin trunk. BARK: Grey, smooth, later rough and brown, branchlets dotted with breathing pores. LEAVES: Compound, on branched stalks, **to 40 cm long,** up to 6 pairs of pinnae and **3-9 leaflets,** each one bright shiny green, narrow to 8 cm, the **edge irregularly toothed, the tip long and pointed.** FLOWERS: Fragrant in large **rounded clusters** to 25 cm, each flower with 5 pale purple-white petals and a **dark purple centre.** FRUIT: Fleshy yellow-orange, oval to 1.5 cm, persisting on the bare tree. Each fruit contains a **stone** with 4-6 dark brown seeds inside.

**Propagation:** Seedlings, wildings, direct sowing.

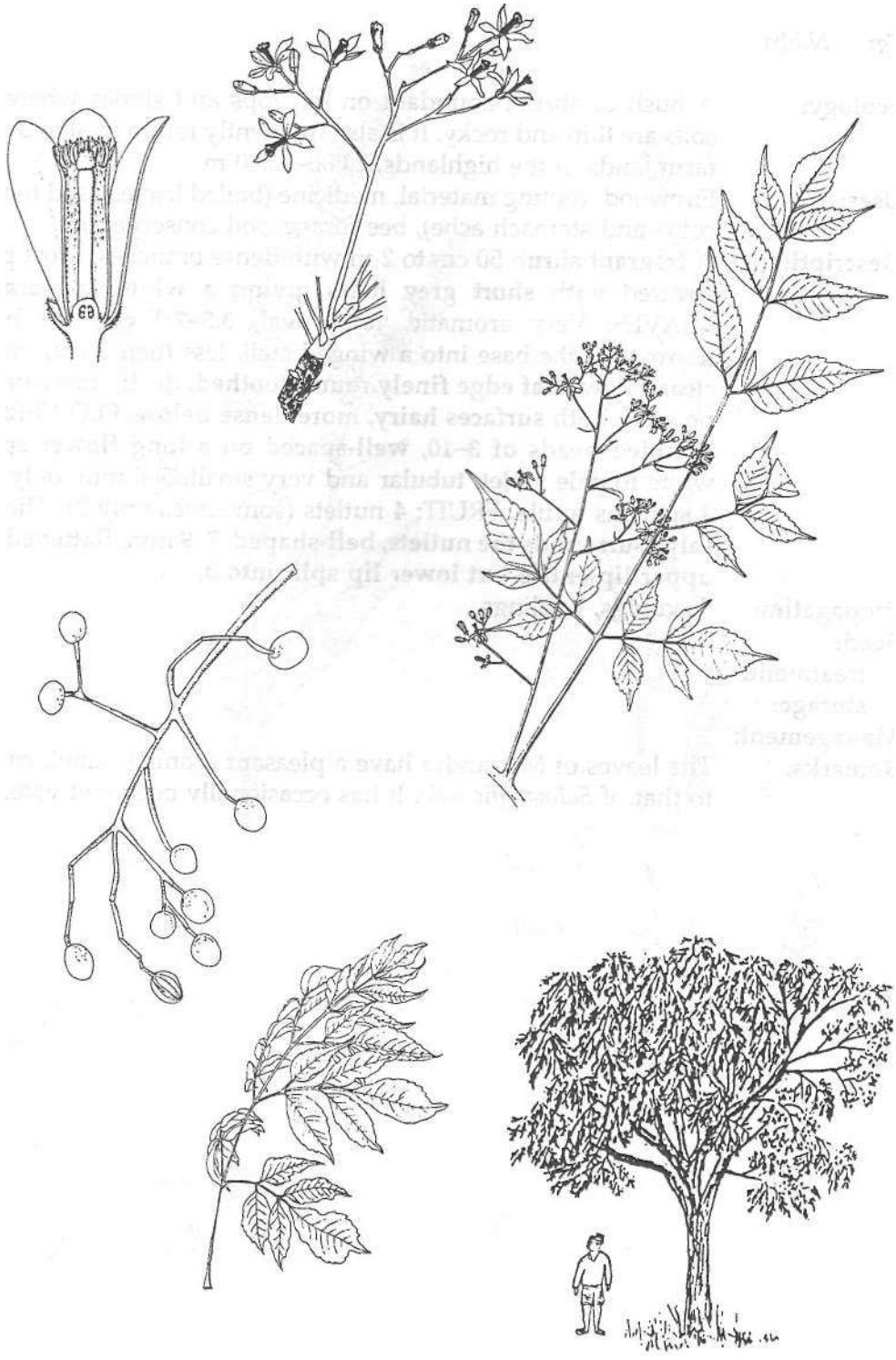
**Seed:** A prolific seeder. High germination rate: several seedlings germinate from each stone. No. of seeds per kg: 500-3,000.

**treatment:** Not necessary.

**storage:** Seed can be kept for some time if stored in a cool place.

**Management:** Fairly fast growing; pollarding, lopping, coppicing, pruning.

**Remarks:** The berries are extremely poisonous to human beings, livestock and poultry. Leaves are not browsed by livestock. An infusion of the leaves has an insecticidal effect and has been used to control insects on vegetables. The tree is moderately termite-resistant and provides quick shade and building poles. In good conditions it grows so many suckers that it may become a weedy nuisance.



## Meriandra bengalensis *Lamiaceae*

Indigenous

*Tg: Nihba*

**Ecology:** A bush or shrub, abundant on hill tops and slopes where the soils are thin and rocky. It is also frequently found in abandoned farm lands in the highlands, 2,000-2,500 m.

**Uses:** Firewood, roofing material, medicine (boiled leaves used to treat colds and stomach ache), bee forage, soil conservation.

**Description:** A **fragrant shrub** 50 cm to 2 m with dense branches. Most parts covered with **short grey hairs giving a white appearance.** LEAVES: Very aromatic, **long oval, 3.5-7.0 cm,** the blade narrows at the base into a winged stalk less than 2 cm, midrib clear below, **leaf edge finely round-toothed,** the tip more or less pointed; **both surfaces hairy, more dense below.** FLOWERS: In **rounded heads of 3-10, well-spaced on a long flower spike,** white to pale violet, tubular and very small, 5-6 mm, only 2 of 4 stamens fertile. FRUIT: 4 nutlets (sometimes only 2). The **dry calyx surrounds the nutlets, bell-shaped, 7-9** mm, **flattened, the upper lip entire but lower lip split into 2.**

**Propagation:** Seedlings, wildings.

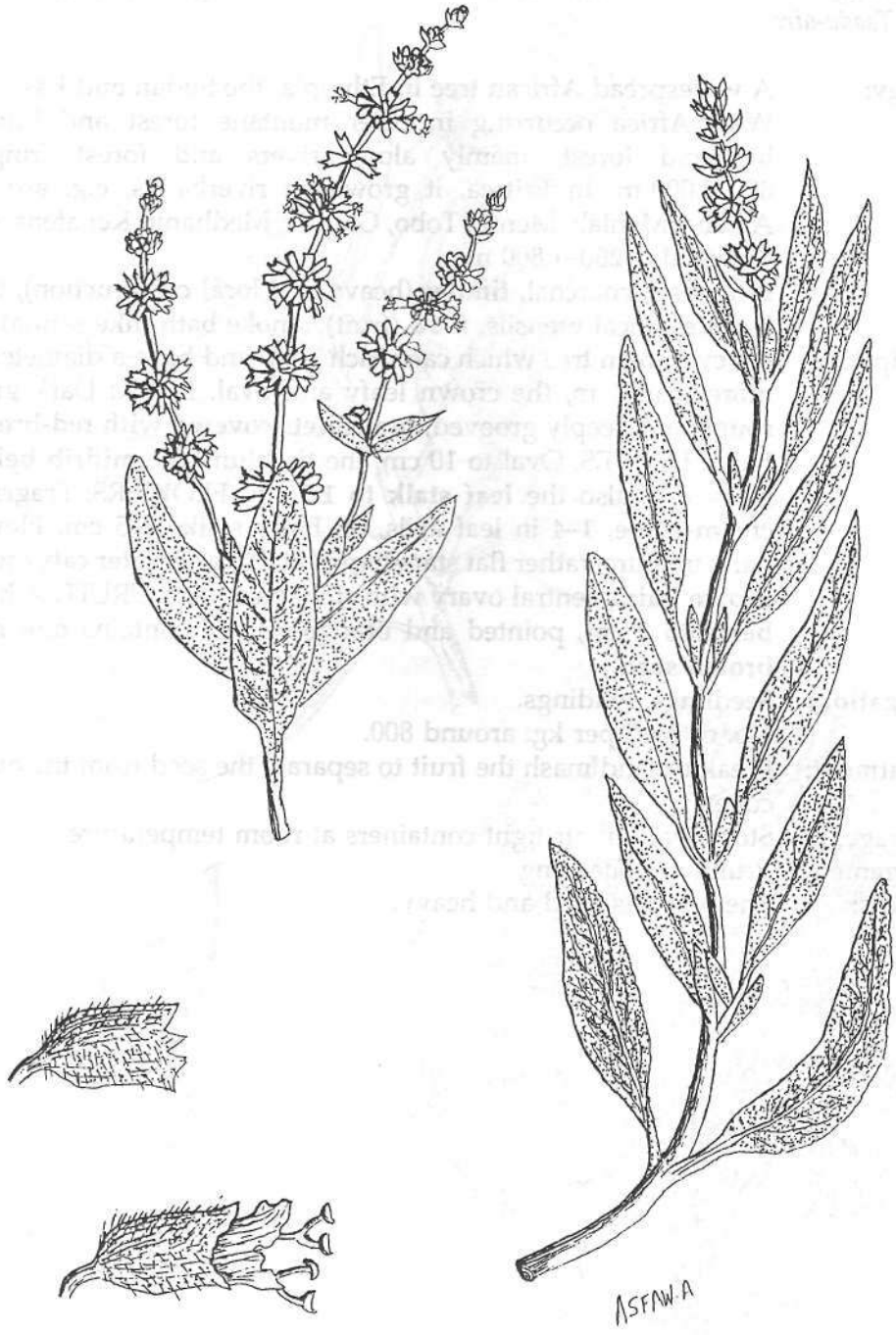
**Seed:**

**treatment:**

**storage:**

**Management:**

**Remarks:** The leaves of Meriandra have a pleasant aromatic smell similar to that of *Salvia officinale.* It has occasionally been cultivated.


ASFAW.A

# Mimusops kummel *Sapotaceae*

Indigenous

*Bl:* *Ogg* *Sh:* *Lalua* *Tg:* *Kummel*
*Tr:* *Tsada-airo*

**Ecology:** A widespread African tree in Ethiopia, the Sudan and East and West Africa occurring in drier montane forest and humid highland forest, mainly along rivers and forest fringes, 800-2,000 m. In Eritrea, it grows on riverbanks, e.g. around Aibaba, Mehlab, Mensa, Tobo, Ghinda, Medhanit, Kenafena and Elabered, 1,200-1,800 m.

**Uses:** **Firewood,** charcoal, **timber** (heavy and local construction), **tool handles,** local utensils, **food** (fruit), smoke bath (like sauna).

**Description:** An evergreen tree which can reach 35 m and have a diameter of more than 1 m, the crown leafy and oval. BARK: Dark grey, rough and deeply grooved, **branchlets covered with red-brown hairs.** LEAVES: Oval to 10 cm, the tip blunt, the **midrib below hairy** and also the **leaf stalk to 1.5 cm.** FLOWERS: Fragrant, cream-white, 1-4 in leaf axils, on hairy stalks 2-5 cm. Flower parts in fours, rather flat star-shaped **stalks and outer calyx with brown hairs,** central ovary with silky pale hairs. FRUIT: A **hard berry to 2 cm,** pointed and orange-yellow, contains **one red-brown seed.**

**Propagation:** Seedlings, wildings.

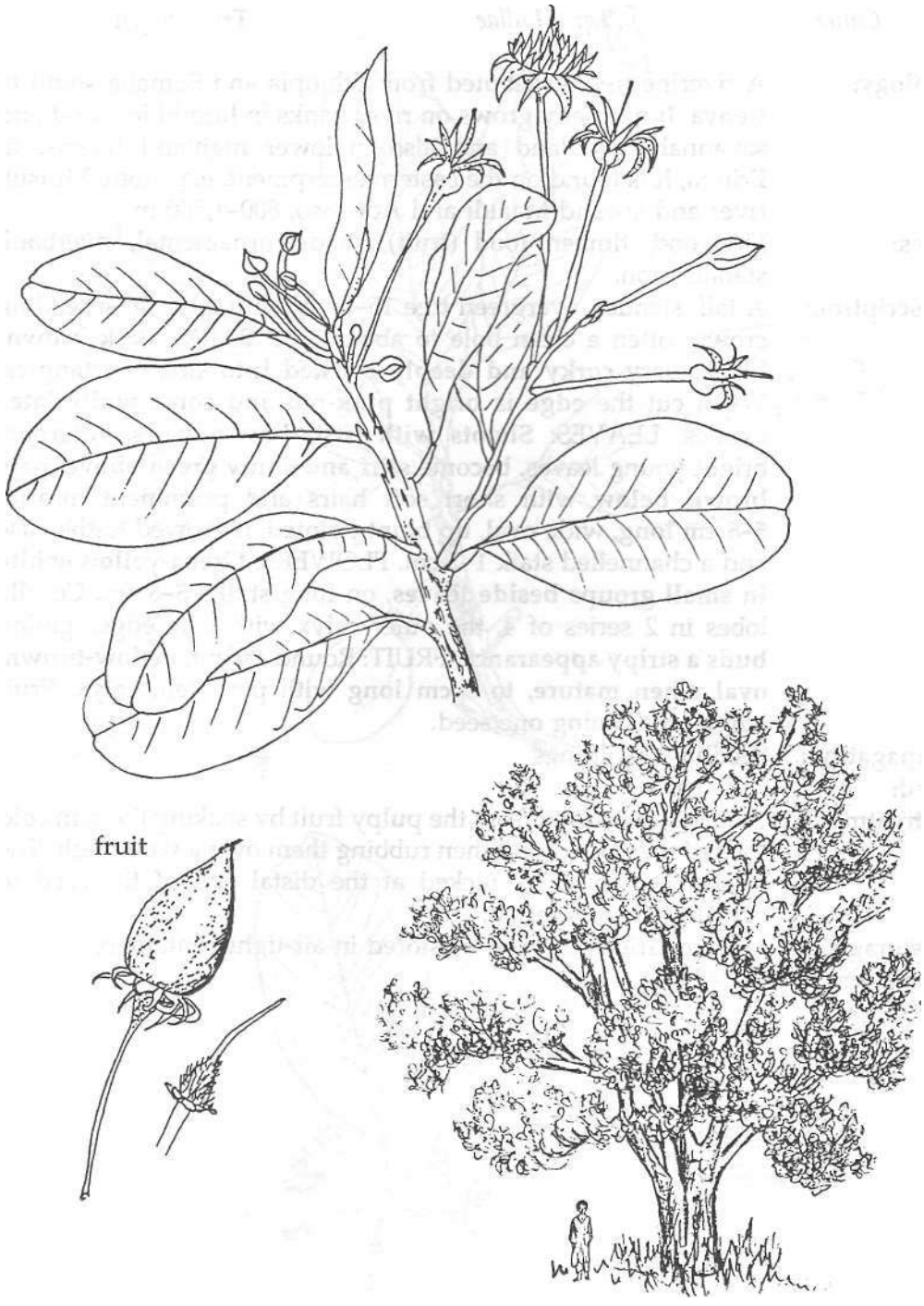
**Seed:** No. of seed per kg: around 800.

**treatment:** Break up and mash the fruit to separate the seed from the outer cover.

**storage:** Stores well in air-tight containers at room temperature.

**Management:** Pruning, pollarding.

**Remarks:** The wood is hard and heavy.


fruit

## Mimusops schimperi *Sapotaceae*

Indigenous

*Sh:* *Calua* *Tg:* *Lullae* *Tr:* *Algen*

**Ecology:** A riverine tree distributed from Ethiopia and Somalia south to Kenya. It normally grows on river banks in humid lowland and savannah woodland and also in lower highland forests. In Eritrea, it is found on the eastern escarpment, e.g. along Mutsub river and around Maaldi and Adi-roso, 800-1,800 m.

**Uses:** Firewood, timber, food (fruit), shade, ornamental, riverbank stabilization.

**Description:** A tall, slender, evergreen tree 15-20 m with a dense spreading crown; often a clean bole to about 7 m. BARK: **Dark brown-black, very corky and deeply cracked into small rectangles.** When cut the **edge is bright pink-red and some white latex** exudes. LEAVES: **Shoots with rusty-brown hairs.** Alternate bright young leaves, become **stiff and shiny green above, pale brown below** with short soft hairs and prominent midrib, **5-8 cm long,** wide oval, tip blunt-pointed, narrowed to the base and a channelled stalk 1-2 cm. FLOWERS: **Green-yellow-white in small groups beside leaves,** on **long stalks 5-8 cm.** Corolla lobes in 2 series of 4, the outer calyx with pale edges giving **buds a stripy appearance.** FRUIT: Round at first, **yellow-brown, oval when mature, to 3 cm long** with persistent calyx. Fruit edible, containing one seed.

**Propagation:** Seedlings, wildings.

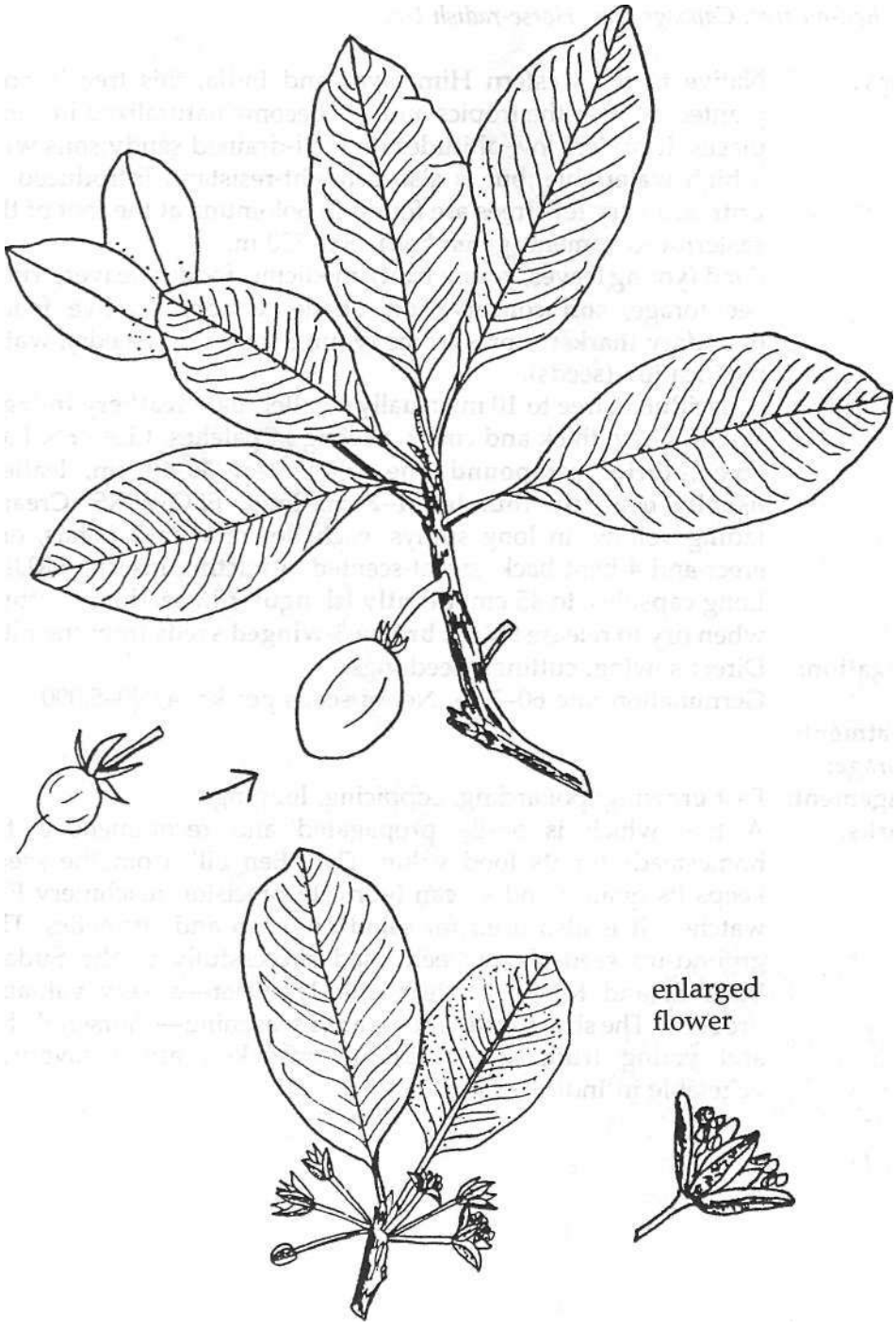
**Seed:**

**treatment:** Seeds are extracted from the pulpy fruit by soaking them in cold water for 24 hours and then rubbing them over a wire mesh. The seed coat should be nicked at the distal end of the seed to encourage germination.

**storage:** Mature, dried seed can be stored in air-tight containers.

**Management:** Pollarding.

**Remarks:**


enlarged
flower

## Moringa oleifera *Moringaceae*

India, Arabia

*Eng: Ben-oil tree, Cabbage tree, Horse-radish tree*

**Ecology:** Native to the western Himalayas and India, this tree is now planted all over the tropics and has become naturalized in some places. It prefers low altitudes on well-drained sandy soils with a high watertable, but is also drought-resistant. Introduced to Eritrea, a very few trees are found in Solomuna at the foot of the eastern escarpment (green belt), 500-750 m.

**Uses:** **Food** (young leaves, young fruit), medicine, fodder (leaves, fruit), bee forage, **soil conservation,** shade, windbreak, live fence, boundary marker, fibres, spice (young roots), oil (seeds), water purification (seeds).

**Description:** A deciduous tree to 10 m, usually smaller, **pale feathery foliage.** BARK: Grey, thick and corky, peeling in patches. LEAVES: Pale green, **thrice compound,** the whole leaf **30-60 cm,** leaflets **usually oval, tip rounded 1-2 cm long.** FLOWERS: **Cream,** fading yellow, in long sprays, each flower with 5 petals, one erect and 4 bent back, sweet-scented, attracting insects. FRUIT: Long capsules, to 45 cm, **bluntly triangular in section,** splitting when dry to release **9 dark brown 3-winged seeds** from the pith.

**Propagation:** Direct sowing, cuttings, seedlings.

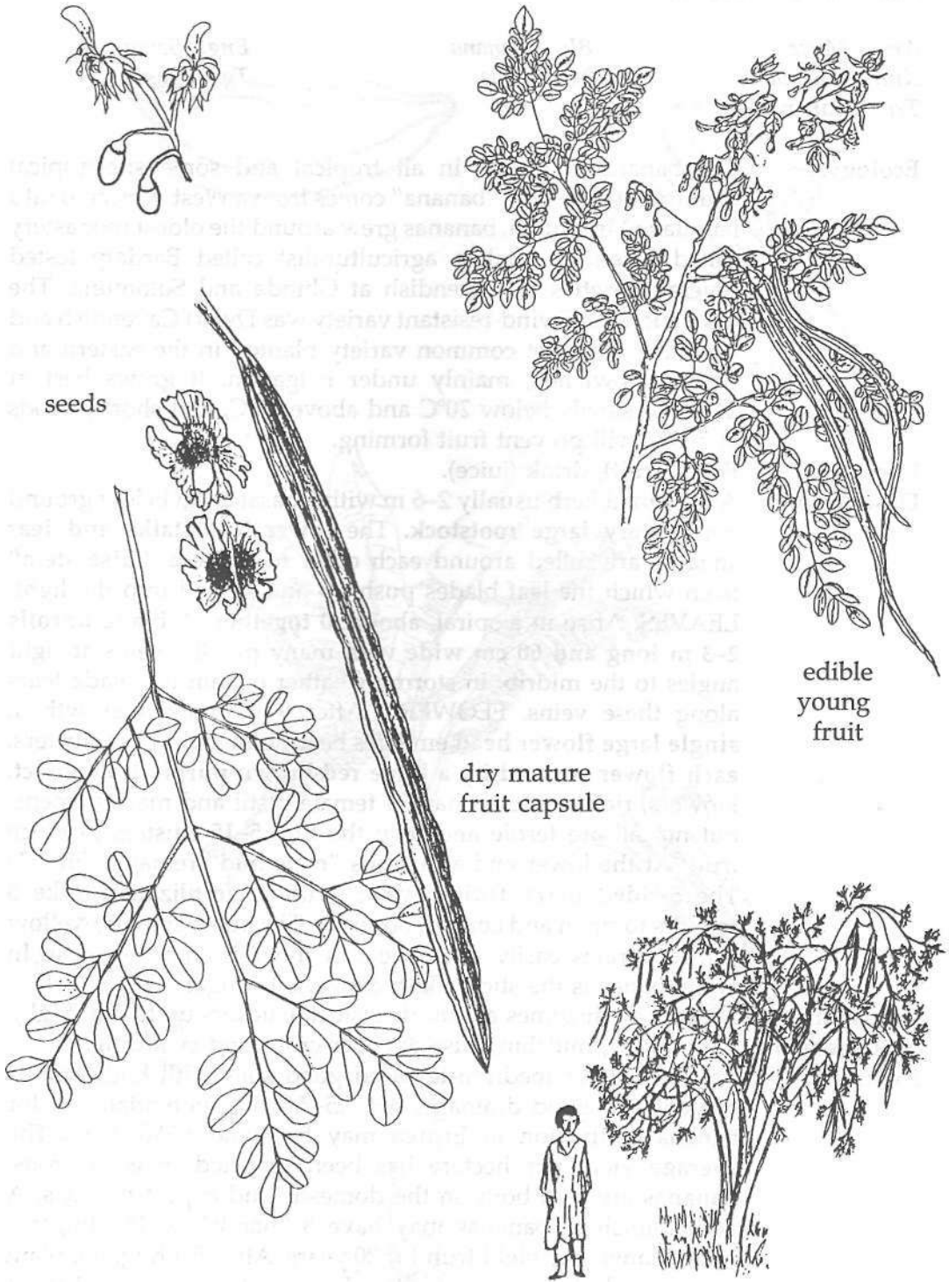
**Seed:** Germination rate 60-70%. No. of seeds per kg: 4,000-5,000.

**treatment:**

**storage:**

**Management:** Fast growing; pollarding, coppicing, lopping.

**Remarks:** A tree which is easily propagated and recommended for homesteads for its food value. The "Ben oil" from the seeds keeps its quality and so can lubricate precision machinery like watches. It is also used for salad oil, soap and cosmetics. The ground-up seeds have been used successfully in the Sudan, Burundi and Kenya to clear muddy water—a very valuable property. The sharp-tasting roots are a seasoning—"horseradish", and young fruit, known as "drumsticks", are a favourite vegetable in India.


seeds
edible
young
fruit
dry mature
fruit capsule

## Musa sapientum *Musaceae*

Indo-Malayan region

| | | |
|---|---|---|
| *Ar: Muze* | *Bl: Banana* | *Eng: Banana* |
| *Km: Banana* | *Nr: Mus* | *Tg: Banana* |
| *Tr: Banana* | | |

Ecology: The banana is grown in all tropical and some sub-tropical countries. (The name "banana" comes from a West African Bantu language.) In Eritrea, bananas grew around the oldest monastery called Bizen. An Italian agriculturalist called Bardaty tested several varieties of Cavendish at Ghinda and Solomuna. The most successful wind-resistant variety was Dwarf Cavendish and it is now the most common variety planted in the eastern and western lowlands, mainly under irrigation. It grows best at 24-29°C, slowly below 20°C and above 35°C, and short periods at 5-8°C will prevent fruit forming.

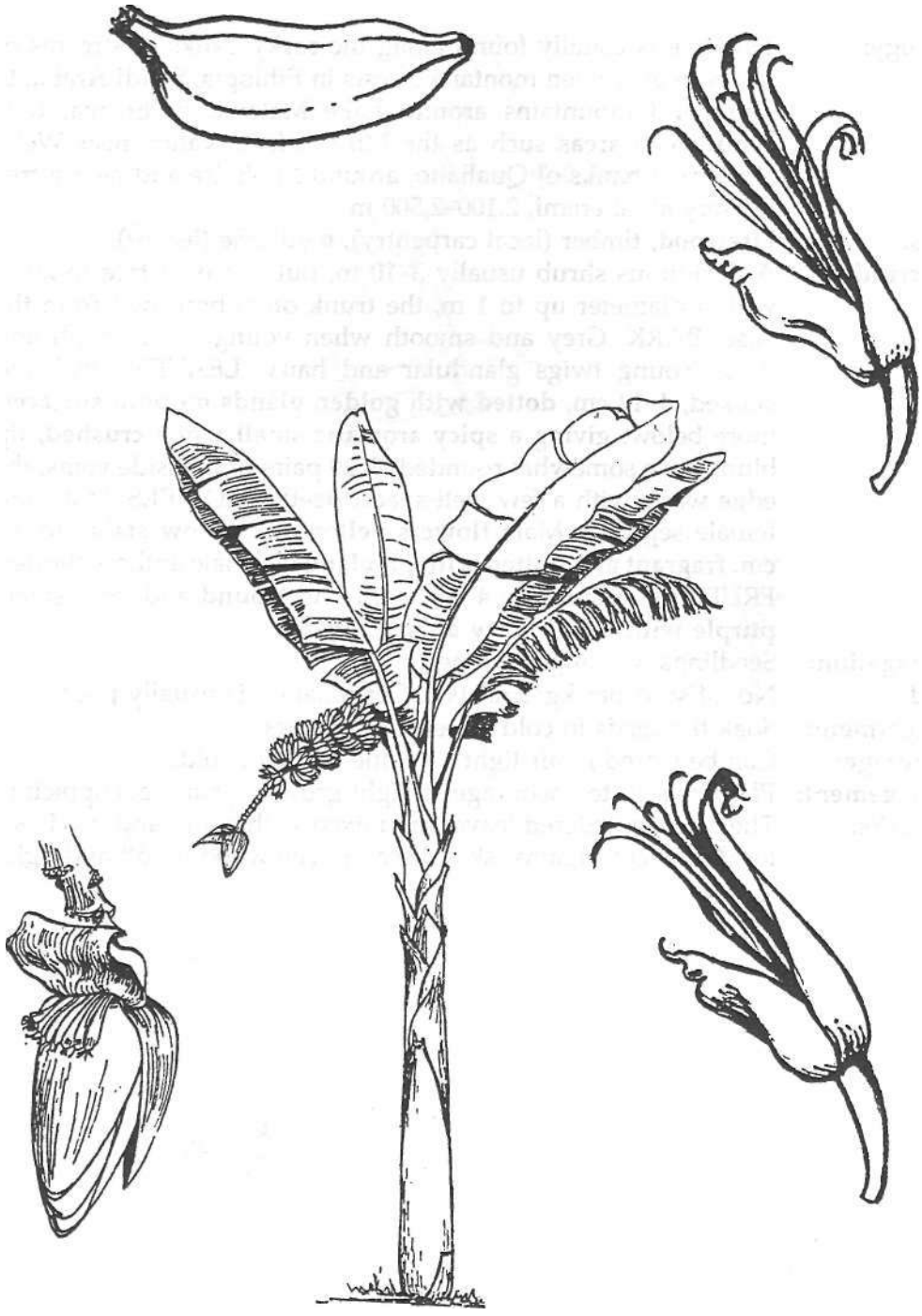
**Uses:** **Food (fruit),** drink (juice).

**Description:** A perennial herb usually 2-6 m with a basal corm below ground and a **very large rootstock.** The **lower leaf stalks and leaf sheaths** are rolled around each other to **make a "false stem"** from which the leaf blades push up and spread into the light. LEAVES: Arise in a spiral, about **30 together. A blade unrolls 2-3** m **long and 60 cm wide** with many parallel veins at right angles to the midrib. In stormy weather or rain the blade tears along these veins. FLOWERS: After 9-10 months growth, a **single large flower head** emerges bearing many flower clusters, **each flower covered by a large red-brown-purple leafy bract.** Flowers, rich in nectar, have a female pistil and male stamens, but not all are fertile and only the first 5-15 clusters produce fruit. At the lower end a bulbous "male bud" remains. FRUIT: The **5-sided berry fruit** develop without fertilization, take 3 months to ripen and contain no seeds. The outer green-to-yellow skin separates easily from the soft inner flesh when ripe. In sweet bananas the sticky flesh converts to sugar.

**Propagation:** Suckers or rhizomes are used as stock (suckers up to 1 m high).

**Management:** Bare fallow, mulching, use of cover crops and swarding;

**Remarks:** Bananas prefer medium-textured good soils with high humus content and good drainage, pH 5.5-7.0. The potential area for banana cultivation in Eritrea may be some 170,000 ha. The average yield per hectare has been reported to be 13 tons. Bananas are sold both on the domestic and export markets. A good bunch of bananas may have 8 "hands" of 15 "fingers" each. Plants may yield fruit for 20 years. After fruiting, the plant dies down but suckers have already formed above ground at the base.



## Myrica salicifolia *Myricaceae*

Indigenous

*Sh: Labie* *Tg: Niibi*

Ecology: This tree is usually found along the rocky banks of streams or rivers in evergreen montane forests in Ethiopia, Saudi Arabia to Zaire and mountains around Lake Malawi. In Eritrea, it is confined to areas such as the Mirgats-feres valley near Weki, along riverbanks of Quahaito, around Mt. Soira and near a tree nursery at Gheremi, 2,100-2,500 m.

Uses: **Firewood,** timber (local carpentry), **medicine** (leaves).

**Description:** A deciduous shrub usually 3-10 m, but can be a tree to 20 m with a diameter up to 1 m, the trunk often branched from the base. BARK: Grey and smooth when young, later rough and dark. Young twigs glandular and hairy. LEAVES: Oval and stalked, 4-14 cm, **dotted with golden glands on both surfaces,** more below, giving a **spicy aromatic smell when crushed,** tip blunt, base somewhat rounded, 8-20 pairs of fine side veins, the edge wavy with a few well-spaced teeth. FLOWERS: Male and female separate. Male **flowers yellow on yellow stalks to 3.5 cm, fragrant and dotted with oil glands.** Female anthers shorter. FRUIT: On a **spike to 4 cm, each fruit round** and very small, **purple with white waxy dots all over.**

**Propagation:** Seedlings, wildings, cuttings.

**Seed:** No. of seed per kg: ±300,000. Germination is usually poor.

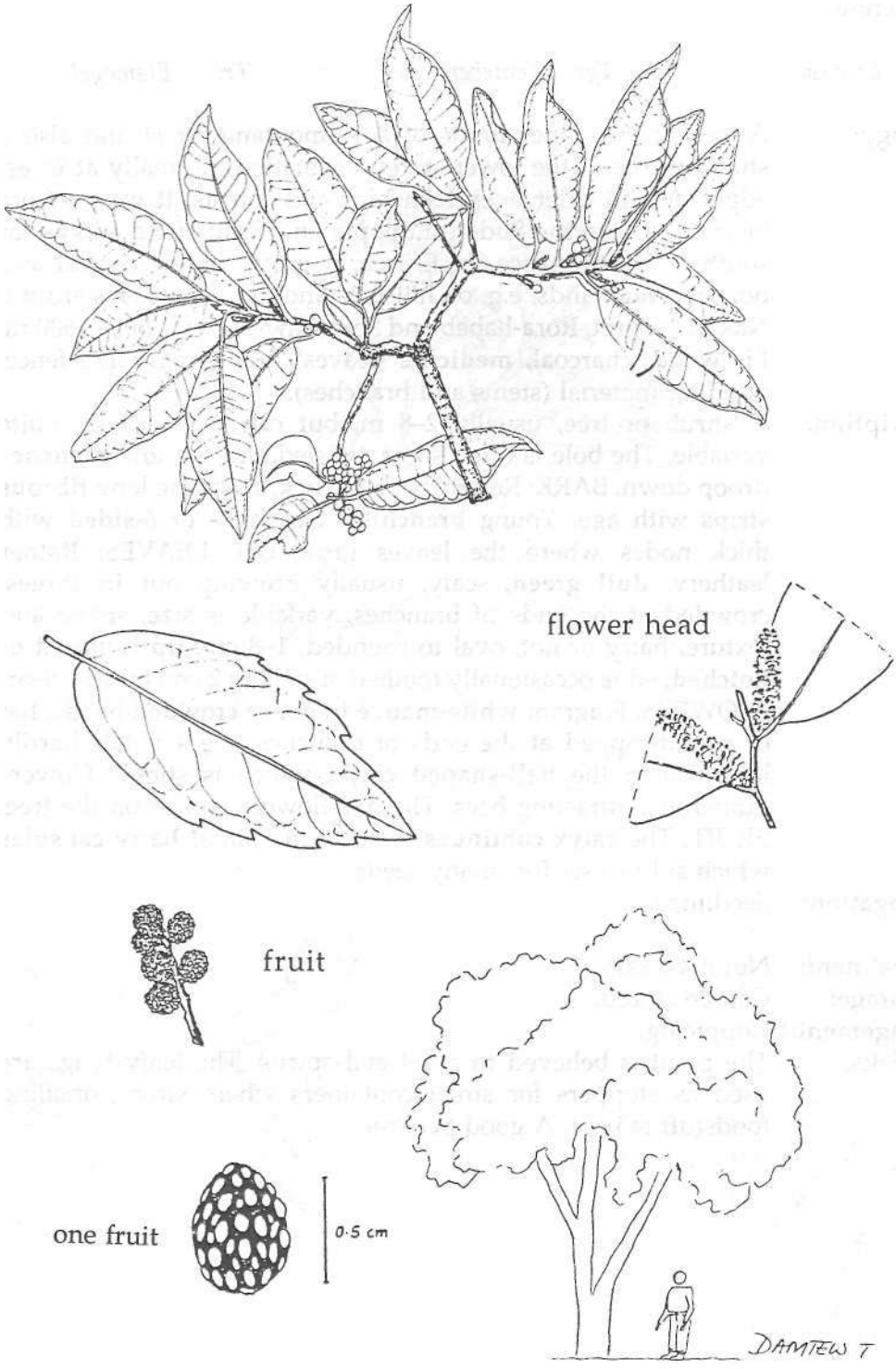
**treatment:** Soak the seeds in cold water for 24 hours.

**storage:** Can be stored in air-tight containers if kept cold.

**Management:** Plant closely to encourage straight growth; pruning, coppicing.

**Remarks:** The dried powdered leaves are mixed with water and used as a local medicine against skin diseases. The wood is soft and light.

**Myrica salicifolia** *Myricaceae*



## Nuxia congesta *Loganiaceae*

Indigenous

*Sh:* *Lamasa* *Tg:* *Kentebera* *Tr:* *Etsmayet*

**Ecology:** A tree of the upper limits of Afro-montane forest and also a shrubby tree of the lower-storey vegetation, normally at forest edges and in drier evergreen highland forests. It grows from Sierra Leone to the Sudan, Ethiopia and East Africa and as far south as South Africa. In Eritrea, it grows in the central and northern highlands, e.g. on hillsides and in river valleys around Nakfa, Wogret, Rora-habab and Semenawi-bahri, 1,600-2,600 m.

**Uses:** **Firewood,** charcoal, **medicine** (leaves), bee forage, live fence, building material (stems and branches).

**Description:** A shrub or tree, usually 2-8 m, but can reach 20 m, quite variable. The bole is often short, twisted and the **low branches** droop down. BARK: Rough, brown-black, shedding long **fibrous strips** with age. Young **branchlets** clearly **3- or 6-sided** with thick nodes where the leaves grow out. LEAVES: Rather leathery, **dull green,** scaly, usually growing out **in threes,** crowded at the ends of branches, variable is size, shape and texture, hairy or not, oval to rounded, 1-8 cm, **tip rounded or notched,** edge occasionally toothed, a stalk to 2 cm, midrib clear. FLOWERS: Fragrant **white-mauve in dense crowded heads,** flat or round-topped at the ends of branches, the 4 petals hardly longer than the **bell-shaped calyx,** which is sticky. Flowers numerous, attracting bees. The dry flowers persist on the tree. FRUIT: The **calyx continues** to surround **small hairy capsules** which split to set free many seeds.

**Propagation:** Seedlings.

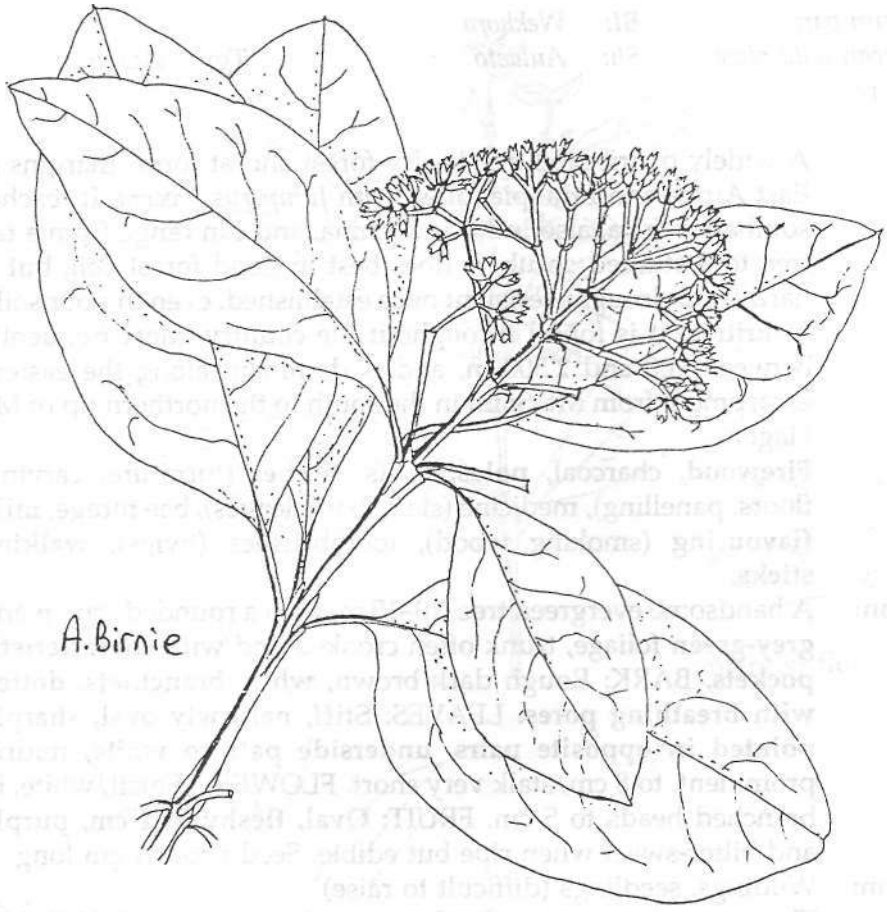
**Seed:**

**treatment:** Not necessary.

**storage:** Can be stored.

**Management:** Coppicing.

**Remarks:** The plant is believed to repel evil spirits. The leafy twigs are used as stoppers for small containers where strong-smelling foodstuff is kept. A good bee tree.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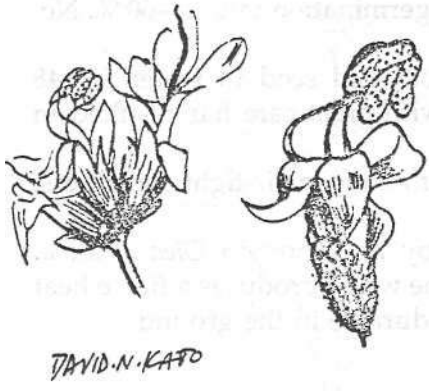

DAVID.N.KATO


DAMTEW T

## Olea europaea subsp. africana *Oleaceae*

Indigenous

*Ar:* *Zeitun bari* *Bl:* *Wekhora*
*Eng:* *African wild olive* *Sh:* *Aulaeto* *Tg:* *Awliie*
*Tr:* *Wegre*

**Ecology:** A widely distributed tree in dry forest and at forest margins in East Africa and Ethiopia, often with *Juniperus procera.* It reaches southern Africa, also India and China, and can range from a tall tree to a stunted shrub. It does best in good forest soil, but is hardy and drought-resistant once established, even in poor soils. In Eritrea, it is found throughout the country, most frequently between 900 and 2,500 m, and is dominant along the eastern escarpment from Mt. Soira in the south to the northern tip of Mt. Hager.

**Uses:** **Firewood,** charcoal, **poles,** posts, **timber** (furniture, carving, floors, panelling), medicine (stem, bark, leaves), bee forage, **milk flavouring** (smoking wood), toothbrushes (twigs), **walking sticks.**

**Description:** A handsome evergreen tree, 10-15 m, with a rounded crown and **grey-green** foliage, trunk often crooked and with **characteristic pockets.** BARK: Rough dark brown, **white branchlets, dotted with breathing pores.** LEAVES: **Stiff, narrowly oval, sharply pointed in opposite pairs, underside pale to white,** midrib prominent, to 8 cm, stalk very short. FLOWERS: Small, white, in branched heads to 5 cm. FRUIT: **Oval, fleshy to 1 cm, purple** and bitter-sweet when ripe but edible. Seed about 1 cm long.

**Propagation:** Wildings, seedlings (difficult to raise).

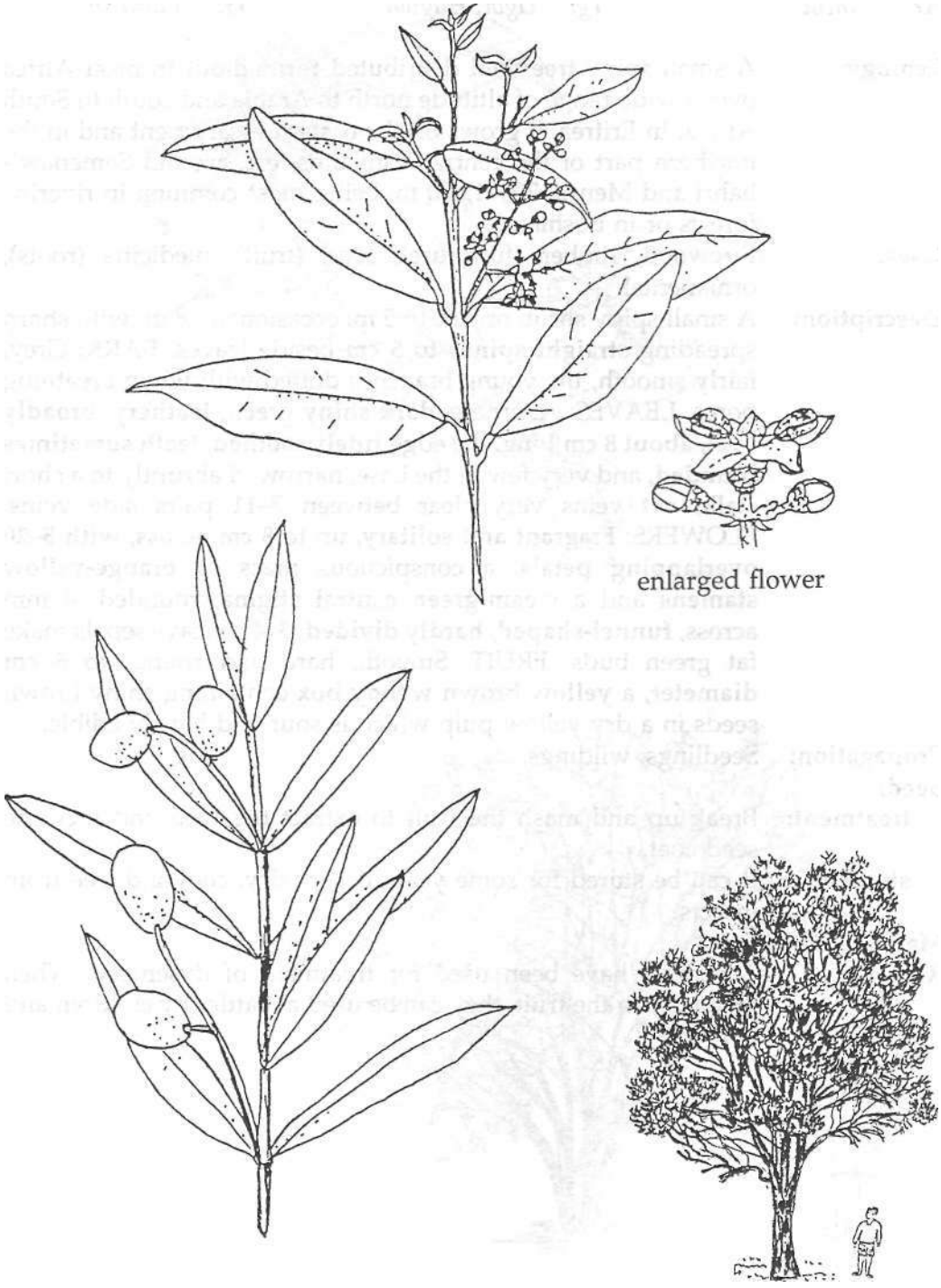
**Seed:** The species is a poor seeder. Low germination rate, 20-60 %. No. of seeds per kg: about 14,000.

**treatment:** Not necessary for fresh seed. Soak old seed in water for 48 hours. Breaking the seed cover with great care has resulted in good germination.

**storage:** Seed can be stored for about two months in air-tight containers.

**Management:** Slow growing, pollarding.

**Remarks:** The species used to be known by its synonym *Olea africana.* Fruits do not produce olive oil. The wood produces a fierce heat on burning. Olive poles are very durable in the ground.


enlarged flower

## Oncoba spinosa *Flacourtiaceae*

Indigenous

*Ar: Ancob* *Tg: Ugot, Huguat* *Tr: Futfusto*

**Ecology:** A small spiny tree well distributed throughout tropical Africa over a wide range of altitude north to Arabia and south to South Africa. In Eritrea, it grows on the eastern escarpment and in the northern part of the central highlands, e.g. around Semenawi-bahri and Mensa, 700-1,800 m, being most common in riverine forests or in bushland.

**Uses:** **Firewood,** timber (furniture), food (fruit), medicine (roots), ornamental.

**Description:** A small spiny shrub or tree to 5 m, occasionally 8 m, with sharp spreading **straight spines to 5 cm** beside leaves. BARK: Grey, fairly smooth, the young branches dotted with white breathing pores. LEAVES: Alternate, **dark shiny green, leathery, broadly oval, about 8 cm long,** the edge **finely toothed, teeth sometimes rounded,** and very few at the base, narrowed abruptly to a short stalk, net veins very clear between 7-11 pairs side veins. FLOWERS: **Fragrant and solitary,** up to **8 cm across, with 5-20 overlapping petals,** a conspicuous **mass of orange-yellow stamens** and a **cream-green central stigma,** rounded, 4 mm across, **funnel-shaped, hardly divided,** 3–4 concave sepals make fat green buds. FRUIT: Smooth, hard and round, to **6 cm diameter,** a **yellow-brown woody box** containing shiny brown seeds in a dry yellow pulp which is sour and hardly edible.

**Propagation:** Seedlings, wildings.

**Seed:**

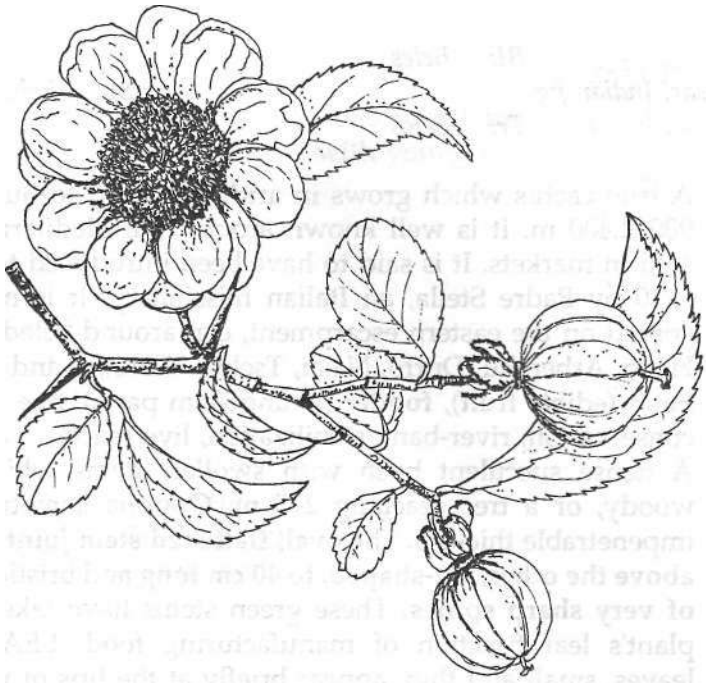
**treatment:** Break up and mash the fruit to extract the seed and nick the seed coat.

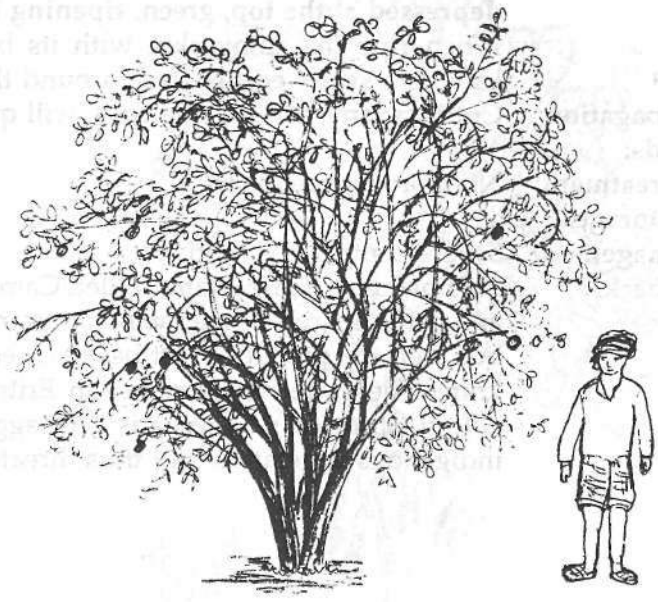
**storage:** It can be stored for some years if kept dry, cool and free from insects.

**Management:**

**Remarks:** The roots have been used for treatment of dysentery. When seeds dry in the fruit, they can be used as rattles by children and dancers.

Oncoba spinosa *Flacourtiaceae*





# Opuntia ficus-indica *Cactaceae*

Central America

*Ar:* *Beles* ***Bl:*** *Beles*
*Eng:* *Prickly pear, Indian fig* *Sh:* *Beles*
*Tg:* *Beles* *Tr:* *Beles*

**Ecology:** A true cactus which grows in arid, semi-arid to humid zones, 900-2,400 m. It is well known around the Mediterranean and sold in markets. It is said to have been introduced to Eritrea in 1910 by Padre Stella, an Italian missionary. It is now widely spread on the eastern escarpment, e.g. around Seled, Segenaiti, Hebo, Arberebu, Durfo, Nalai, Tsebir, Hamhim and Nakfa.

**Uses:** **Food** (edible fruit), **fodder** (young stem parts), **bee forage,** soil conservation, river-bank stabilization, live fence.

**Description:** A dense succulent bush with swollen stems which become woody, or a tree reaching 2-5 m. Opuntia sometimes forms impenetrable thickets. The **oval, flattened stem joints grow one above the other, ear-shaped, to 40 cm long** and bristle with **tufts of very sharp spines.** These green stems have taken over the plant's leaf function of manufacturing food. LEAVES: True leaves, small and thin, appear briefly at the tips of very young shoots and soon fall. FLOWERS: **Bright orange-yellow, 6-8 cm across with many sepals, petals and stamens** arranged spirally. Flowers develop in rows on the upper edges of young joints, almost all year. FRUIT: **Fleshy and egg-shaped but deeply depressed at the top,** green, **ripening brick red-yellow-purple.** When ripe the spiny skin with its barbed hairs will slip off leaving a **sweet edible flesh** around the seeds.

**Propagation:** Cuttings; any part, even a fruit, will quickly root.

**Seeds:**

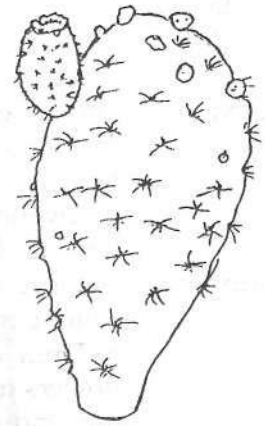
**treatment:** No treatment required.

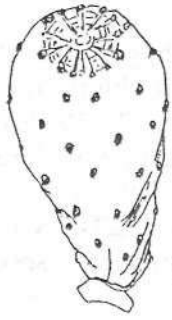
**storage:**

**Management:** Severe control is essential.

**Remarks:** This plant is an important fodder. Camels browse all parts, goats and cattle sparely. Older stem joints are also used as cattle feed, but then the prickles must be removed either by fire or with a knife. There are two varieties in Eritrea: var. *maxima* and var. *dillenii* (spineless). Opuntia is very aggressive and will displace indigenous vegetation and thus threaten local ecosystems.

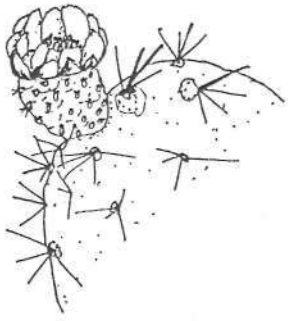
one stem joint
with young fruit

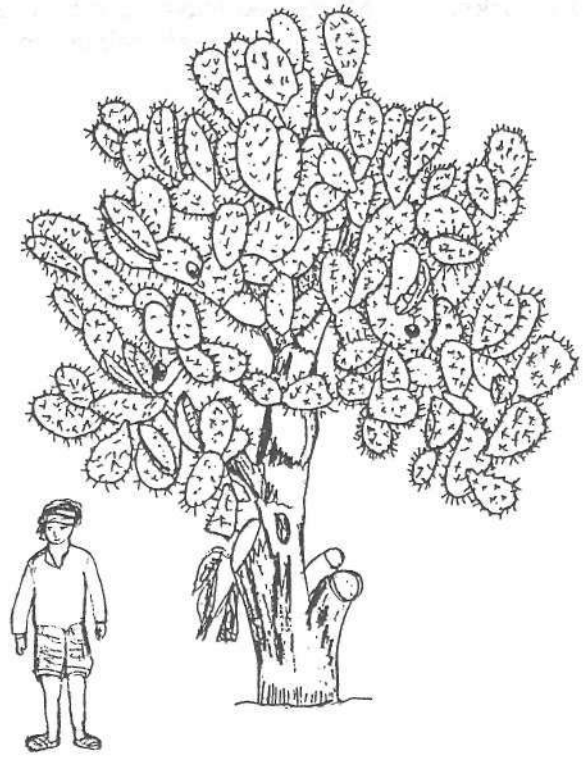




ripe fruit
(c. 10 cm long)
from market

flower





Indigenous

| | | | |
|---|---|---|---|
| *Bl:* | *Alendia* | *Km:* | *Masketima* |
| *Tg:* | *Alendia* | *Tr:* | *Geret harmaz* |

**Ecology:** One of several African species found from Senegal to the Sudan. In Eritrea, it is common in woodland and bushland throughout the country, 700-2,400 m.

Uses: **Firewood,** timber (construction), walking sticks, medicine (leaves), fodder, smoke bath (like sauna).

**Description:** A shrub or small tree to 3 m tall. BARK: Rough, grey. LEAVES: Compound, on a stalk to 7 cm, with 15-17 tiny oblong leaflets, 6-7 mm long, grey-green and white-hairy below. FLOWERS: 1-2 flowers together, **purple, pea-shaped,** the largest petal about 15 mm and rounded at the base, surrounded by a **hairy calyx. The flower remains a long time, turning brown. FRUIT: A small pod, strongly curved, hairy and rough,** containing 5-6 seeds.

**Propagation:** Seedlings.

Seed: 70,000-80,000 seeds per kg.

**treatment:** Soak in cold water for 24 hours.

**storage:** Can retain viability for 1-2 years if kept well dried in airtight containers.

**Management:** Slow growing, coppicing.

Remarks: Macerated leaves can be used to cure body inflammation. This species is closely related to *O. kirkii* found further south.


ASFAW ABDISSA

## Osyris quadripartita (O. abyssinica) *Santalaceae*

Indigenous

*Sh:* *Aras* *Tg:* *Kerets* *Tr:* *Kerets*

**Ecology:** There are only two species of Osyris and this one is a small tree that occurs throughout Africa and beyond. It grows in gallery forests, Juniperus, Combretum and Dodonea woodland, on rocky slopes, degraded woodland and scrub, 1,500-2,300 m. In Ethiopia is occurs throughout the highlands, e.g. around Bogos, Mensa, Zalambessa and Quahaito.

Uses: Firewood, bee forage, **tannin** (bark and leaves), soil conservation.

**Description:** A much-branched evergreen shrub or tree 1-7 m, branches hanging down. It is extremely variable in leaf and size. LEAVES: Alternate, blue-green or yellow-green, **slightly fleshy, long oval 1-7 cm, tip very sharp, edge thickened.** FLOWERS: **Tiny, yellow-green, on stalked heads beside leaves,** 3 female flowers together but 5-15 male flowers, in flower most of the year. FRUIT: **Bright red, flask-shaped, 7 mm long,** juicy and edible, containing the seed.

**Propagation:** Seedlings, direct sowing at site.

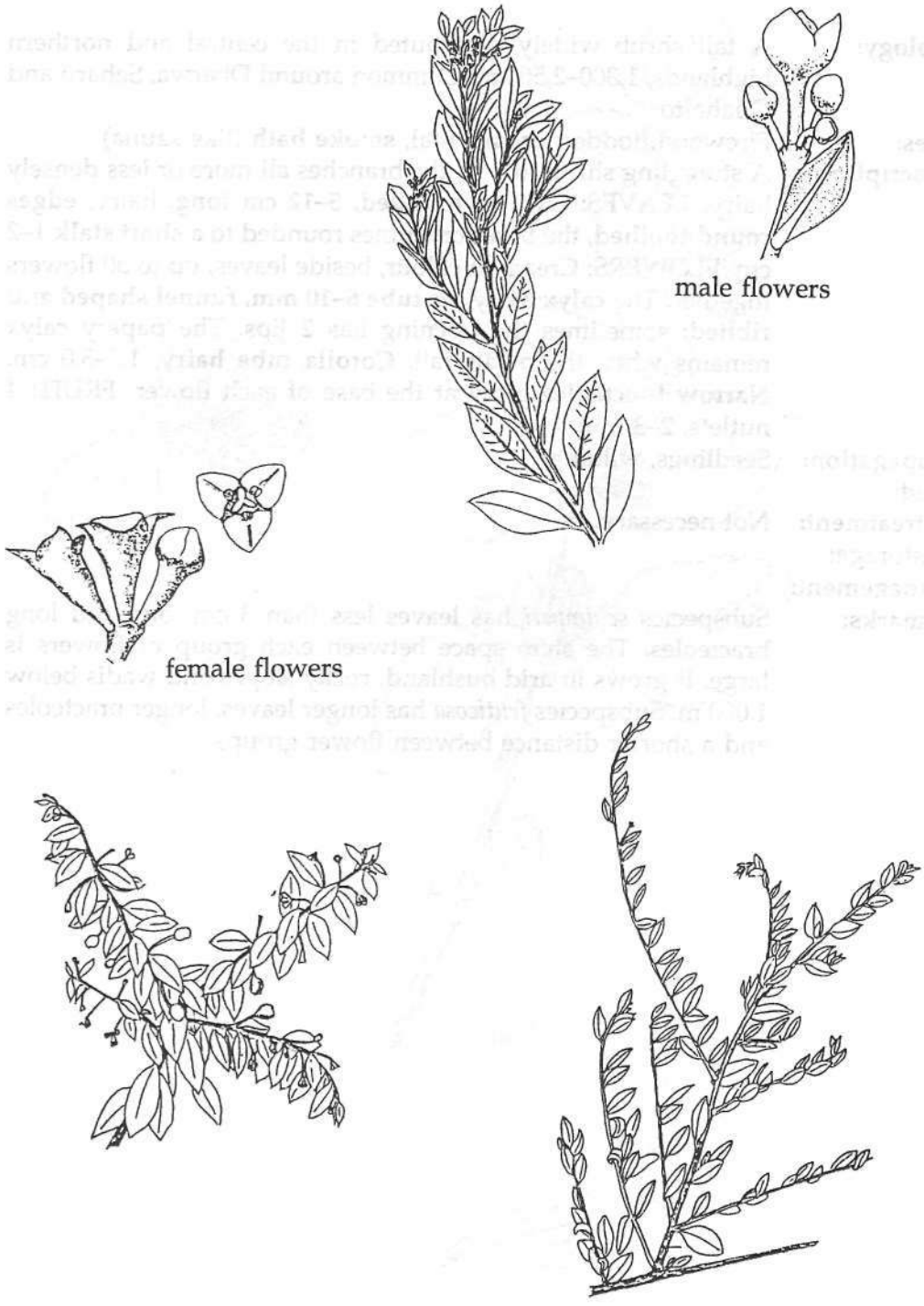
**Seed:**

**treatment:**

**storage:**

**Management:**

**Remarks:**


male flowers
female flowers

## Otostegia fruticosa (O. repanda) *Lamiaceae*

Indigenous

*Tg: Fesihadima* *Tr: Hadalma*

**Ecology:** A tall shrub widely distributed in the central and northern highlands, 1,300-2,500 m. Common around Dbarwa, Seharti and Quahaito.

**Uses:** Firewood, fodder, ornamental, **smoke bath** (like sauna).

**Description:** A straggling shrub to 3 m, the branches all more or less densely hairy. LEAVES: **Oval to rounded, 5-12 cm long,** hairy, **edges round-toothed,** the base sometimes rounded to **a short stalk 1-2** cm. **FLOWERS: Cream** in colour, beside leaves, up to 30 flowers together. The **calyx hairy, its tube 6-10 mm, funnel shaped and ribbed;** sometimes the opening has 2 lips. The papery calyx remains when the petals fall. **Corolla tube hairy,** 1.3-3.0 cm. **Narrow bracteoles** grow at the base of each flower. FRUIT: 4 nutlets, 2-3 mm long.

**Propagation:** Seedlings, wildings.

**Seed:**

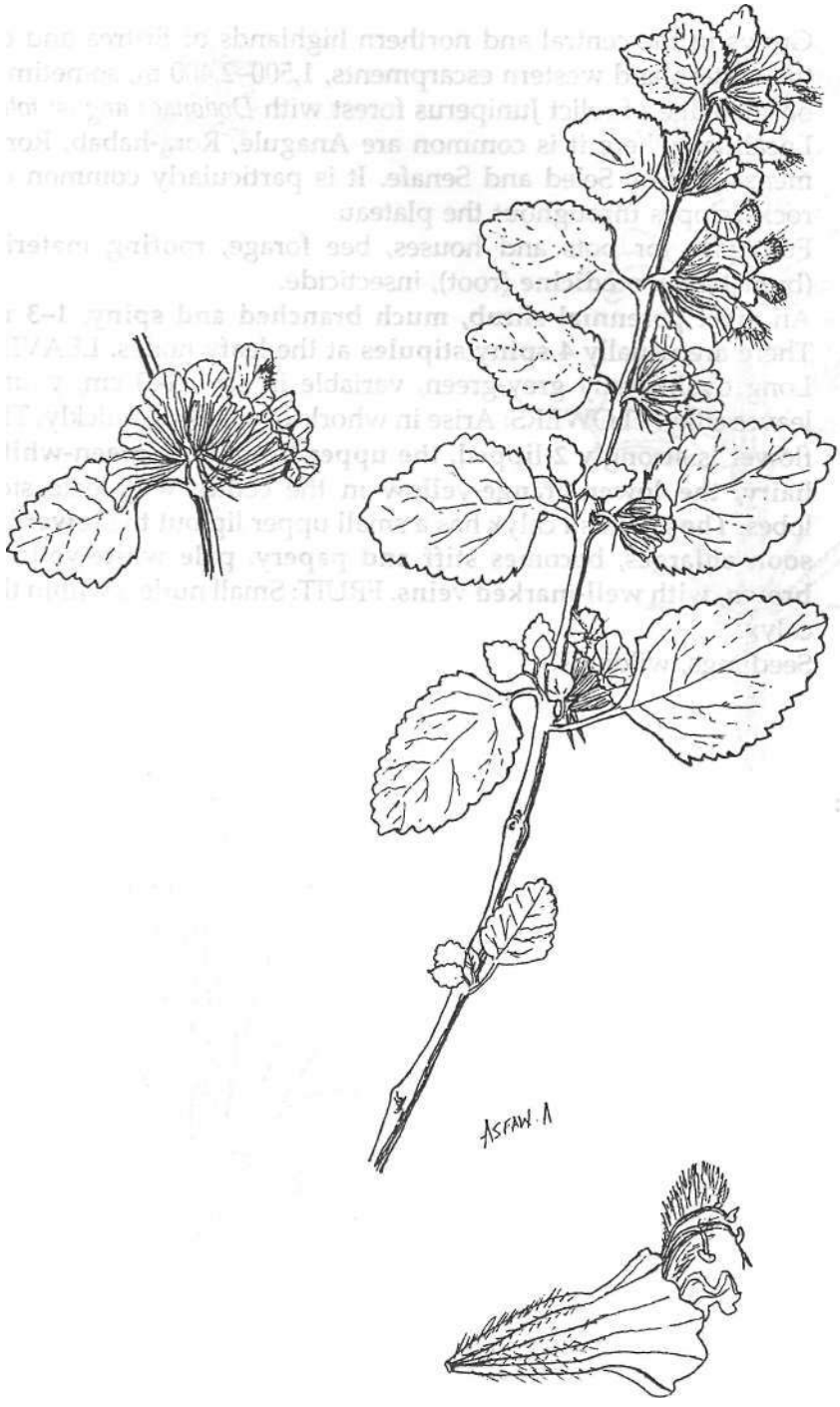
**treatment:** Not necessary.

**storage:**

**Management:**

**Remarks:** Subspecies *schimperi* has leaves less than 3 cm long and long bracteoles. The stem space between each group of flowers is large. It grows in arid bushland, rocky slopes and wadis below 1,000 m. Subspecies *fruticosa* has longer leaves, longer bracteoles and a shorter distance between flower groups.

Otostegia fruticosa (O. repanda) *Lamiaceae*



## Otostegia integrifolia *Lamiaceae*

Indigenous

*Sh: Digdale* *Tg: Chindog* *Tr: Shenebet*

**Ecology:** Grows in the central and northern highlands of Eritrea and on the eastern and western escarpments, 1,500-2,400 m, sometimes on the edge of relict Juniperus forest with *Dodonaea angustifolia.* Localities where it is common are Anagule, Rora-habab, Rora-mensa, Areza, Seled and Senafe. It is particularly common on rocky slopes throughout the plateau.

**Uses:** Fumigant for pots and houses, bee forage, **roofing material** (branchlets), **medicine** (root), insecticide.

**Description:** An **erect perennial shrub, much branched and spiny, 1-3 m.** There are usually **4 spiny stipules** at the leafy nodes. LEAVES: Long oval, mealy grey-green, variable in size, 1-3 cm, young leaves silky. FLOWERS: Arise in whorls of 6, falling quickly. The flower is **strongly 2-lipped, the upper lip oblong green-white, hairy, the lower orange-yellow** in the centre with pale side lobes. The greenish calyx has a small upper lip but the **lower lip soon enlarges, becomes stiff and papery, pale white-yellow-brown, with well-marked veins.** FRUIT: Small nutlets within the calyx.

**Propagation:** Seedlings, wildings.

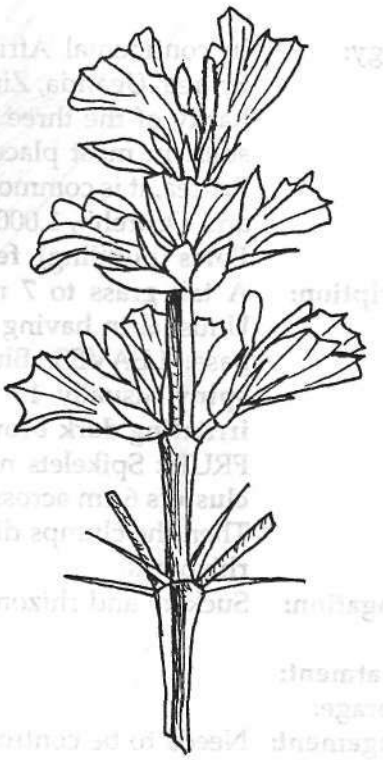
**Seed:**

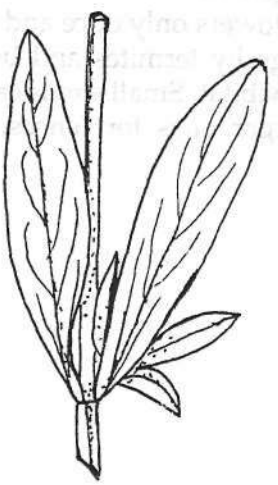
**treatment:**

**storage:**

**Management:**

**Remarks:**





## Oxytenanthera abyssinica *Gramineae*

Indigenous

*Bl:* *Ma* *Eng: Lowland bamboo* *Tg:* *Arkai*
*Tr:* *Hil*

**Ecology:** In continental Africa the lowland bamboo grows in Ethiopia, Eritrea, Uganda, Zimbabwe, Zambia and Tanzania. It is the most hardy of the three African bamboos, often found on very poor soils. In most places it is in demand for building purposes. In Eritrea, it is common in Elabered, the Tekeze and Anseba valleys and Debrehil, 1,000-1,800 m.

**Uses:** **Poles** (building), **fences, fodder** (leaves), walking sticks.

**Description:** A tall grass to 7 m or more, in dense clumps, arching over. Unusual in having **solid stems,** up to 10 cm in diameter at the base. LEAVES: Blue-green, **base rounded,** the **tip long and spiny,** usually 15 x 2.5 cm, but up to 30 x 5 cm. There are **irritating dark brown hairs** on the leaf sheath. FLOWERS AND FRUIT: Spikelets narrowed, pointed, 2.5 cm in dense **rounded clusters** 6 cm across. **Flowering takes place about** every 7 **years.** Then the clumps die down but shoot up one year later from the rhizomes.

**Propagation:** Suckers and rhizomes; rarely, seed.

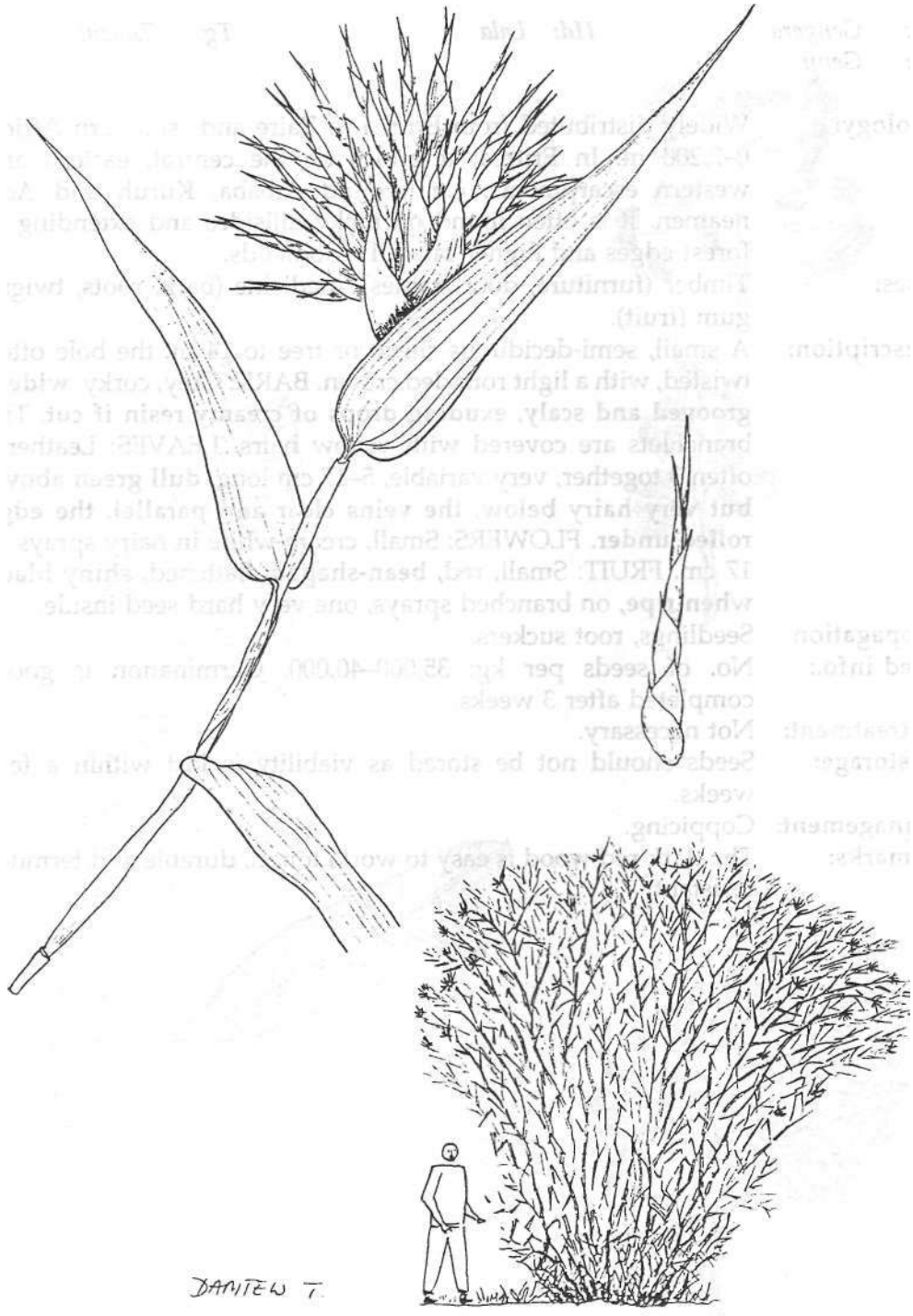
**Seed:**

**treatment:**

**storage:**

**Management:** Needs to be controlled by cutting back.

**Remarks:** Like most bamboos, each plant flowers only once and then dies. Fences are susceptible to damage by termites and borers. The plant survives fire in its natural habitat. Small stems can be used for pipes and arrow shafts, larger ones for fences, building, furniture, beds and baskets.


DAMTEW T.

## Ozoroa insignis (Heeria reticulata) *Anacardiaceae*

Indigenous

*Bl:* *Gengera* *Hd:* *Lala* *Tg:* *Zanzai*
*Tr:* *Genji*

Ecology: Widely distributed from Eritrea to Zaire and southern Africa, 0-2,200 m. In Eritrea, it grows on the central, eastern and western escarpments, e.g. around Aibaba, Kuruh and Adi-neamen. It is often found on rocky hillsides and extending to forest edges and higher-rainfall woodlands.

**Uses:** Timber (furniture, door frames), medicine (bark, roots, twigs), gum (fruit).

**Description:** A small, semi-deciduous shrub or tree to 14 m, the bole often twisted, with a light rounded crown. BARK: Grey, corky, **widely grooved and scaly, exuding drops of creamy resin if cut.** The branchlets are covered with yellow hairs. LEAVES: Leathery, often 3 together, very variable, 5-17 cm long, **dull green above, but very hairy below, the veins clear and parallel, the edge rolled under.** FLOWERS: Small, cream-white in hairy sprays to 17 cm. FRUIT: Small, red, **bean-shaped,** flattened, **shiny black when ripe,** on branched sprays, one very hard seed inside.

**Propagation** Seedlings, root suckers.

**Seed info.:** No. of seeds per kg: 35,000-40,000. Germination is good, completed after 3 weeks.

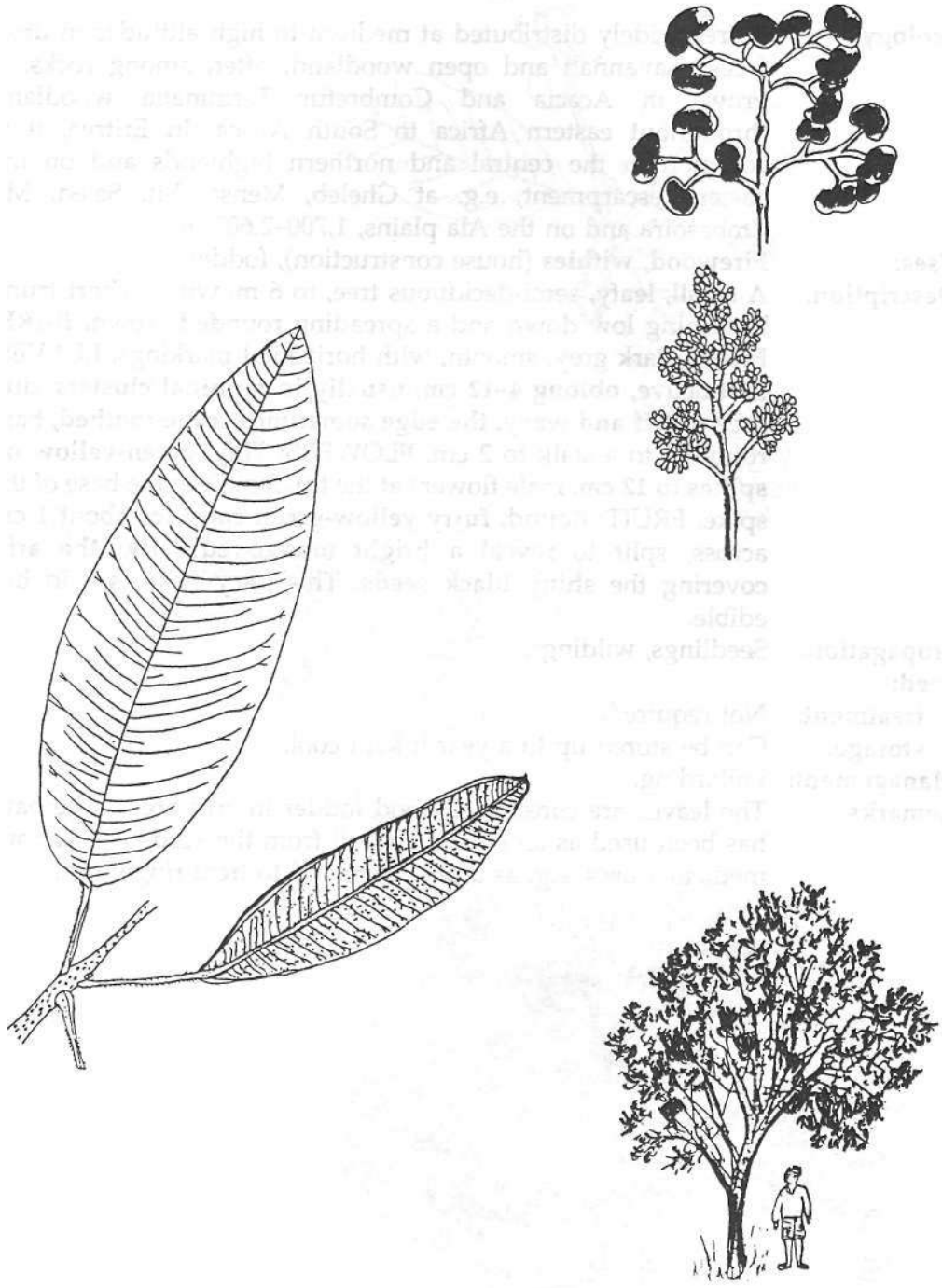
**treatment:** Not necessary.

**storage:** Seeds should not be stored as viability is lost within a few weeks.

**Management:** Coppicing.

**Remarks:** The dark red wood is easy to work, tough, durable and termite-resistant.

Ozoroa insignis (Heeria reticulata) *Anacardiaceae*



## Pappea capensis *Sapindaceae*

Indigenous

*Tg: Tishbealalito, Areragud* *Tr: Melhat*

**Ecology:** A tree widely distributed at medium to high altitudes in drier forest, savannah and open woodland, often among rocks. It grows in Acacia and Combretum-Terminalia woodland throughout eastern Africa to South Africa. In Eritrea, it is common in the central and northern highlands and on the eastern escarpment, e.g. at Gheleb, Mensa, Mt. Seled, Mt. Embasoira and on the Ala plains, 1,700-2,600 m.

**Uses:** **Firewood, withies** (house construction), fodder.

**Description:** A small, leafy, semi-deciduous tree, to 6 m, with a short trunk branching low down and a spreading rounded crown. BARK: Pale to dark grey, smooth, with horizontal markings. LEAVES: Distinctive, **oblong 4-12 cm, usually in terminal clusters,** dull green, **stiff and wavy, the edge sometimes spine-toothed,** base rounded to a stalk to 2 cm. FLOWERS: Tiny, **green-yellow on spikes to 12 cm,** male flowers at the tip, female at the base of the spike. FRUIT: Round, **furry yellow-green capsules** about 1 cm across, split to reveal a **bright orange-red jelly (the aril)** covering the **shiny black seeds.** This juicy flesh is acid but edible.

**Propagation:** Seedlings, wildings.

**Seed:**

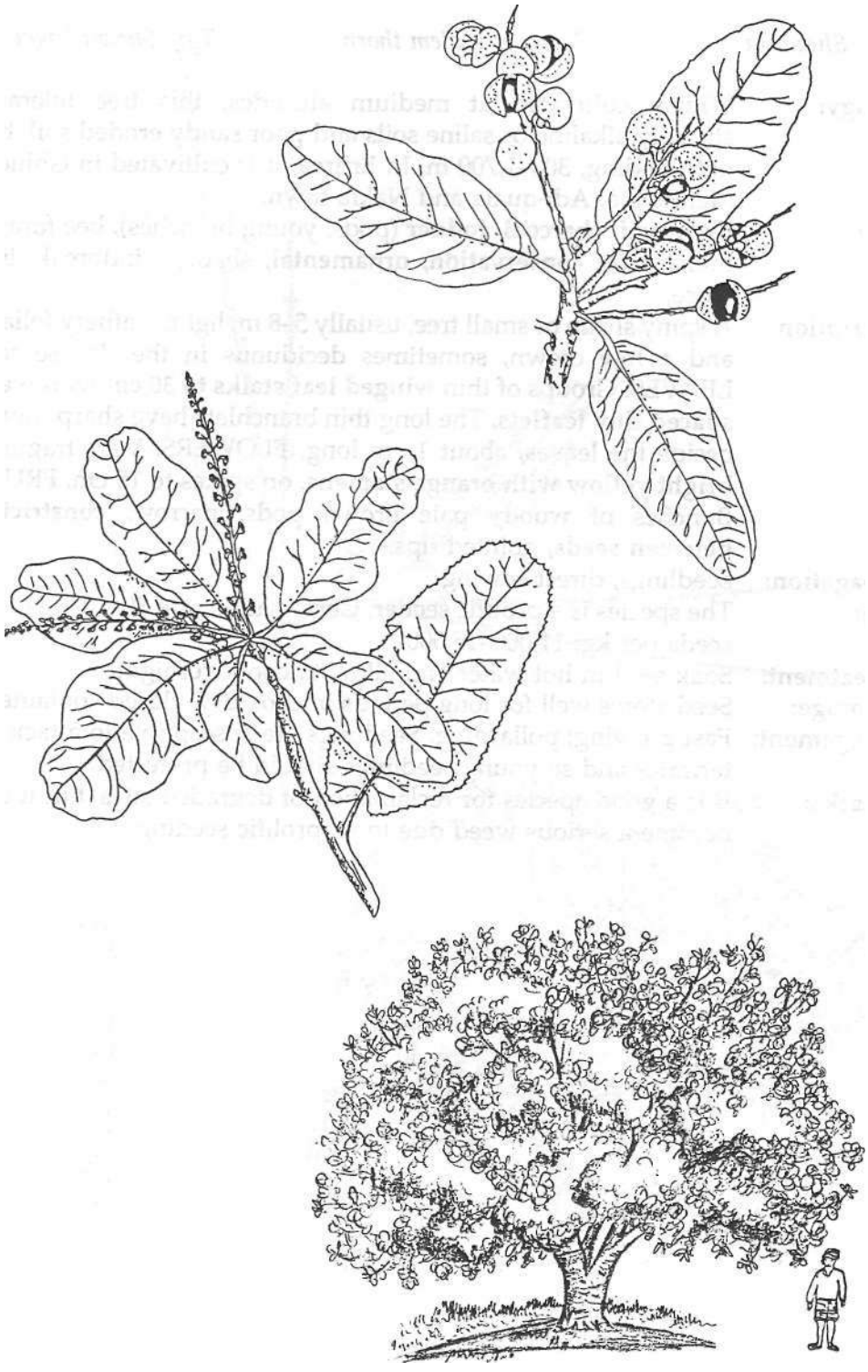
**treatment:** Not required.

**storage:** Can be stored up to a year if kept cool.

**Management:** Pollarding.

**Remarks:** The leaves are considered good fodder in arid areas. The bark has been used as an emetic and oil from the seeds has various medicinal uses, e.g. as a purgative and to treat ringworm.

Pappea capensis *Sapindaceae*



## Parkinsonia aculeata *Caesalpinioideae*

Tropical America

*Bl: Shewina* *Eng: Jerusalem thorn* *Tg: Shewit hagai*

**Ecology:** Widely cultivated at medium altitudes, this tree tolerates strongly alkaline or saline soils and poor sandy eroded soil, but not flooding, 300-1,700 m. In Eritrea, it is cultivated in Ghinda, Mendefera, Adi-quala and Nakfa town.

**Uses:** **Firewood, charcoal, fodder** (pods, young branches), bee forage, mulch, **soil conservation, ornamental,** shade, windbreak, live fence.

**Description:** A spiny shrub or small tree, usually 5-8 m, light, feathery foliage and a low crown, sometimes deciduous in the dry season. LEAVES: Groups of thin **winged leaf stalks to 30 cm with well-spaced tiny leaflets.** The long thin branchlets have sharp thorns beside the leaves, about 1 cm long. FLOWERS: Very fragrant, **bright yellow with orange stamens,** on spikes to 15 cm. FRUIT: Bunches of **woody** pale brown pods, narrow, **constricted between seeds,** pointed tips.

**Propagation:** Seedlings, direct sowing.

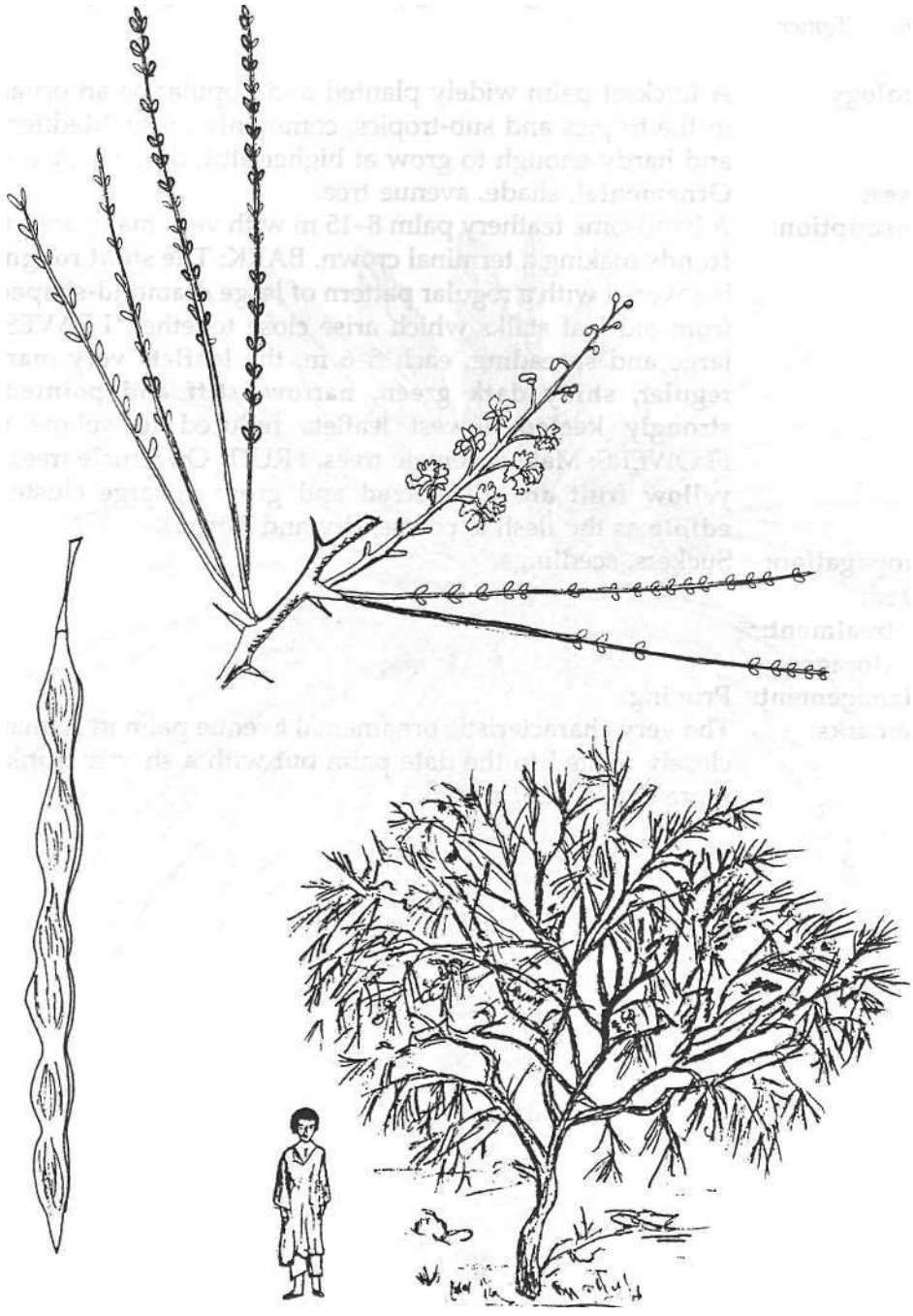
**Seed:** The species is a prolific seeder. Germination rate 30-70%. No. of seeds per kg: 11,000-15,000.

**treatment:** Soak seed in hot water and allow to cool overnight.

**storage:** Seed stores well for long periods in cool, dry, closed containers.

**Management:** Fast growing; pollarding. Seedlings are susceptible to attack by termites and so young seedlings should be protected.

**Remarks:** It is a good species for reclamation of degraded sites, but it can become a serious weed due to its prolific seeding.



## Phoenix canariensis *Paltnae*

Canary Islands

*Ar: Nakhala* *Eng: Canary palm* *Tg: Siye*
***Tr:*** *Temer*

**Ecology:** A thickset palm widely planted and popular as an ornamental in the tropics and sub-tropics, commonly in the Mediterranean and hardy enough to grow at higher altitudes, e.g. Asmara.

**Uses:** **Ornamental,** shade, avenue tree.

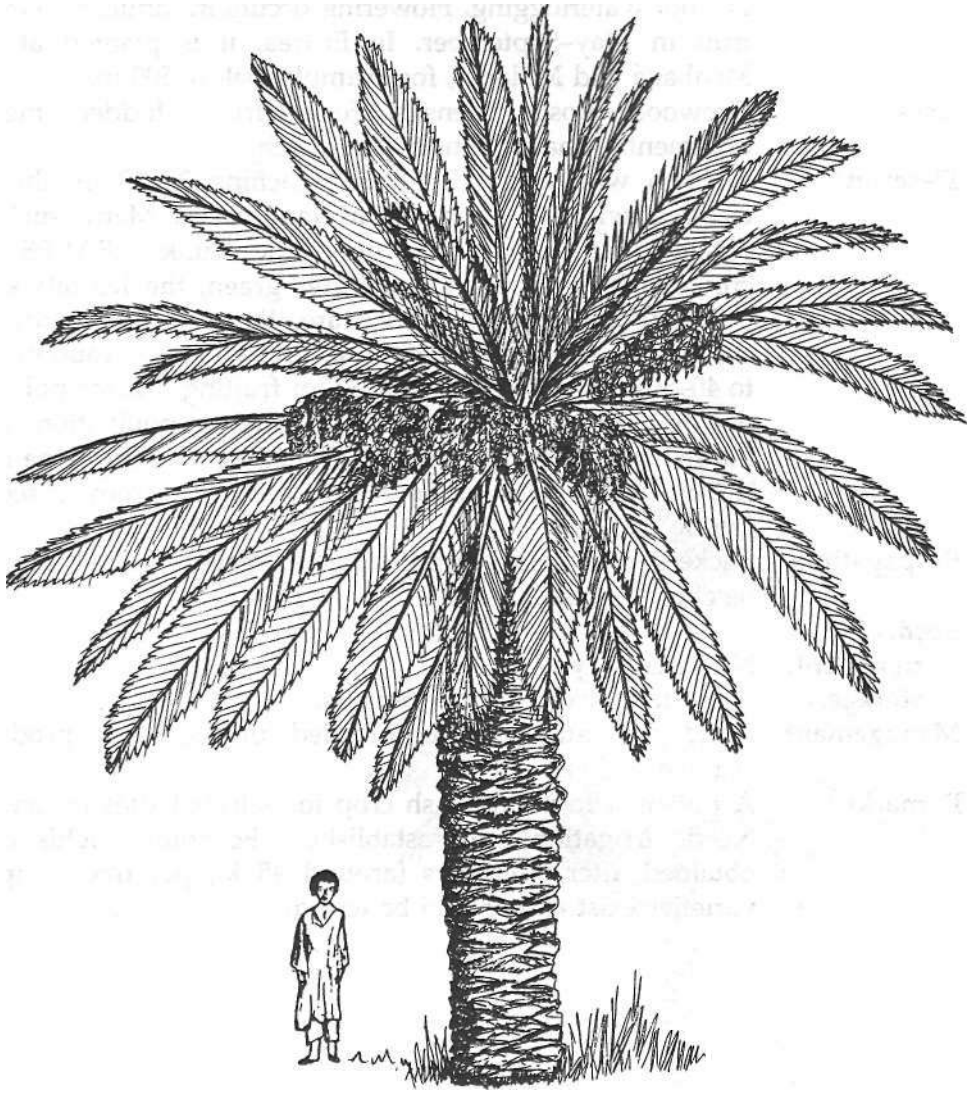
**Description:** A handsome feathery palm 8-15 m with very many **arching leaf fronds** making a terminal crown. BARK: **The stout rough trunk** is covered with a regular pattern of **large diamond-shaped scars** from old leaf stalks which arise close together. LEAVES: Very large and spreading, each 5-6 m, the **leaflets very many and regular, shiny dark green, narrow, stiff and pointed, very strongly keeled,** lowest leaflets reduced to yellow spines. FLOWERS: Male or female trees. FRUIT: On female trees, **small yellow fruit are olive-sized** and grow in large clusters; **not edible** as the flesh is coarse, dry and fibrous.

**Propagation:** Suckers, seedlings.

**Seed:**
**treatment:**
**storage:**

**Management:** Pruning.

**Remarks:** The very characteristic ornamental avenue palm in Asmara. It is closely related to the date palm but with a shorter trunk and a more dense leafy crown.



## Phoenix dactylifera *Paltnae*

Persian Gulf, Mediterranean

| | | | | | |
|---|---|---|---|---|---|
| *Ar:* | *Temer* | *Bl:* | *Temer* | *Eng:* | *Date palm* |
| *Sh:* | *Temer* | *Tg:* | *Temri* | *Tr:* | *Temer* |

**Ecology:** *A* well-known and important food tree found in desert areas from Morocco to India, 0-1,500 m. It requires a well-drained fertile soil, high temperatures and low humidity during fruiting. The palm must have a high watertable. It will stand alkaline soil but not waterlogging. Flowering occurs in January-March and fruit in May-September. In Eritrea, it is planted at Beilul, Menkaka and Molober, for example, below 500 m.

**Uses:** Firewood, posts, utensils, **food** (fruit), fodder, medicine, ornamental, shade, windbreak, thatch.

**Description:** A palm with a slender trunk reaching 20-30 m, the **trunk covered with the remains of leaf bases.** Many suckers or offshoots are produced around the trunk. LEAVES: 30-50 crowded leaves, each to **3 m grey-green, the leaflets sharply pointed;** the lowest leaves are thorny and removed by cultivators. FLOWERS: Male and female trees, a ratio of 1 male to 40-50 female trees is required for fruiting, but the pollen may not always be ready at the best time for pollination. FRUIT: Large hanging bunches of dates, needing support. **Ripe dates 5 x 2 cm, yellow to golden-brown,** with one grooved seed, the "stone".

**Propagation:** Suckers (offshoots) are preferable as male or female plants can be chosen; seedlings.

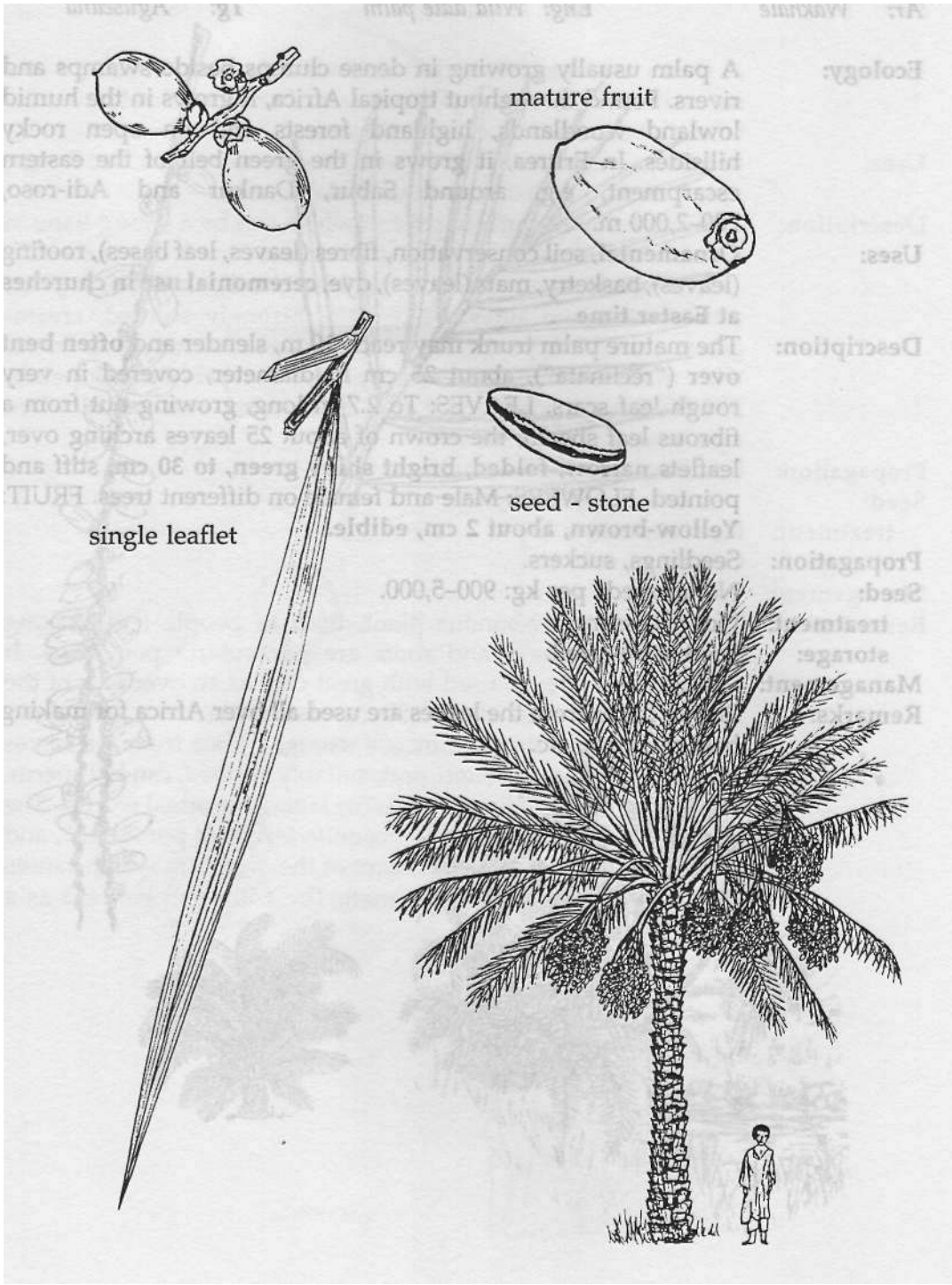
**Seed:**

**treatment:** Not necessary.

**storage:** Seed stores well for long periods.

**Management:** Hand pollination is recommended for good date production; remove suckers.

**Remarks:** A potential food and cash crop for selected sites in dry areas. Needs irrigation until established. Economic yields can be obtained after 6-7 years (around 45 kg per tree). Improved varieties exist and should be tested.


mature fruit
seed - stone
single leaflet

Indigenous

*Ar: Wakhale* *Eng: Wild date palm* *Tg: Aguseana*

**Ecology:** A palm usually growing in dense clumps beside swamps and rivers. Found throughout tropical Africa, it grows in the humid lowland woodlands, highland forests and on open rocky hillsides. In Eritrea, it grows in the green belt of the eastern escarpment, e.g. around Sabur, Dankur and Adi-roso, 700-2,000 m.

**Uses:** **Ornamental,** soil conservation, fibres (leaves, leaf bases), roofing (leaves), basketry, mats (leaves), dye, **ceremonial use in churches at Easter time.**

**Description:** The mature palm trunk may reach 10 m, slender and **often bent over** ("reclinata"), about 25 cm in diameter, covered in very rough leaf scars. LEAVES: To 2.7 **m** long, growing out from a fibrous leaf sheath, the crown of about 25 leaves arching over, leaflets **narrow, folded, bright shiny green, to 30 cm,** stiff and pointed. FLOWERS: Male and female on different trees. FRUIT: **Yellow-brown, about 2 cm, edible.**

**Propagation:** Seedlings, suckers.

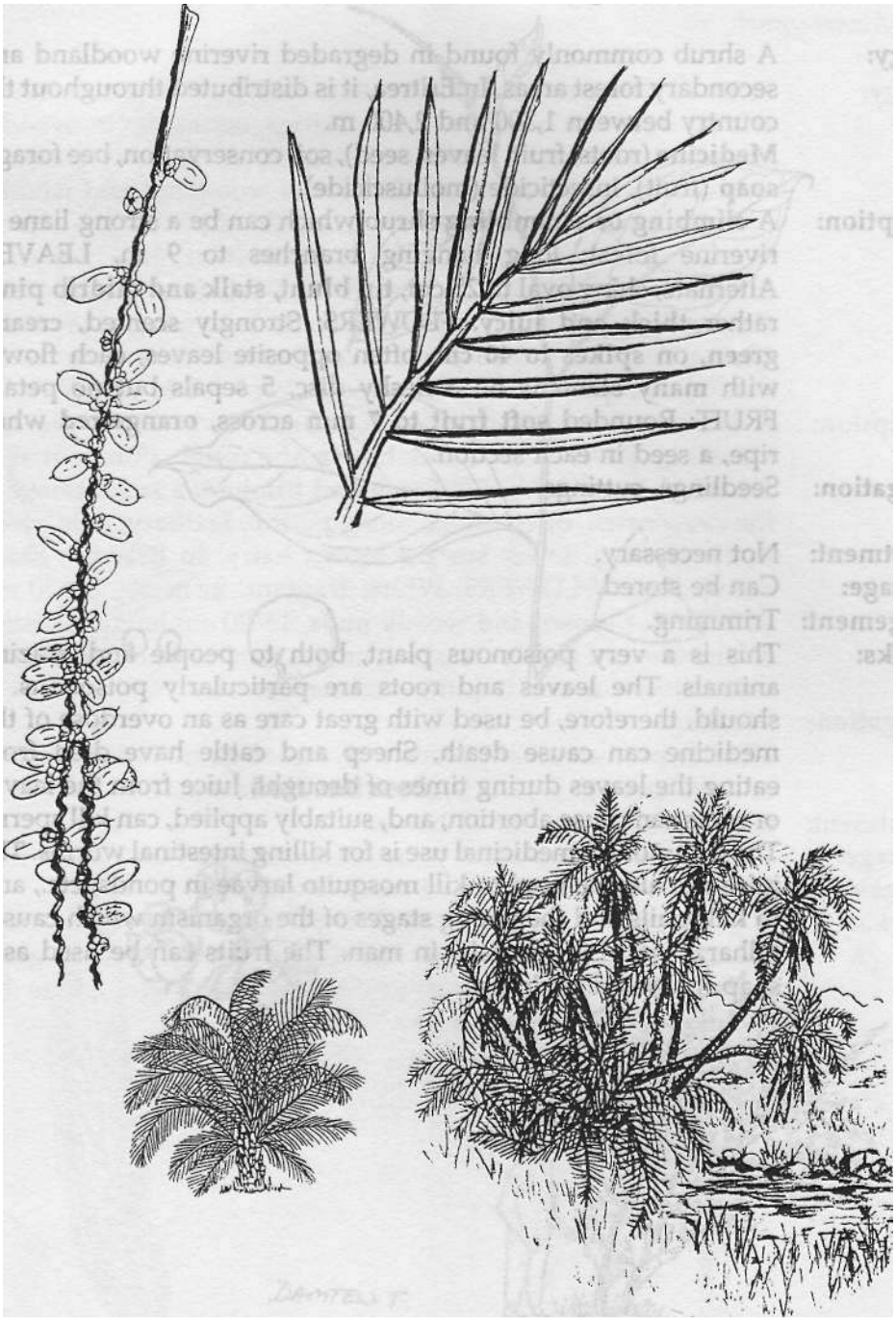
**Seed:** No. of seeds per kg: 900-5,000.

**treatment:** Not necessary.

**storage:** Seed stores well.

**Management:**

**Remarks:** Strong fibres from the leaves are used all over Africa for making baskets, mats, etc.



## Phytolacca dodecandra *Phytolaccaceae*

Indigenous

*Sh:* *Seber* *Tg:* *Shibti* *Tr:* *Sobeth*

Ecology: A shrub commonly found in degraded riverine woodland and secondary forest areas. In Eritrea, it is distributed throughout the country between 1,300 and 2,400 m.

Uses: Medicine (roots, fruit, leaves, seed), soil conservation, bee forage, soap (fruit), insecticide (molluscicide).

Description: A climbing or scrambling shrub which can be a strong liane in riverine forest; long hanging branches to 9 m. LEAVES: Alternate, shiny oval to 25 cm, **tip blunt, stalk and midrib pink,** rather thick and juicy. FLOWERS: Strongly scented, cream-green, on spikes to 40 cm, often opposite leaves, each flower with many stamens on a fleshy disc, 5 sepals but no petals. FRUIT: Rounded soft fruit to 7 mm across, **orange-red** when ripe, a seed in each section.

Propagation: Seedlings, cuttings.

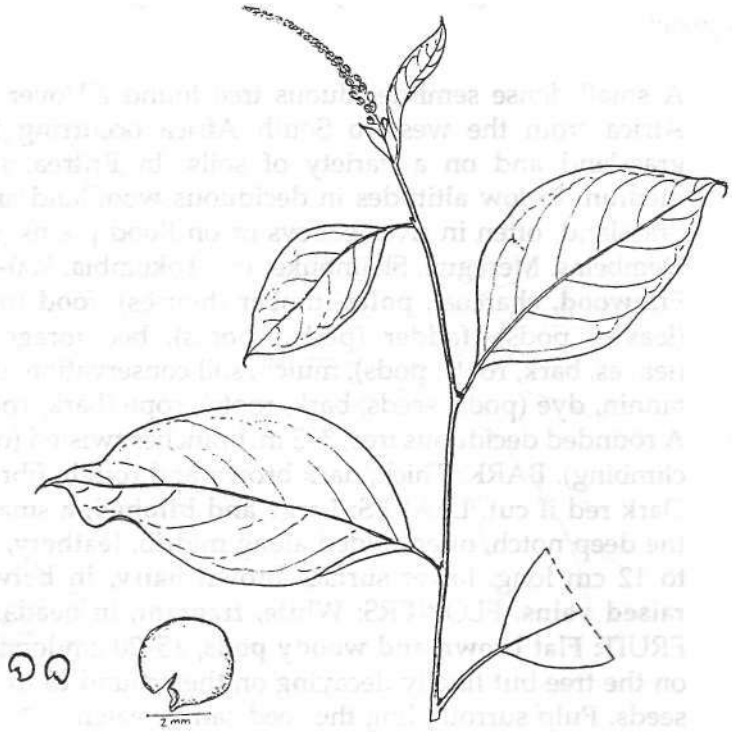
Seed:

treatment: Not necessary.

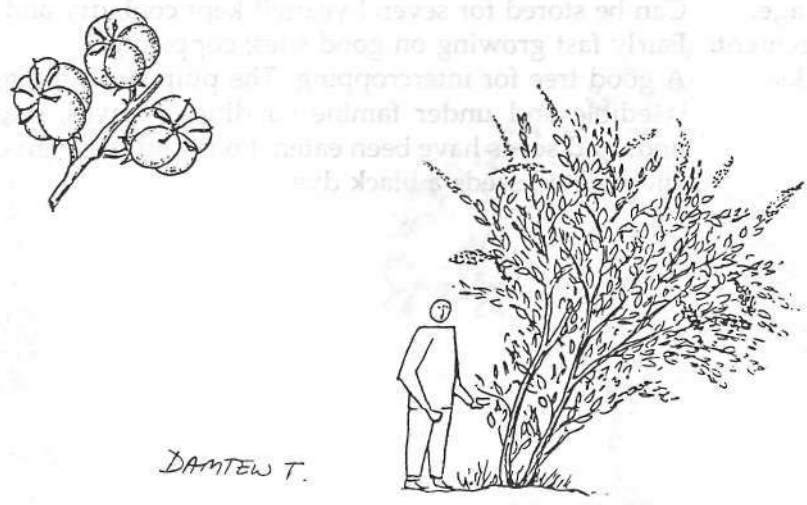
storage: Can be stored.

Management: Trimming.

Remarks: This is a very poisonous plant, both to people and grazing animals. The leaves and roots are particularly poisonous. It should, therefore, be used with great care as an overdose of the medicine can cause death. Sheep and cattle have died from eating the leaves during times of drought. Juice from the leaves or roots can cause abortion, and, suitably applied, can kill sperm. The commonest medicinal use is for killing intestinal worms. The juice can also be used to kill mosquito larvae in ponds, etc., and to kill snails and the young stages of the organism which causes bilharzia (schistosomiasis) in man. The fruits can be used as a soap for washing clothes.




fruit and seed



## Piliostigma thonningii *Caesalpinioideae*

Indigenous

*Km: Jedeba* *Eng: Camel's foot tree, Monkey bread*
*Amam-gemel*

**Ecology:** A small dense semi-deciduous tree found all over sub-humid Africa from the west to South Africa occurring in wooded grassland and on a variety of soils. In Eritrea, it grows at medium to low altitudes in deciduous woodland and wooded grassland, often in river valleys or on flood plains, e.g. around Dembelas, Meraguz, Shambuko and Tokombia, 900-1,600 m.

**Uses:** **Firewood,** charcoal, **poles,** timber (houses), **food** (pods), drink (leaves, pods), fodder (pods, shoots), bee forage, **medicine** (leaves, bark, roots, pods), mulch, soil conservation, ornamental, tannin, dye (pods, seeds, bark, roots), rope (bark, root fibres).

**Description:** A rounded deciduous tree, 3-5 m, branches twisted (occasionally climbing). BARK: Thick, dark brown and rough, fibrous within. Dark red if cut. LEAVES: **Large and bilobed,** a small bristle in the deep notch, often folded along midrib, **leathery,** pale green, to 12 cm long, lower surface brown **hairy, in between many raised veins.** FLOWERS: **White, fragrant,** in heads, 10-20 cm. FRUIT: **Flat brown and woody pods,** 15-20 cm long, persisting on the tree but finally decaying on the ground to free pea-sized seeds. Pulp surrounding the seed can be eaten.

**Propagation:** Seedlings.

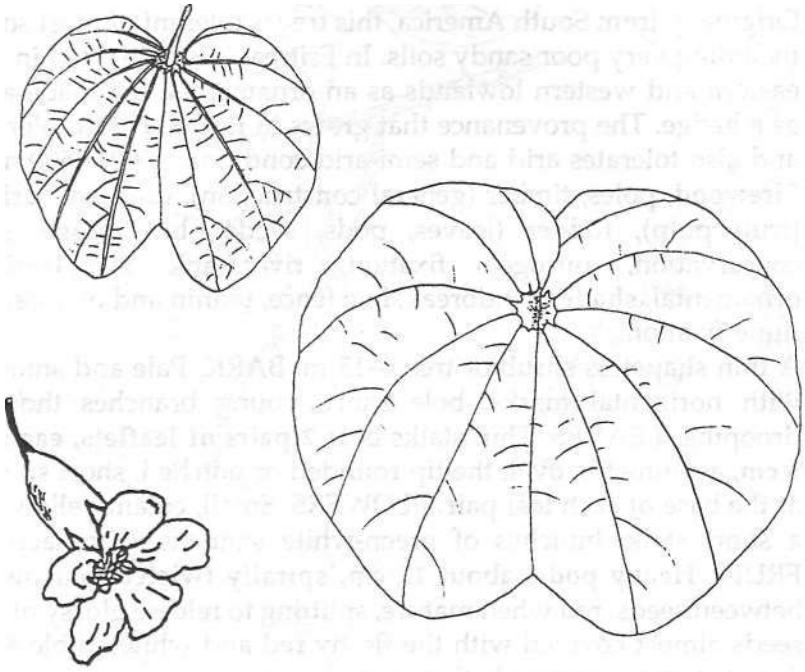
**Seed:** The tree produces many seeds with a good germination rate. No. of seeds per kg: +7,300. Seeds difficult to extract.

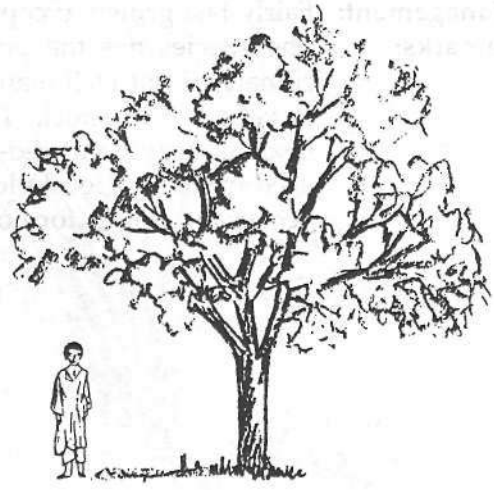
**treatment:** Soak in cold water for 24 hours.

**storage:** Can be stored for several years if kept cool, dry and insect free.

**Management:** Fairly fast growing on good sites; coppicing.

**Remarks:** A good tree for intercropping. The pulp surrounding the seeds is edible and under famine conditions leaves, crushed green pods and seeds have been eaten. Pods and seeds give a blue dye and roasted seeds a black dye.





## Pithecellobium dulce *Mimosoideae*

South America

*Tg: Temri-hindi* *Tr: Temer-hindi*
*Eng: Madras thorn, Manilla tamarind*

**Ecology:** Originally from South America, this tree is tolerant of most soils, including very poor sandy soils. In Eritrea, it is cultivated in the eastern and western lowlands as an ornamental, for shade and as a hedge. The provenance that grows in Eritrea is salt tolerant and also tolerates arid and semi-arid conditions, 500-1,600 m.

**Uses:** Firewood, poles, timber (general construction), **food and drink** (fruit pulp), **fodder** (leaves, pods, seeds), bee forage, soil conservation, nitrogen fixation, river-bank stabilization, ornamental, **shade,** windbreak, live fence, tannin and oil (seeds), dune fixation.

**Description:** A thin shapeless shrub or tree 4-15 m. BARK: Pale and smooth with horizontal marks, bole short, young branches thorny, drooping. LEAVES: Thin stalks bear **2 pairs of leaflets, each to** 5 cm, asymmetric oval, the tip rounded or notched, short spines at the base of each leaf pair. FLOWERS: Small, cream-yellow on a short stalk, bunches of green-white stamens 1 cm across. FRUIT: **Heavy pods, about 12 cm, spirally twisted,** narrowed between seeds, red when mature, splitting to release glossy black seeds almost covered with the fleshy red and white edible aril. A sweet pulp surrounds the seeds.

**Propagation:** Seedlings, direct sowing, cuttings.

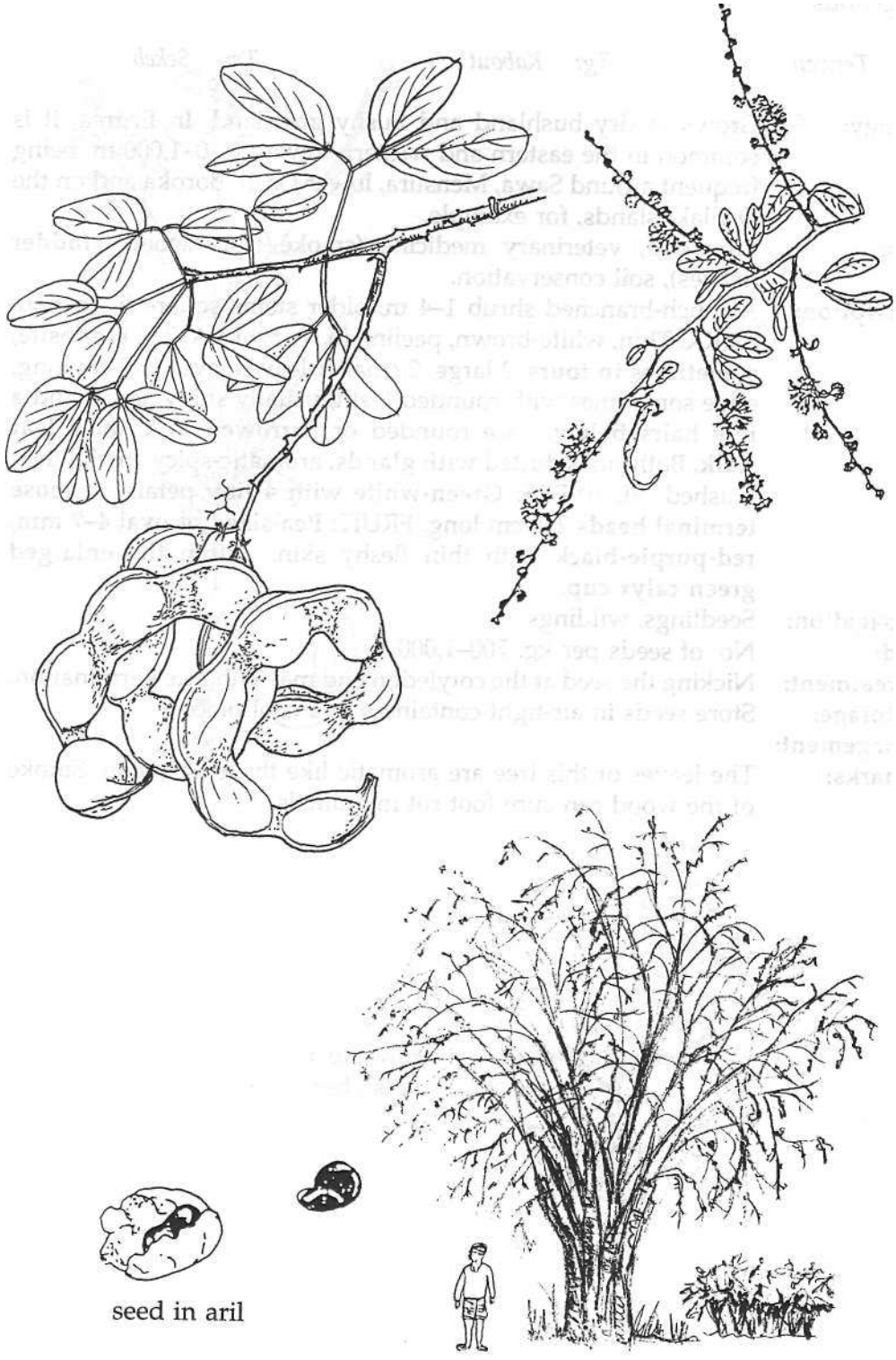
**Seed:** No. of seeds per kg: 7,000-26,000.

**treatment:** Not necessary.

**storage:** Can be stored in air-tight containers.

**Management:** Fairly fast growing; coppicing, trimming (for live fence).

**Remarks:** The species has the potential for becoming a weed in moist climates if not well managed. It is popular as a spiny live fence to keep out livestock. The timber of a large tree is strong and flexible, heavy and red-brown. It is difficult to cut but can be used in making local ploughs. The flowers are a good source of nectar and pollen for honey bees.


seed in aril

## Premna resinosa *Verbenaceae*

Indigenous

*Hd:* *Tetwen* *Tg:* *Kabout* *Tr:* *Sekeb*

Ecology: Grows in dry bushland and bushy grassland. In Eritrea, it is common in the eastern and western lowlands, 0-1,000 m, being frequent around Sawa, Mensura, lower Gash, Boroka and on the Dahlak Islands, for example.

Uses: **Firewood,** veterinary medicine (smoke from wood), **fodder** (leaves), soil conservation.

Description: A much-branched shrub 1-4 m, older stems square in section. BARK: Thin, white-brown, peeling in strips. LEAVES: **Opposite, sometimes in fours,** 2 large, 2 smaller leaves, oval to 7 cm long, edge sometimes with rounded teeth, usually shiny above and **a few hairs below,** base rounded or **narrowed to a short leaf stalk.** Both sides **dotted with glands,** aromatic-spicy smell when crushed. FLOWERS: **Green-white** with 4 tiny petals, in **loose terminal heads** 2-6 cm long. FRUIT: **Pea-sized or oval 4-7 mm, red-purple-black** with thin fleshy skin, within the **enlarged green calyx cup.**

**Propagation:** Seedlings, wildings.

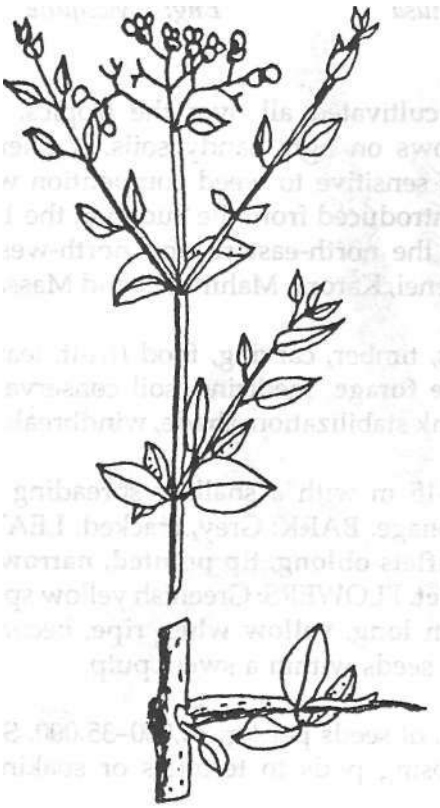
**Seed:** No. of seeds per kg: 700-1,000.

**treatment:** Nicking the seed at the cotyledon end may enhance germination.

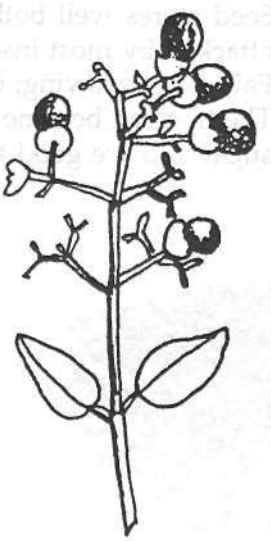
storage: Store seeds in air-tight containers in a cool place.

**Management:**

**Remarks:** The leaves of this tree are aromatic like those of lemon. Smoke of the wood can cure foot rot in animals.



enlarged flower



fruit with enlarged calyx

## Prosopis chilensis *Mimosoideae*

South America, Texas, Mexico

*Ar:* *Temer musa* *Hd:* *Temer musa* *Eng:* *Mesquite*
*Tr:* *Sesban*

**Ecology:** A thorny shrub or tree cultivated all over the tropics. It is drought-resistant and grows on light sandy soils. It tolerates some waterlogging but is sensitive to weed competition while young. In Eritrea, it was introduced from the Sudan in the 1970s and now occurs all over the north-eastern and north-western lowlands, e.g. around Tesenei, Karora, Mahmimet and Massawa, from sea level to 1,200 m.

**Uses:** **Firewood, charcoal,** posts, timber, carving, food (fruit, leaves), **fodder** (leaves, pods), **bee forage,** medicine, soil conservation, nitrogen fixation, river-bank stabilization, shade, windbreak, live fence.

**Description:** A small tree or shrub 8-15 m with a shallow spreading root system. Light drooping foliage. BARK: Grey, cracked. LEAVES: Alternate, compound. **Leaflets oblong, tip pointed, narrow, 1.5 cm long, no terminal leaflet.** FLOWERS: Greenish yellow spikes. FRUIT: **Pods, about 10-cm long, yellow when ripe,** becoming black, numerous up to 25 seeds within a sweet pulp.

**Propagation:** Seedlings, direct sowing.

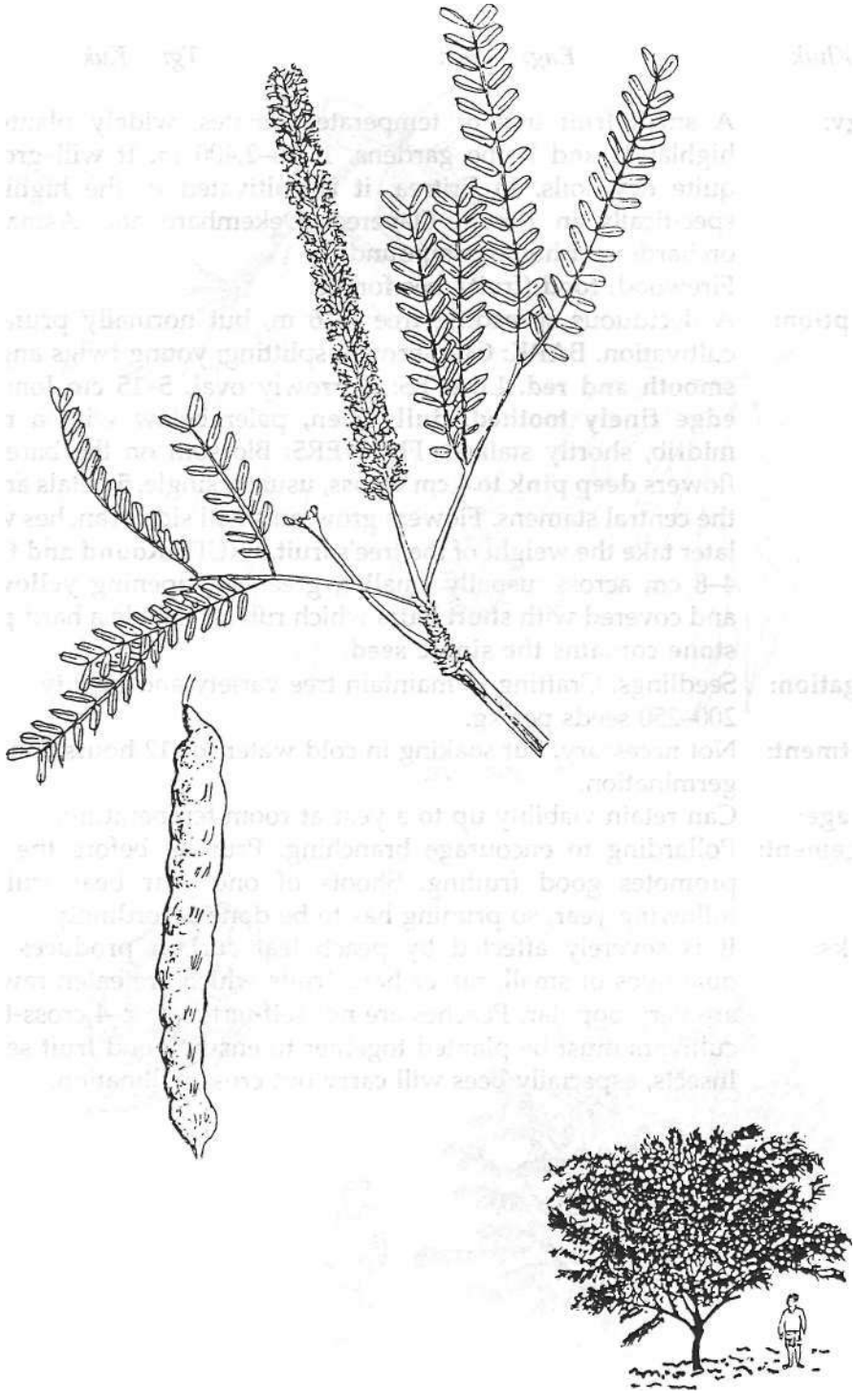
**Seed:** Germination 40-80 %. No. of seeds per kg: 30,000-35,000. Seeds can be extracted by exposing pods to termites or soaking in water.

**treatment:** Immerse in hot water, allow to cool and soak for 24 hours.

**storage:** Seed stores well both in pods and when extracted as it is not attacked by most insects.

**Management:** Fairly fast growing; lopping, pollarding and coppicing.

**Remarks:** The tree can become a weed on wetter sites. Pods contain sugar and are good animal feed.



## Primus persica *Rosaceae*

South-West Asia, China

*Ar: Khuk* *Eng: Peach* ***Tg:*** *Kuk*

**Ecology:** A small fruit tree of temperate climates, widely planted in highlands and home gardens, 1,700-2,400 m. It will grow in quite dry soils. In Eritrea, it is cultivated in the highlands, specifically in Keren, Elabered, Dekemhare and Asmara in orchards and home compounds.

**Uses:** Firewood, **food** (fruit), bee forage.

**Description:** A deciduous spreading tree to 6 m, but normally pruned in cultivation. BARK: Grey-brown, splitting; young twigs angular, **smooth and red.** LEAVES: Narrowly oval, 5-15 cm long, the **edge finely toothed, dull green,** paler below with a raised midrib, shortly stalked. FLOWERS: Blossom on the bare tree, flowers **deep pink to 4 cm across,** usually single, 5 petals around the central stamens. Flowers grow on small side branches which later take the weight of the tree's fruit. FRUIT: **Round and fleshy** 4-8 cm across, usually smaller, greenish, ripening **yellow-red** and covered with **short hairs** which rub off. Inside a hard **pitted stone contains the single seed.**

**Propagation:** Seedlings. Grafting to maintain tree variety and quality.

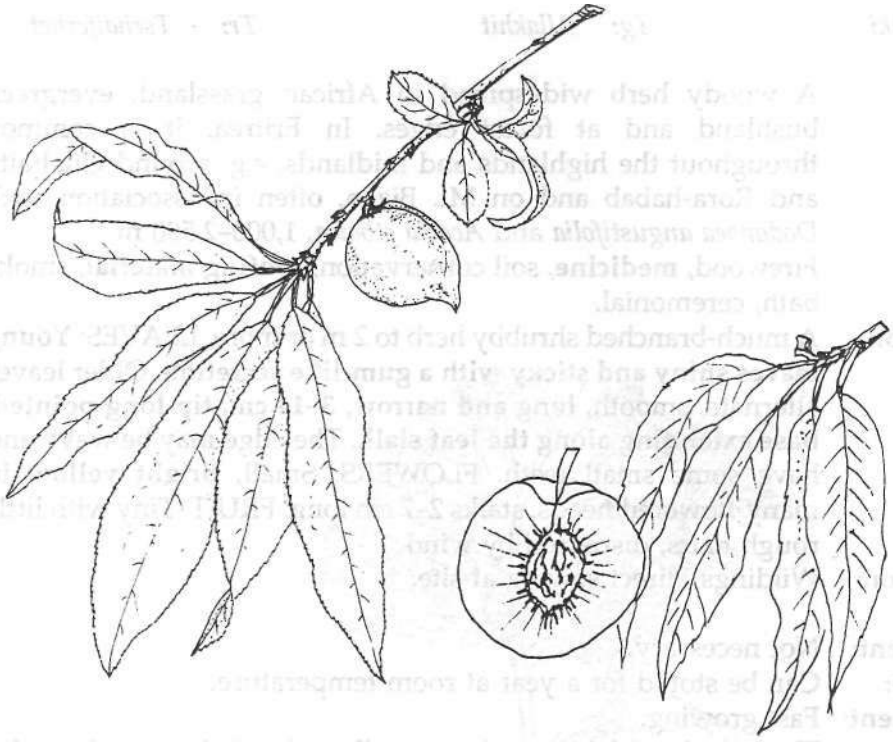
**Seed:** 200-250 seeds per kg.

**treatment:** Not necessary, but soaking in cold water for 12 hours enhances germination.

**storage:** Can retain viability up to a year at room temperature.

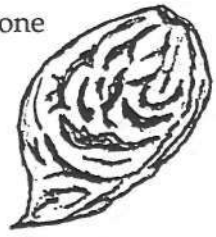
**Management:** Pollarding to encourage branching. Pruning before the rains promotes good fruiting. Shoots of one year bear fruit the following year, so pruning has to be done accordingly.

**Remarks:** It is severely affected by peach leaf curl. It produces large quantities of small, rather hard fruits which are eaten raw and are very popular. Peaches are not self-fertile so 2-4 cross-fertile cultivars must be planted together to ensure good fruit setting. Insects, especially bees will carry out cross-pollination.



fruit section

seed - stone



## Psiadia punctulata *Compositae*

Indigenous

*Sh:* *Allaki* *Tg:* *Allakhit* *Tr:* *Tsehaiferhet*

**Ecology:** A woody herb widespread in African grassland, evergreen bushland and at forest edges. In Eritrea, it is common throughout the highlands and midlands, e.g. around Quahaito and Rora-habab and on Mt. Bizen, often in association with *Dodonaea angustifolia* and *Acacia etbaica,* 1,000-2,500 m.

**Uses:** Firewood, **medicine,** soil conservation, **roofing material,** smoke bath, ceremonial.

**Description:** A much-branched shrubby herb to 2 m or more. LEAVES: **Young leaves shiny and sticky with a gum-like secretion.** Older leaves alternate, smooth, **long and narrow, 3-14 cm, tip long pointed, base extending along the leaf stalk.** The edge may be wavy and have some small teeth. FLOWERS: Small, **bright yellow** in many-flowered heads, stalks 2-7 cm long. FRUIT: Tiny with little rough hairs, dispersed by wind.

**Propagation:** Wildings, direct sowing at site.

**Seed:**

**treatment:** Not necessary.

**storage:** Can be stored for a year at room temperature.

**Management:** Fast growing.

**Remarks:** The branches of this species are collected and tied together with string to light for the *Meskel* celebration—usually called *Hoye-hoye.*

## Psidium guajava *Myrtaceae*

Tropical America

| | | | | | |
|---|---|---|---|---|---|
| *Ar:* | *Juafa* | *Bl:* | *Zeitun* | *Eng:* | *Guava* |
| *Km:* | *Lila* | *Nr:* | *Zeitun* | *Sh:* | *Zeitun* |
| *Tg:* | *Zeitun* | *Tr:* | *Zeitun* | | |

**Ecology:** Originally from South America, this fruit tree is now grown throughout the tropics, the warmer sub-tropics and all over Africa south of the Sahara, 0-2,000 m. It is drought-hardy, grows well with irrigation but not in waterlogged soils. In Eritrea, it is cultivated along the Anseba river, around Elabered, Durfo, Filfil, Mai-aini and on the Ala plains in irrigated fields and in home gardens, 1,200-2,000 m.

**Uses:** Firewood, tool handles, **food** (fruit).

**Description:** A small evergreen tree to 8 m, branching irregularly. BARK: Smooth, pale brown, later peeling and flaking; **young shoots 4-sided.** LEAVES: Large, **dull and oval to 15 cm long,** side veins prominently hairy below, in opposite pairs. FLOWERS: White, about 2.5 cm across, 1-3 together beside leaves, many stamens. FRUIT: Rounded to 6 cm long, **tipped by remains of calyx, pink, white, or yellow,** depending on the variety. The **sweet flesh** surrounds many hard angular seeds.

**Propagation:** Seedlings, root suckers, direct sowing, wildings.

**Seed:** No. of seed per kg: about 500,000.

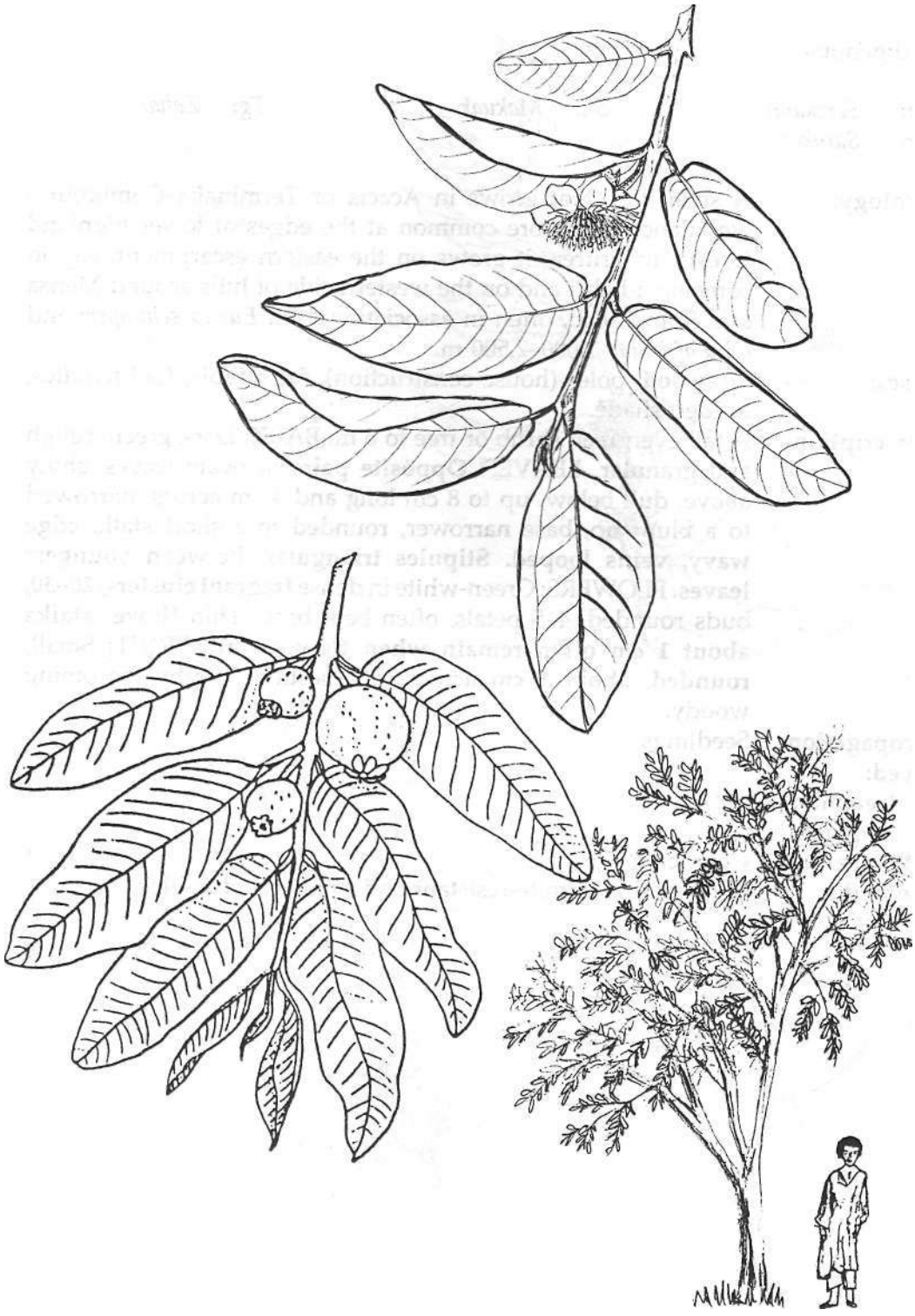
**treatment:** Not necessary.

**storage:** Can be stored in air-tight containers.

**Management:** Fast growing; pollarding, lopping, pruning, coppicing. Prune branches and roots if near crops.

**Remarks:** The fruit is very rich in vitamin C, but often attacked by fruit flies. Trees bear fruit in 3-4 years, continue to fruit for up to 30 years and are a useful source of cash for farmers. The wood is termite-resistant. The leaves do not decompose easily and trees should be planted away from crops to avoid competition.

Psidium guajava *Myrtaceae*



## Psydrax schimperiana subsp. schimperiana *Rubiaceae*

**(Canthium schimperianum)**

Indigenous

*Bl:* *Serekana* *Sh:* *Makuak* *Tg:* *Zahak*
*Tr:* *Sarakan*

**Ecology:** A small tree that grows in Acacia or Terminalia-Combretum woodland. It is more common at the edges of lower highland forests. In Eritrea, it grows on the eastern escarpment, e.g. in Semenawi-bahri and on the western side of hills around Mensa and Rora-habab, often in association with *Euclea schimperi* and *Oka africana,* 1,600-2,500 m.

Uses: **Firewood,** poles (house construction), **farm tools,** tool handles, fodder, shade.

**Description:** A tall evergreen shrub or tree to 6 m. BARK: Dark green, rough and granular. LEAVES: **Opposite pairs** of ovate leaves, shiny above, dull below, up to 8 cm long and 4 cm across, narrowed to a blunt tip, base narrower, rounded to a short stalk, **edge wavy, veins looped. Stipules triangular, between youngest leaves.** FLOWERS: Green-white in dense **fragrant clusters, 20-30,** buds rounded, 4-5 petals, often bent back. Thin **flower stalks about 1 cm often remain when flowers fall.** FRUIT: Small, **rounded, about 1 cm** across in 2 sections, fleshy, becoming woody.

**Propagation:** Seedlings.

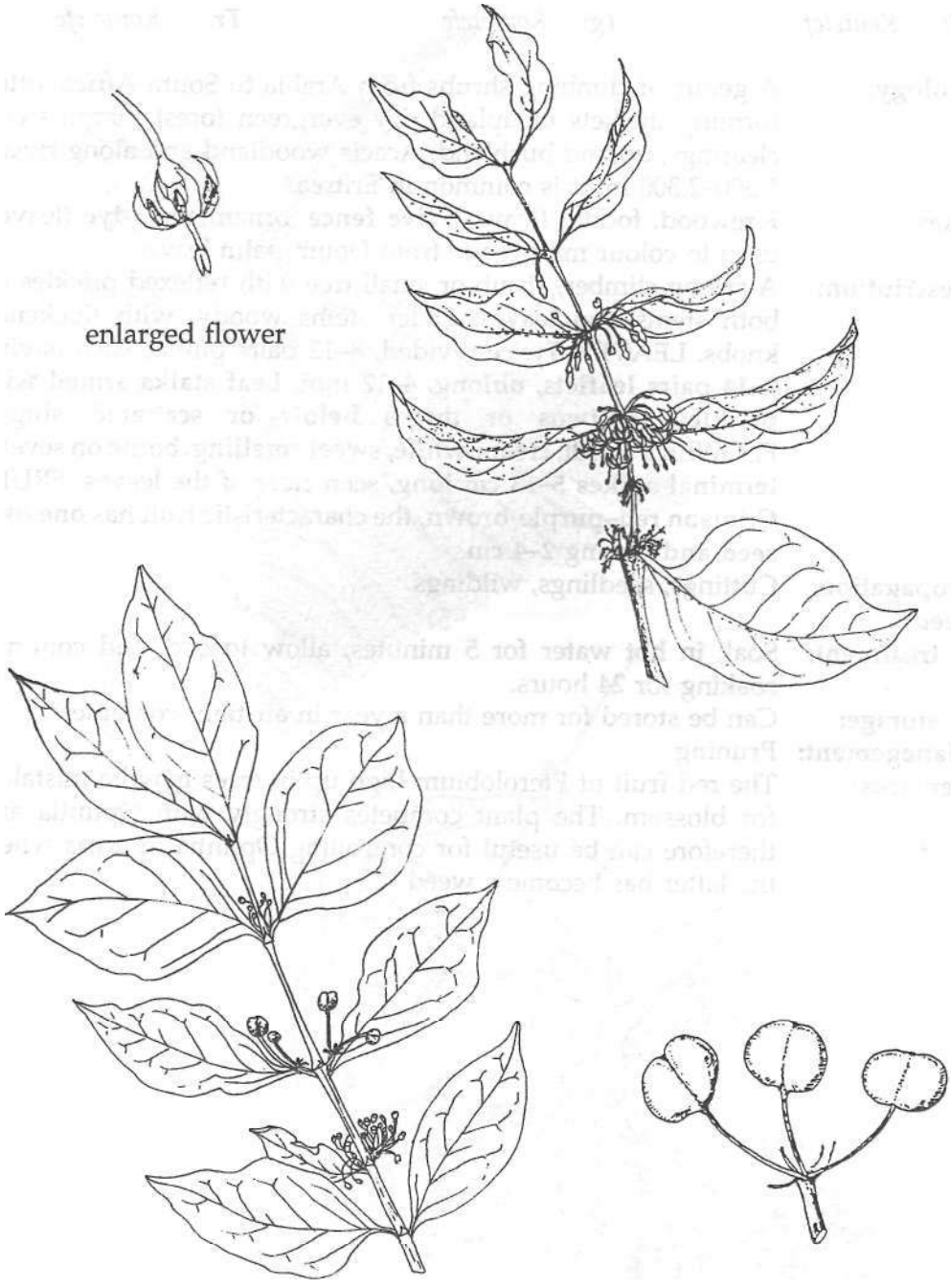
**Seed:**

**treatment:**

**storage:**

**Management:** Coppicing.

**Remarks:** The wood is termite-resistant and thus very durable.


enlarged flower

## Pterolobium stellatum *Caesalpinioideae*

Indigenous

*Bl:* *Kentetef* *Tg:* *Kontetefe* *Tr:* *Kontetefe*

**Ecology:** A genus of climbing shrubs from Arabia to South Africa, often forming thickets in upland dry evergreen forest margins and clearings, upland bushland, Acacia woodland and along rivers, 1,300-2,300 m. It is common in Eritrea.

**Uses:** Firewood, fodder (leaves), **live fence,** ornamental, **dye** (leaves, used to colour mats made from Doum palm leaves).

**Description:** A strong climber, shrub or small tree with reflexed prickles on both stems and leaves. Older stems woody, with thickened knobs. LEAVES: Twice divided, 8-12 pairs pinnae each having **9-14 pairs leaflets, oblong, 4-12** mm. **Leaf stalks armed with prickles in twos or threes below or scattered singly.** FLOWERS: Small, **cream-white, sweet smelling,** borne on several **terminal spikes 5-13 cm long,** seen clear of the leaves. FRUIT: **Crimson red-purple-brown,** the characteristic fruit has **one oval seed and a wing 2-4 cm.**

**Propagation:** Cuttings, seedlings, wildings.

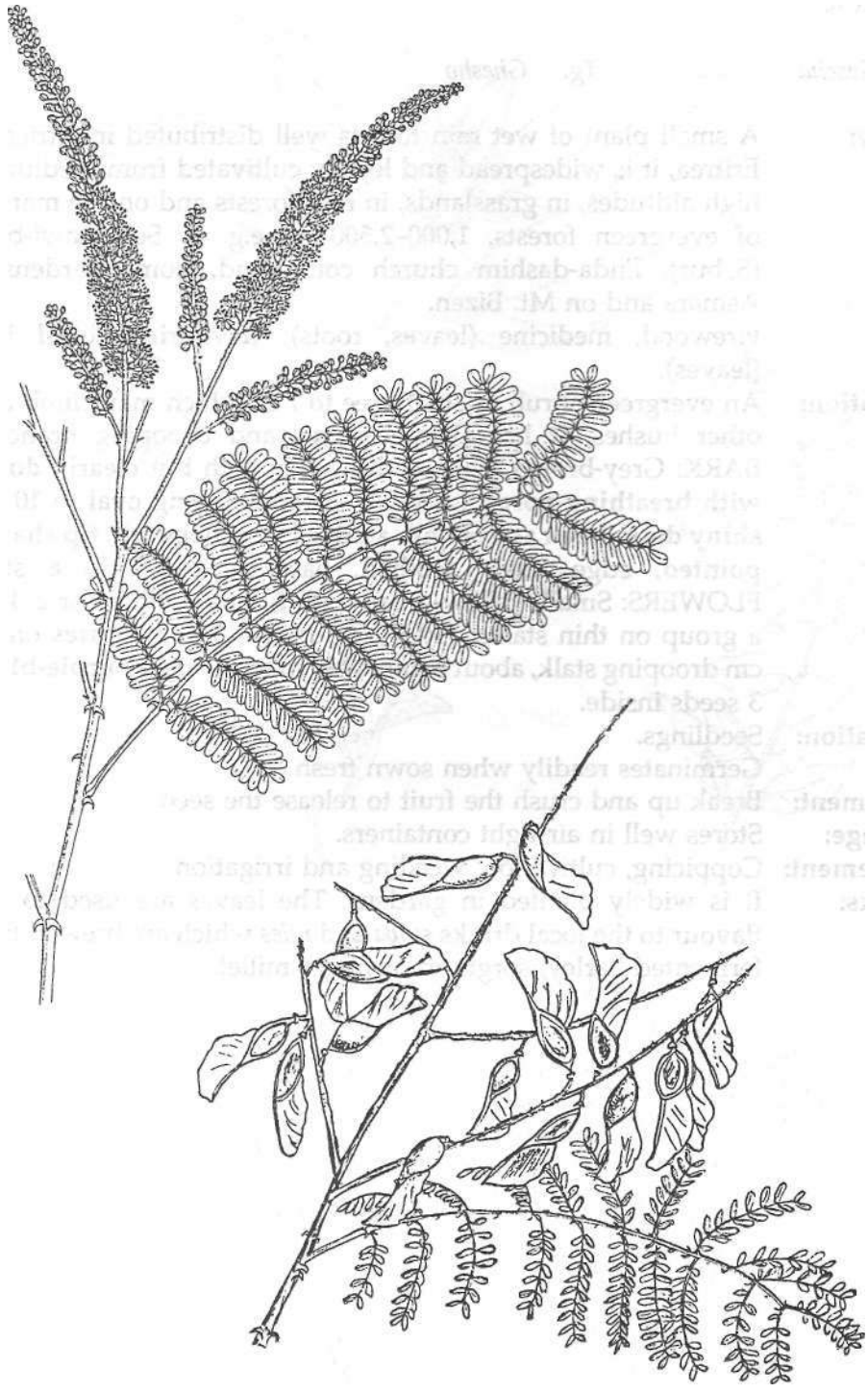
**Seed:**

**treatment:** Soak in hot water for 5 minutes, allow to cool and continue soaking for 24 hours.

**storage:** Can be stored for more than a year in air-tight containers.

**Management:** Pruning.

**Remarks:** The red fruit of Pterolobium high up in trees may be mistaken for blossom. The plant competes strongly with Opuntia and therefore can be useful for controlling Opuntia in areas where the latter has become a weed.



## Rhamnus prinoides *Rhamnaceae*

Indigenous

*Sh: Geseha* *Tg: Ghesho*

**Ecology:** A small plant of wet rain forests well distributed in Africa. In Eritrea, it is widespread and locally cultivated from medium to high altitudes, in grasslands, in rain forests and on the margins of evergreen forests, 1,000-2,500 m, e.g. in Semenawi-bahri (Sabur), Enda-dashim church compound, home gardens in Asmara and on Mt. Bizen.

**Uses:** Firewood, medicine (leaves, roots), **flavouring,** local **beer** (leaves).

**Description:** An evergreen shrub or small tree to 7 m which may climb over other bushes. It has slender stems and drooping branches. BARK: Grey-brown, dark with age, smooth but **clearly dotted with breathing pores.** LEAVES: Alternate, long oval to 10 cm, **shiny dark green above** with **a raised vein network, tip sharply pointed,** edge finely toothed, base narrowed to a stalk. FLOWERS: Small, yellow-green with 5 **sepals,** single or 2-10 in a group on thin stalks. FRUIT: Rounded, **3-part berries** on a 2 cm drooping stalk, about 8 mm, **shiny red,** turning **purple-black,** 3 seeds inside.

**Propagation:** Seedlings.

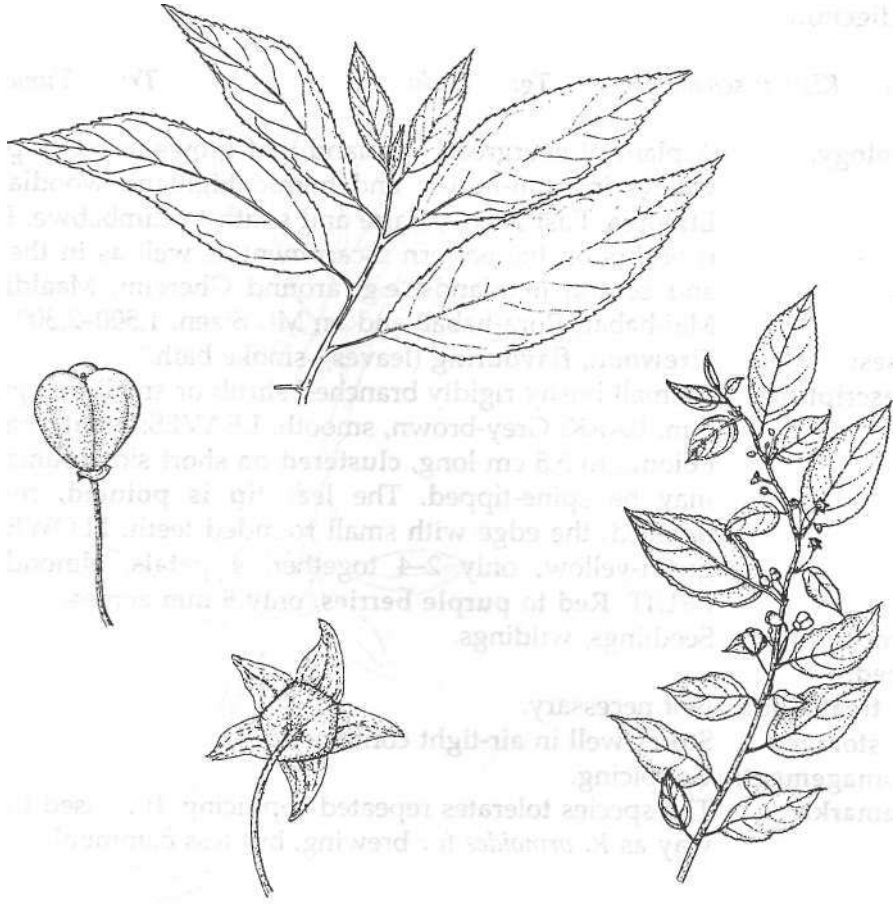
**Seed:** Germinates readily when sown fresh.

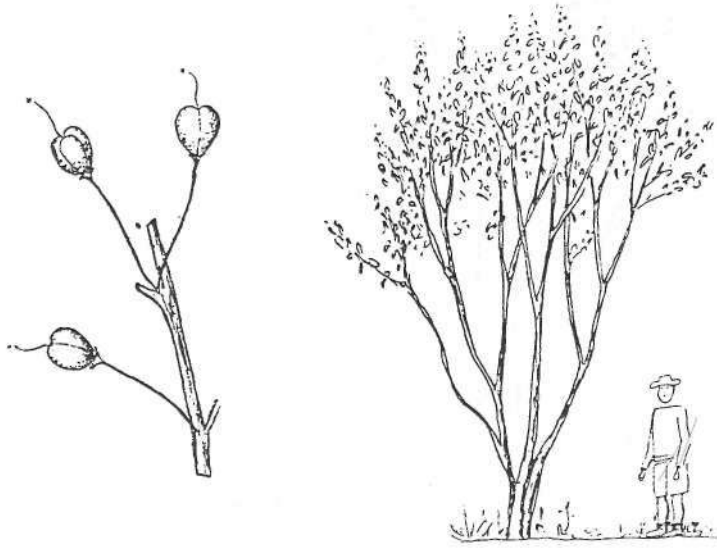
**treatment:** Break up and crush the fruit to release the seed.

**storage:** Stores well in air-tight containers.

**Management:** Coppicing, cultivation, weeding and irrigation.

**Remarks:** It is widely planted in gardens. The leaves are used to add flavour to the local drinks *suwa* and *mies* which are brewed from fermented barley, sorghum or finger millet.





## Rhamnus staddo *Rhamnaceae*

Indigenous

*Sh: Kistani-schahala* *Tg: Tsedo* *Tr: Tumera*

Ecology: A plant of evergreen bushland that grows in rocky places and valleys in semi-humid and humid highland woodlands from Ethiopia, East Africa, Zaire and south to Zimbabwe. In Eritrea, it occurs on the eastern escarpment as well as in the northern and central highlands, e.g. around Gheremi, Maaldi, Nefasit, Mai-habar, Rora-habab and on Mt. Bizen, 1,500-2,300 m.

Uses: **Firewood, flavouring** (leaves), smoke bath.

**Description:** A small bushy rigidly branched shrub or small tree growing to 5 m. BARK: Grey-brown, smooth. LEAVES: **Small,** narrow and oblong, to 5.5 cm long, **clustered** on short side branches which may be spine-tipped. The **leaf tip is pointed, rounded** or notched, the edge with small rounded teeth. FLOWERS: Small green-yellow, only 2-4 together, **4 petals,** almond scented. FRUIT: **Red to purple berries,** only 5 **mm** across.

**Propagation:** Seedlings, wildings.

Seed:

**treatment:** Not necessary.

**storage:** Stores well in air-tight containers.

**Management:** Coppicing.

Remarks: The species tolerates repeated coppicing. It is used in the same way as *R. prinoides* for brewing, but less commonly.

Rhamnus staddo *Rhamnaceae*

## Rhus glutinosa subsp. abyssinica *Anacardiaceae*

Indigenous

*Ar:* *Sambu* *Sh:* *Amus* *Tg:* *Amus*
*Tr:* *Shamutet*

Ecology: In Eritrea this shrub is common over 1,500 m in the central and northern highlands as well as in the eastern escarpment, often on rocky hillsides. It occurs around Semenawi-bahri, Embasoira, Wogret, Debresina and on Mt. Bizen and Mt. Tekera, for example, often in association with *Carissa edulis* and *Rhus natalensis.* It is drought resistant.

**Uses:** **Firewood, timber** (construction), walking sticks, food (fruit), bee forage, toothbrush.

**Description:** A shrub or tree up to 7 m high. BARK: Dark grey to brown or reddish, rough. LEAVES: **Three leaflets on a hairy stalk to 8 cm long, leaflets without stalks,** all oval, the central leaflet longer, 7-20 cm, **both surfaces softly hairy,** edge wavy or with rounded teeth only at the tip. FLOWERS: Small, brown-white on terminal branched heads or beside leaves, **to 20 cm long,** stalk hairy. FRUIT: Small, rounded, **shiny,** containing seed, **slightly flattened, 3-5 mm across.**

**Propagation:** Seedlings, wildings.

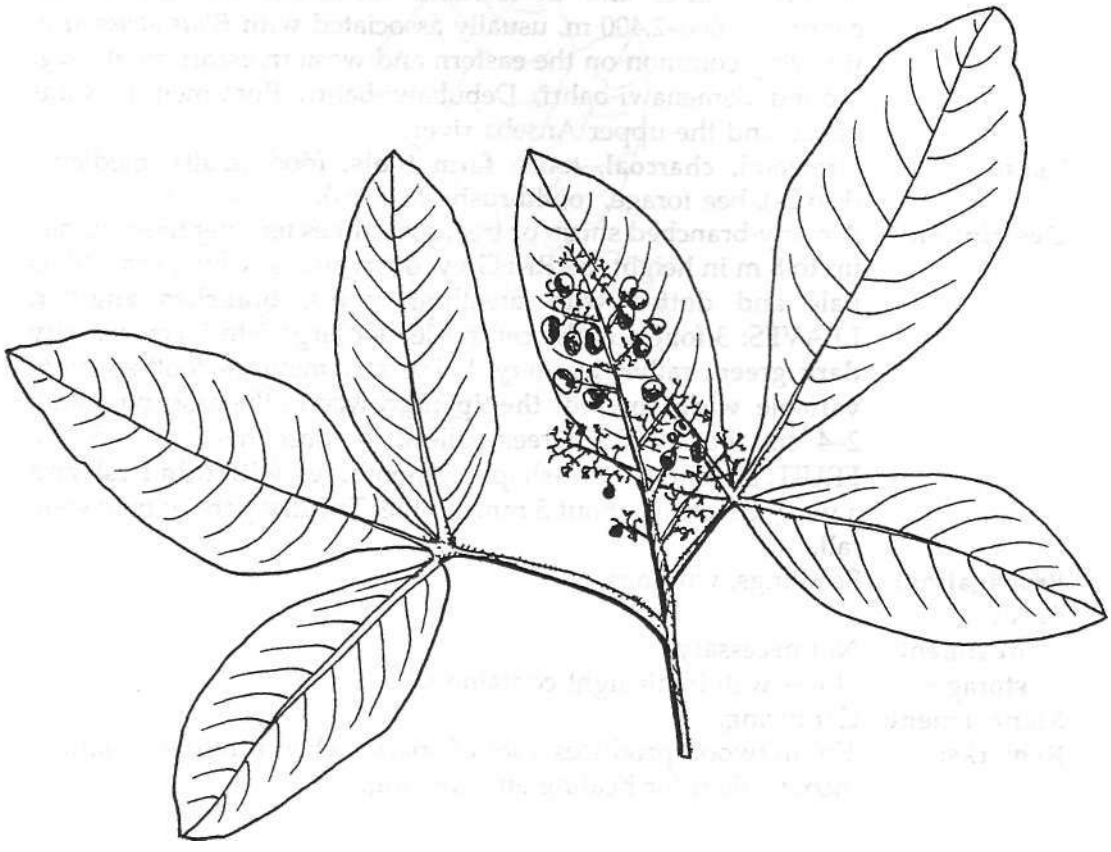
**Seed:**

**treatment:**

**storage:**

**Management:** Fast growing.

**Remarks:**



## Rhus natalensis *Anacardiaceae*

Indigenous

*Bl:* *Mechecho* *Sh:* *Atami* *Tg:* *Tetale*
*Tr:* *Shamutet*

**Ecology:** A bush or tree widespread in Africa at dry forest margins and in wooded grassland. In Eritrea, **it** grows in wooded savannah, at forest edges and in lowland woodland throughout the country, 1,600-2,400 m, usually associated with *Rhus abyssinica.* It is very common on the eastern and western escarpments, e.g. around Semenawi-bahri, Debubawi-bahri, Rora-mensa, Rora-habab and the upper Anseba river.

**Uses:** Firewood, **charcoal,** tools, **farm tools,** food (fruit), medicine (leaves), bee forage, toothbrushes (stems).

**Description:** A many-branched shrub or tree, sometimes tending to scramble, up to 8 m in height. BARK: Grey, often almost white, branchlets pale and dotted with breathing pores, **branches angular.** LEAVES: 3-foliolate, the central leaflet largest to 9 cm, **usually dark green,** rather **leathery,** hairless, sometimes toothed, very variable, **wider towards the tip,** narrowed to the base, on a stalk 2-4 cm. FLOWERS: Green-yellow in loose heads to 15 cm. FRUIT: Oblong to bean-shaped, smooth, **red with thin flesh** and a waxy covering, about 5 mm, edible. The dry papery fruit soon fall.

**Propagation:** Seedlings, wildings.

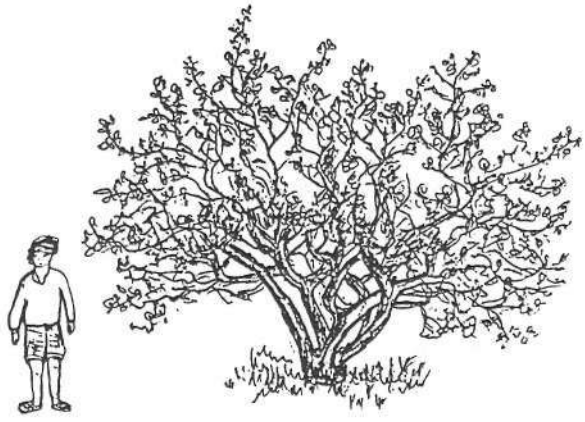
**Seed:**

**treatment:** Not necessary.

**storage:** Stores well in air-tight containers.

**Management:** Coppicing.

**Remarks:** The firewood produces a lot of sparks when it burns making it inconvenient for heating and cooking.



Indigenous

*Bl:* *Mechecho* *Sh:* *Atami* *Tg:* *Teteale*
*Tr:* *Shamut-ketan*

**Ecology:** Found also in the Sudan, Somalia and Arabia, this shrub occurs in evergreen bushland on dry and rocky slopes on the eastern and western escarpments and the northern highlands of Eritrea, 1,600-2,000 m. It is common around Semenawi-bahri and Debubawi-bahri as well as in the Rora-mensa area.

**Uses:** **Firewood, farm tools, walking sticks,** bee forage, local beds (leaves).

**Description:** A thin shrub or small tree 2-6 m, the slender red-brown twigs hanging down. **Young shoots shiny.** LEAVES: **Long,** thin and pointed, usually pendent, **over 4 times longer than broad,** to **20 cm, widest below the centre, edge finely curly,** shiny green above, paler below, oily and **sticking together if pressed,** usually **remaining green as they dry.** FLOWERS: Small, male and female, in loose branched heads, **stalks hairless.** FRUIT: Round or bean-shaped, **less than 5 mm,** shiny pale brown, slightly pink, soon falling.

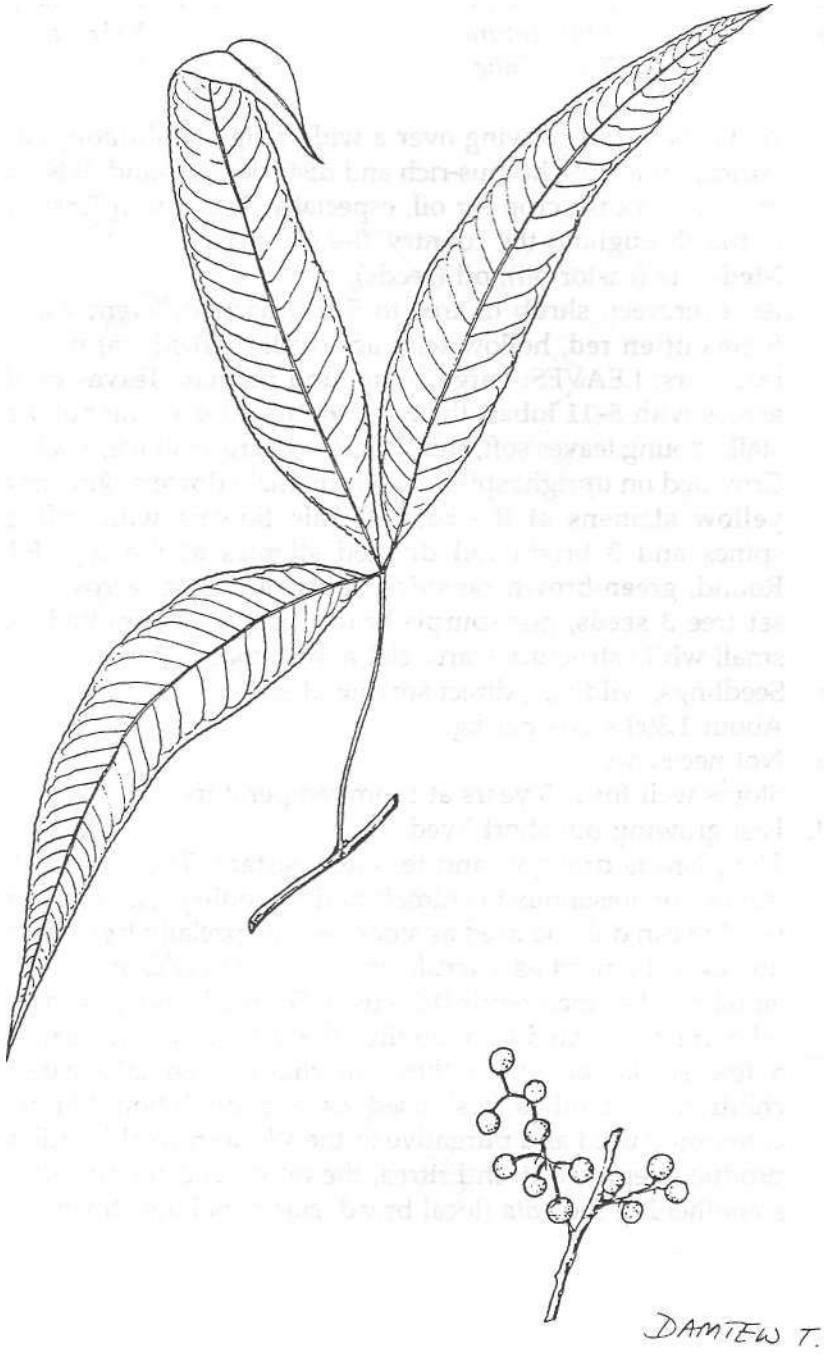
**Propagation:** Seedlings.

**treatment:**

**storage:** Stores well in air-tight containers.

**Management:**

**Remarks:** The leaves stick together if they are piled on top of each other and pressed down, a feature that can help identification of this species.


DAMTEW T.

## Ricinus communis *Euphorbiaceae*

Indigenous to Africa

| | | |
|---|---|---|
| *Ar: Kurwaa* | *Bl: Gulka* | *Eng: Castor oil plant* |
| *Hd: Bqullas* | *Km: Intura* | *Sh: Nakobeles* |
| *Tg: Gulii* | *Tr: Gulie* | |

**Ecology:** A shrubby tree growing over a wide range of altitudes all over Africa, preferring humus-rich and disturbed ground. It is widely grown as a cash crop for oil, especially in India. In Eritrea, it is found throughout the country, 0-2,400 m.

**Uses:** **Medicine** (castor oil), **oil** (seeds).

**Description:** An evergreen shrub or tree to 5 m (many different varieties). **Stems often red,** hollow with age, well-marked leaf nodes and leaf scars. LEAVES: Large compound **palmate leaves to 50 cm across** with **5-11 lobes,** the **edge toothed,** on a long hollow leaf stalk. Young leaves soft, shiny, dark red-green above. FLOWERS: Crowded on upright spikes to 60 cm, male flowers with **creamy-yellow stamens** at the base; female flowers with soft green spines and 3 bright red divided stigmas at the top. FRUIT: Round, **green-brown capsules,** spiny, to 2.5 cm across, split to set free 3 **seeds,** grey-purple-brown, shiny and spotted with a small white structure (caruncle) at one end.

**Propagation:** Seedlings, wildings, direct sowing at site.

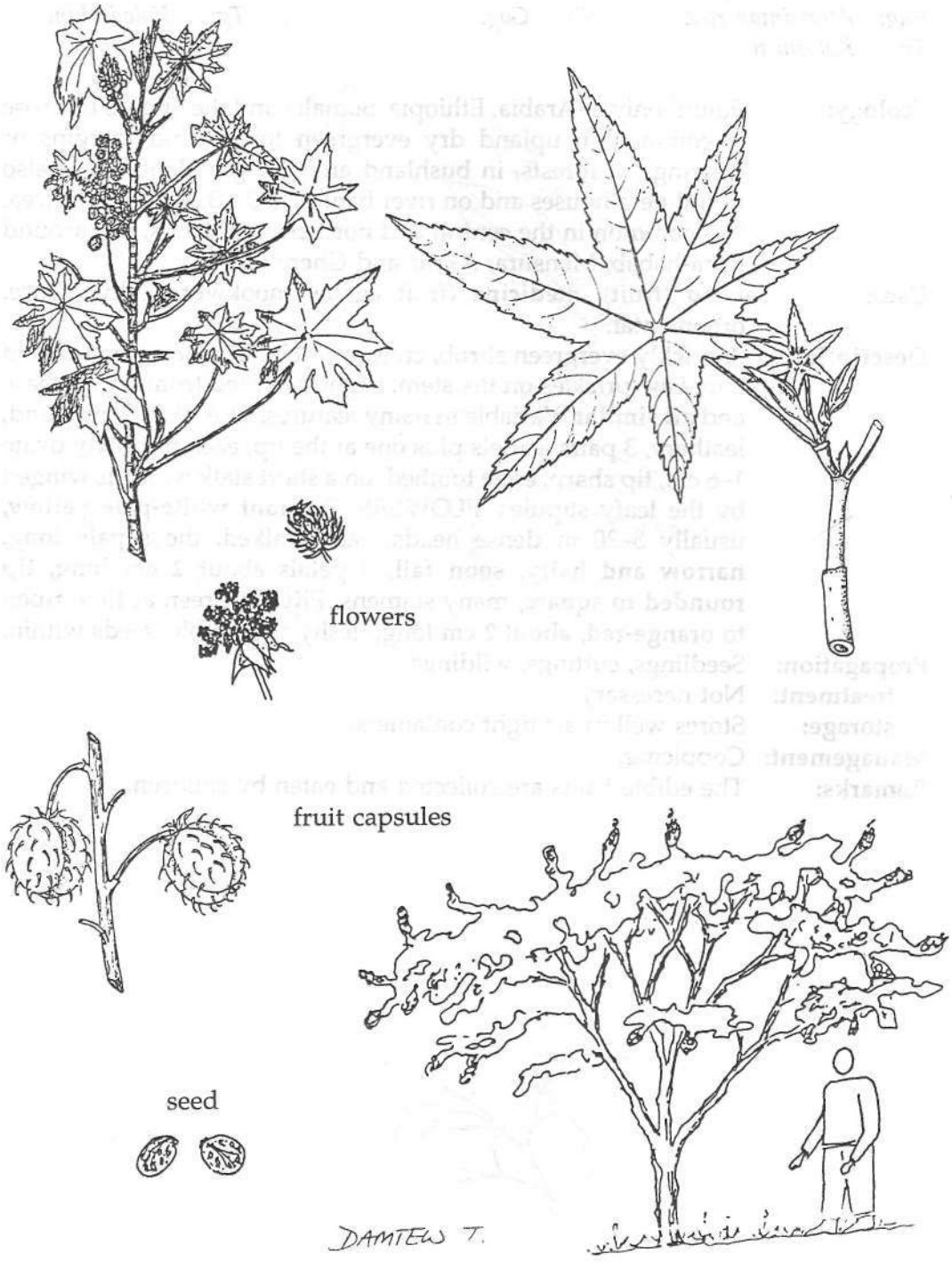
**Seed:** About 1,300 seeds per kg.

**treatment:** Not necessary.

**storage:** Stores well for 2-3 years at room temperature.

**Management:** Fast growing but short lived.

**Remarks:** The plant is drought- and termite-resistant. The seed coat and leaves are poisonous to animals and to poultry, and even the oil residue can only be used as stock feed if specially treated. It can, however, be used as a fertilizer. The seeds yield up to 50% oil, an oil that has many industrial uses. For medicinal purposes, the oil extract is heated to neutralize the strong poison, ricin. Even a few seeds can kill if they are chewed—so take care with children. The oil is best used as a body lotion but it was commonly used as a purgative in the Western world until better products replaced it. In Eritrea, the oil is used for cleaning and smoothening the *taita* (local bread, *enjera)* baking stoves.


flowers
fruit capsules
seed
DAMTEW T.

## Rosa abyssinica *Rosaceae*

Indigenous

*Eng: Abyssinian rose* *Sh: Gaga* *Tg: Kolodashim*
*Tr: Koloshem*

**Ecology:** Found only in Arabia, Ethiopia, Somalia and the Sudan, this rose is common in upland dry evergreen forests and margins or clearings of forests, in bushland and dry grasslands. It is also found near houses and on river banks, 1,700-3,300 m. In Eritrea, it is common in the central and northern highlands, e.g. around Rora-habab, Mensura, Akrur and Gheremi.

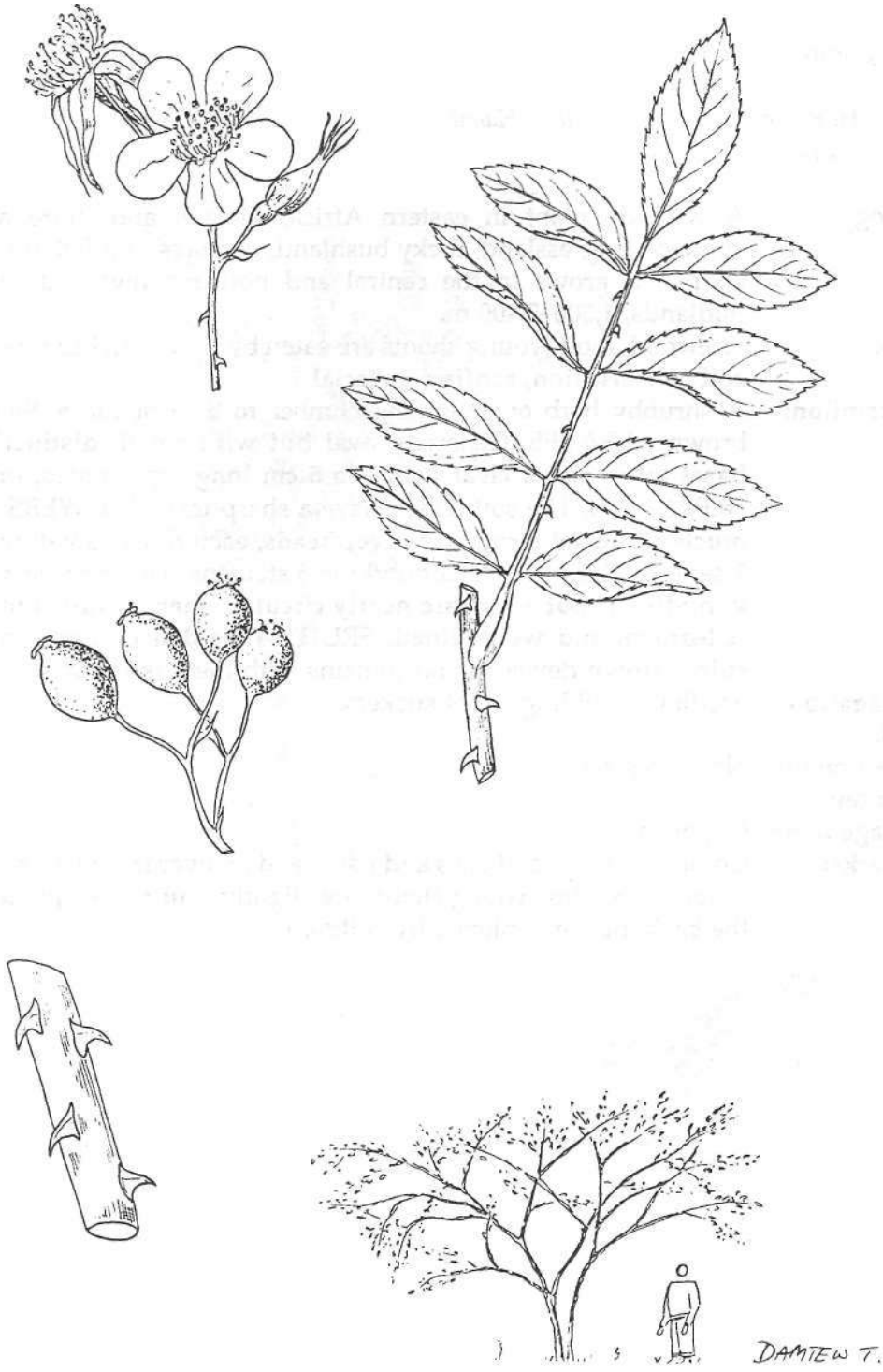
**Uses:** **Food** (fruit), **medicine** (fruit against hookworm), live fence, ornamental.

**Description:** A prickly evergreen shrub, creeper or climber, or a small tree to 7 m. Few prickles on the stem, slightly curved from a wide base and **all similar.** Variable in many features. LEAVES: Compound, leathery, 3 pairs leaflets plus one at the tip, each narrowly ovate 1-6 cm, tip sharp, edge toothed, on a short stalk which is winged by the leafy stipules. FLOWERS: **Fragrant white-pale yellow,** usually 3-20 in dense heads, each stalked, the **sepals long, narrow and hairy, soon fall,** 5 petals about **2 cm long, tip rounded to square,** many stamens. FRUIT: Green at first, ripen to **orange-red, about 2 cm** long, fleshy and edible, seeds within.

**Propagation:** Seedlings, cuttings, wildings.
**treatment:** Not necessary.
**storage:** Stores well in air-tight containers.

**Management:** Coppicing.

**Remarks:** The edible fruits are collected and eaten by children.


DAMTEW T.

## Rumex usambarensis *Polygonaceae*

**(R. nervosus var. usambarensis)**

Indigenous

*Ar: Hummaida* *Sh: Hahot* *Tg: Hehot*
*Tr: Hahut*

**Ecology:** A wayside plant in eastern Africa, Malawi and Zaire and common in grassland, rocky bushland, pastures and fallows. In Eritrea, it grows in the central and northern highlands and midlands, 1,300-2,400 m.

**Uses:** Firewood, food (young shoots are eaten by children), bee forage, **soil conservation, roofing material.**

**Description:** A shrubby herb or straggling climber to 3 m or more. Stems brown. LEAVES: Generally **oval but with small, distinctive basal lobes and 3 clear veins, to 5 cm long,** tip pointed, on a **stalk 1-4 cm.** The soft leaves have a sharp taste. FLOWERS: In **much-branched terminal flower heads,** each flower small with 2 series of 3 tiny sepals around the 6 stamens. The **inner sepals wing-like about 6 mm are nearly circular when mature, red to red-brown and well veined. FRUIT: A 3-sided nut, oval and shiny brown** develops and remains with the 3 red sepals.

**Propagation:** Seedlings, wildings, root suckers.

**Seed:**

**treatment:** Not necessary.

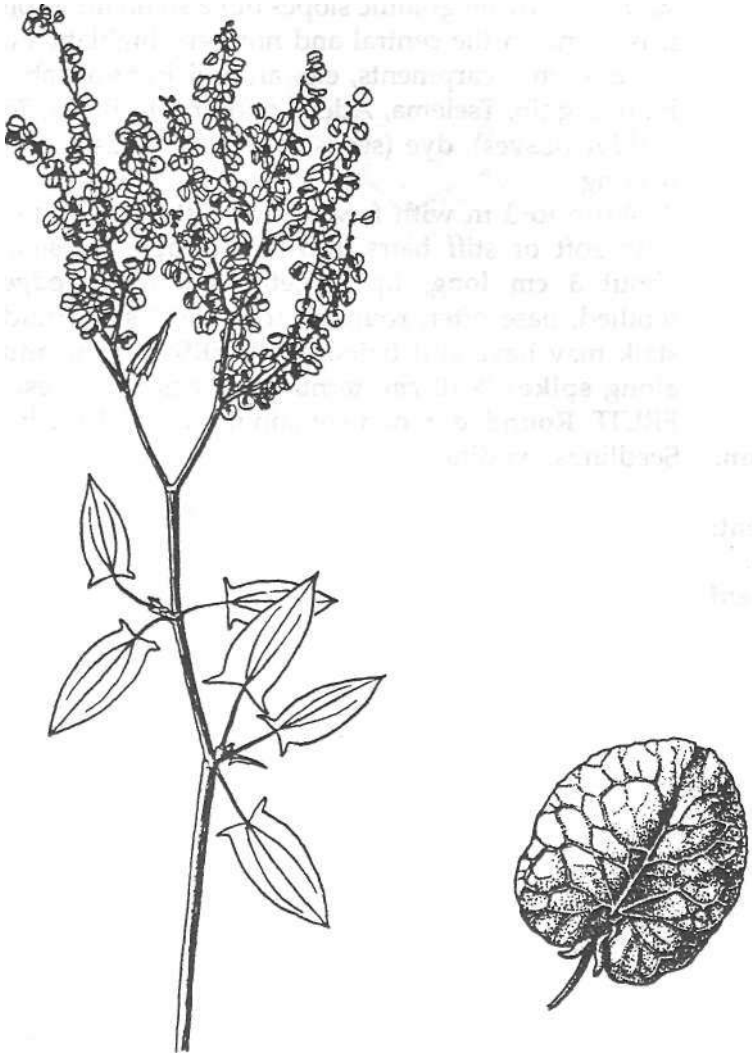
**storage:**

**Management:** Coppicing.

**Remarks:** Common along roadsides and paths and on overgrazed areas on mountain slopes. Young shoots are slightly sour but stripped of the bark they are enjoyed by children.

Rumex usambarensis *Polygonaceae*

(R. nervosus var. usambarensis)



## Sageretia thea *Rhamnaceae*

Indigenous

*Sh:* *Mastaw* *Tg:* *Hatnat tsedo* *Tr:* *Lebet telit*

**Ecology:** A plant genus that is mostly Asian with just this species reaching north-east Africa. It grows usually in dry Combretum-Terminalia woodland and bushland, in dry Juniperus forest and montane scrub, mostly on granitic slopes but also on limestone. In Eritrea, it is found in the central and northern highlands as well as on the eastern escarpments, e.g. around Rora-habab, Rora-mensa, Filfil, Zighib, Tselema, Adetal and on Mt. Bizen, 750-2,500 m.

**Uses:** **Fodder** (leaves), dye (seeds), bark serves as a catalyst in wine making.

**Description:** A shrub to 3 m with few or many **straight spines,** branchlets with soft or stiff hairs. LEAVES: **Opposite, small and oval, about 3 cm long,** tip sometimes pointed, edge sometimes toothed, base often rounded to a short stalk, midrib and leaf stalk may have stiff hairs. FLOWERS: **Yellow and very small along spikes 2-10 cm,** terminal or beside leaves, stalks hairy. FRUIT: **Rounded, 6 mm** containing 2-3 flat seeds.

**Propagation:** Seedlings, wildings.

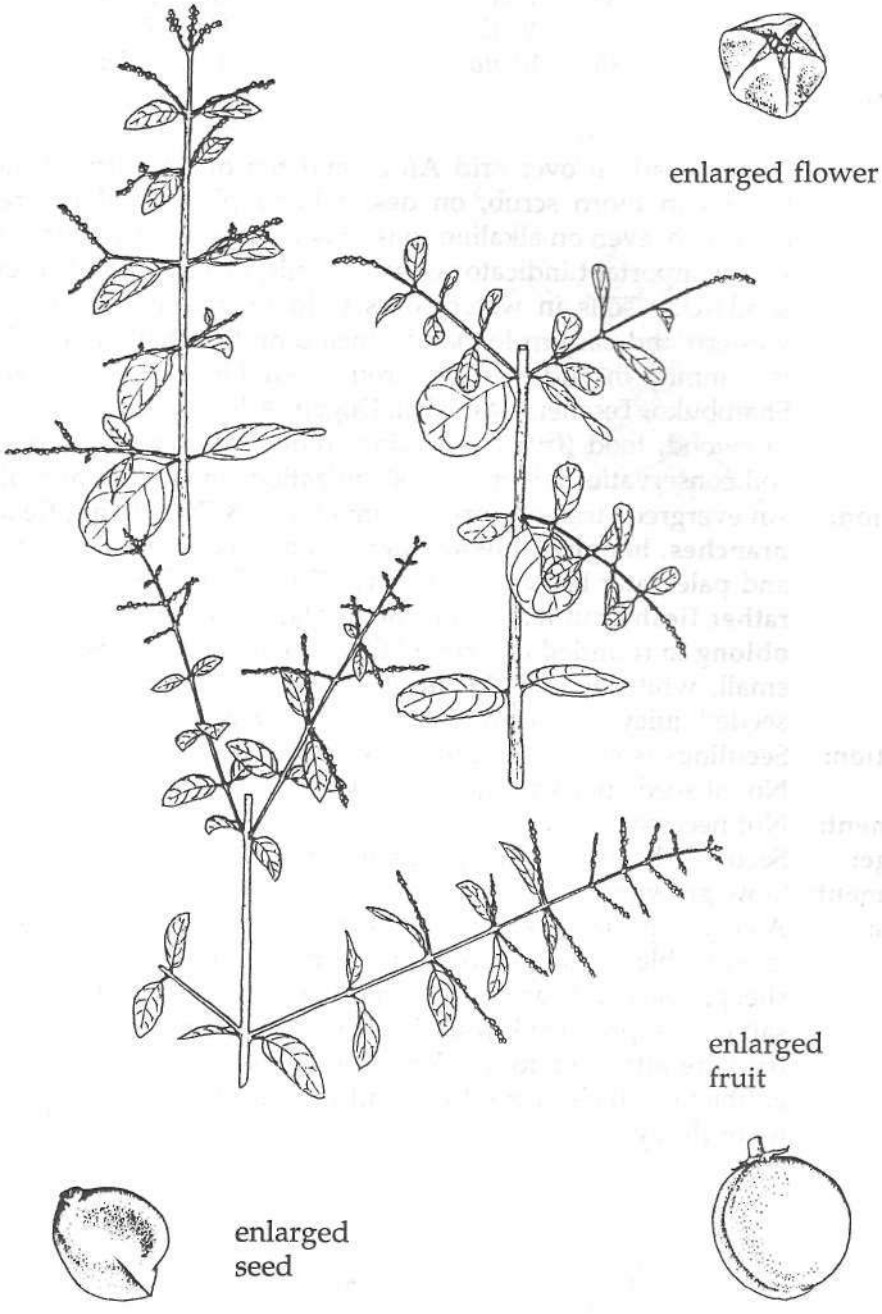
**Seed:**

**treatment:**

**storage:**

**Management:**

**Remarks:**


enlarged flower
enlarged
fruit
enlarged
seed

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *Af:* | *Adaito* | *At:* | *Arak* | *Bl:* | *Adaya* |
| *Eng:* | *Toothbrush tree* | *Hd:* | *Wihib* | *Km:* | *Egla* |
| *Nr:* | *Loo* | *Sh:* | *Adaito* | *Tg:* | *Adai* |
| *Tr:* | *Adai* | | | | |

**Ecology:** Widespread all over arid Africa and the driest parts of India. Occurs in thorn scrub, on desert flood plains and in grassy savannah, even on alkaline soils. It is very drought-resistant and is an important indicator of saline soils, even though it prefers sandy-clay soils in water courses. In Eritrea, it grows in the western and eastern lowlands, including the Dahlak Islands. It is common in Hidai valley, around Adobha, Hagaz, Daerotai, Shambuko, Tesenei, Hashishai, Dogali, Ailet and Edi, 0-1,500 m.

**Uses:** Firewood, food (fruit), **medicine** (roots), **fodder** (fruit, leaves), soil conservation, river-bank stabilization, shade, **toothbrushes.**

**Description:** An evergreen trailing shrub or small tree, 3-7 m, young **flexible branches, hanging down,** older wood twisted. BARK: Smooth and pale, later brown and corky. LEAVES: **Yellow-green, dull, rather fleshy** but hard with rough gland dots and raised veins, **oblong to rounded to** 5 **cm.** FLOWERS: In loose heads, to 10 **cm,** small, white. FRUIT: **White, then pink to purple, 1 cm,** one seeded, juicy and strongly flavoured, sweet but peppery.

**Propagation:** Seedlings (sow seed in pots), root suckers, wildings.

**Seed:** No. of seeds per kg: 31,000-37,000.

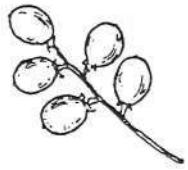
**treatment:** Not necessary.

**storage:** Seed can be stored for about a month.

**Management:** Slow growing.

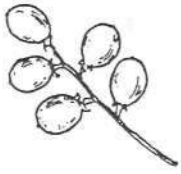
**Remarks:** A very important fodder species for dry areas when nothing else is available as the shoots can be browsed all year by cattle, sheep, goats and camels—but milk may be flavoured. A kitchen salt can be produced from the ash of the wood and leaves. The fruit are attractive to monkeys and birds. The bark contains an antibiotic which keeps the mouth clean and helps to prevent tooth decay.

flowers



fruit

flowers



fruit

## Schinus molle *Anacardiaceae*

Peru, Andes

*Ar:* *Felfel-kazib* *Eng:* *Pepper tree* *Tg:* *Berbere-tselim*
*Tr:* *Etset ferfer*

**Ecology:** An evergreen tree commonly planted in dry warm climates throughout the world. It will grow in almost any soil but prefers well-drained sites. It is extremely drought-resistant once established and reaches maturity in less than 20 years. It grows from near sea level to 2,400 m. In Eritrea, it was introduced as an ornamental and is common in the midlands and highlands around homesteads and along roads.

**Uses:** Firewood, charcoal, bee forage, soil conservation, **ornamental, shade, windbreak,** spice (fruit), insect repellant (leaves).

**Description:** A tree with attractive light **weeping foliage** to 15 m, the trunk short, the crown spreading. BARK: Dark brown, peeling, **very sticky latex** forms if the bark is damaged. LEAVES: Compound to 30 cm, many **narrow leaflets to 7 cm,** with a peppery smell if crushed. FLOWERS: Very small, green-yellow. FRUIT: Hanging on female trees, small **round berries green to red then black,** edible.

**Propagation:** Seedlings.

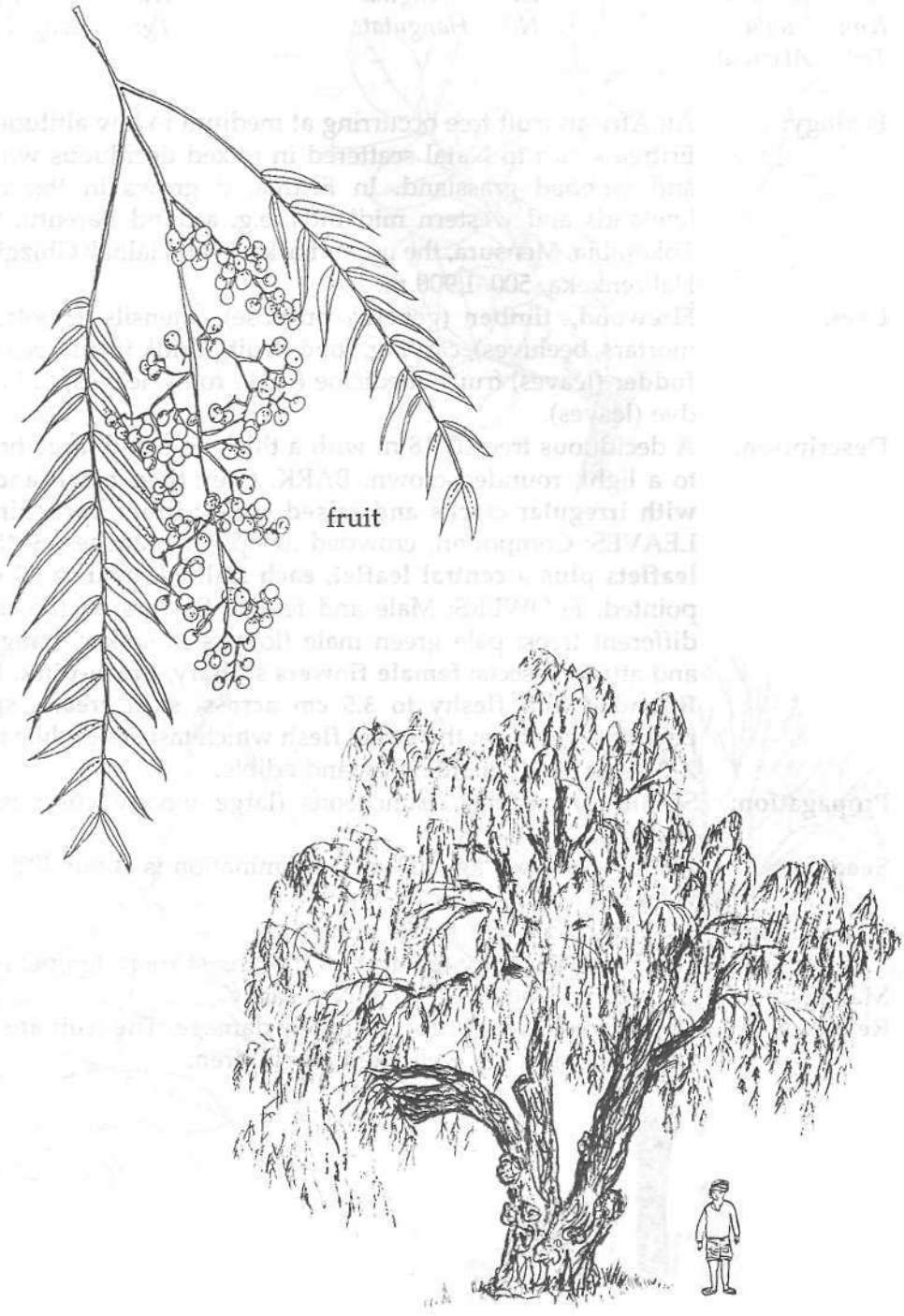
**Seed:** Germination rate 40-80%. No. of seeds per kg: 31,000-44,000.

**treatment:** Not necessary.

**storage:** Seed can be stored in air-tight containers.

**Management:** A fast-growing tree. Pollarding, lopping and coppicing.

**Remarks:** The tree should not be planted too close to buildings because branches tend to fall as the tree ages.


fruit

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *Ar:* | *Homeid* | *Bl:* | *Abengula* | *Hd:* | *Habedengul* |
| *Km:* | *Tugla* | *Nr:* | *Hangutate* | *Tg:* | *Abengul* |
| *Tr:* | *Abengul* | | | | |

Ecology: An African fruit tree occurring at medium to low altitudes from Eritrea south to Natal scattered in mixed deciduous woodland and wooded grassland. In Eritrea, it grows in the western lowlands and western midlands, e.g. around Barentu, Gonge, Tokombia, Mensura, the upper Barka river, Halhal, Ghizgiza and Habrenkeka, 500-1,900 m.

Uses: Firewood, **timber** (general purpose), utensils (stools, grain mortars, beehives), carving, **food** (fruit), drink (fruit), bee forage, fodder (leaves, fruit), medicine (bark, roots, leaves), oil (seeds), dye (leaves).

Description: A deciduous tree 10-18 m with a thick bole and large branches to a light, rounded crown. BARK: Grey **then black and thick** with irregular cracks and **raised scales; inner bark pink red.** LEAVES: Compound, crowded at tips of branches, **3-18 pairs leaflets plus a central leaflet, each stalked, oval to 10 cm,** tip pointed. FLOWERS: Male and female flowers on the same or different trees; pale green male flowers in spikes, hang down and attract insects; female flowers solitary, green-pink. FRUIT: Rounded and fleshy to 3.5 cm across, skin cream, **spotted,** peeling away from the sweet **flesh** which tastes a bit like mango; 2-3 large **seeds** inside, oily and edible.

Propagation: Seedlings, cuttings, truncheons (large woody cuttings), root suckers.

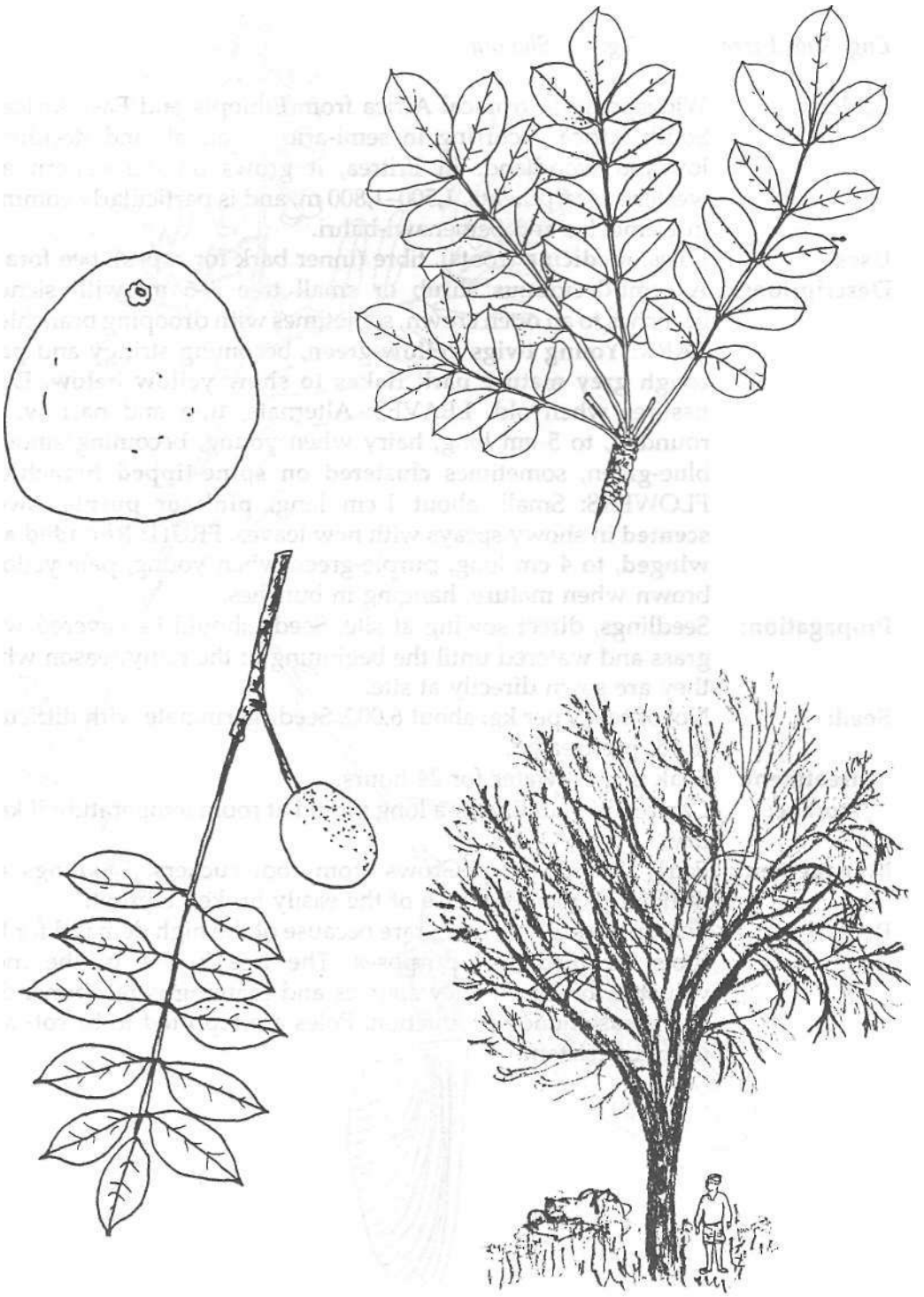
Seed: No. of seeds per kg: 400-450. Germination is about 40% after 6 weeks.

treatment: Soak in cold water for 24 hours.

storage: Can retain viability for up to 3 months at room temperature.

Management: Coppicing. Young trees coppice easily.

Remarks: Young trees are susceptible to fire damage. The fruit are rich in vitamin C and are well liked by children.





t

## Securidaca longepedunculata *Polygalaceae*

Indigenous

*Eng: Violet tree* *Tg: Shotora*

**Ecology:** Widespread in tropical Africa from Ethiopia and East Africa to South Africa occurring in semi-arid savannah and deciduous lowland woodland. In Eritrea, it grows **on** the eastern and western escarpments, 1,500-1,800 m, and is particularly common in Dembelas and Semenawi-bahri.

**Uses:** Poles, **medicine** (roots), fibre (inner bark for ropes), bee forage.

**Description:** A semi-deciduous shrub or small tree 2-6 m, with slender branches to an open crown, sometimes with drooping branchlets. BARK: **Young twigs yellow-green,** becoming stringy and pale; **rough grey mature bark flakes to show yellow below.** Deep fissures when old. LEAVES: Alternate, thin and narrow, tip rounded, to 5 cm long, hairy when young, becoming smooth, blue-green, sometimes **clustered on spine-tipped branchlets.** FLOWERS: Small, about 1 cm long, **pink or purple, sweet scented** in showy sprays with new leaves. FRUIT: **Rounded and winged,** to 4 cm long, purple-green when young, pale yellow-brown when mature, hanging in bunches.

**Propagation:** Seedlings, direct sowing at site. Seeds should be covered with grass and watered until the beginning of the rainy season when they are sown directly at site.

**Seed:** No. of seeds per kg: about 6,000. Seeds germinate with difficulty if not pre-treated.

**treatment:** Soak in cold water for 24 hours.

**storage:** Can retain viability for a long period at room temperature if kept dry.

**Management:** Fairly fast-growing. Grows from root suckers. Seedlings are difficult to plant because of the easily broken taproot.

**Remarks:** This species is becoming rare because of the high demand for the roots for medicinal purposes. The tree is one of the most valuable lowland honey sources and planting is recommended to increase honey production. Poles are reported to be rot- and termite-resistant.

Securidaca longepedunculata *Polygalaceae*

## Senna alexandrina (Cassia alexandrina) *Caesalpinioideae*

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *Af:* | *Sanu* | *Ar:* | *Sanna makka* | | |
| *Eng:* | *Alexandrian senna* | *Hd:* | *Embirka* | *Tg:* | *Sono* |
| *Tr:* | *Sanu* | | | | |

**Ecology:** A shrub in semi-desert scrub and grassland, particularly on floodplains and shore lines. This species grows from the central Sahara eastwards to India and southwards to Kenya. In Eritrea, it grows mostly in the eastern and north-western lowlands, 0-900 m, e.g. around Sheib, Dogali, Afabet and Molober.

**Uses:** **Soil conservation, medicine** (leaves, pods).

**Description:** An annual woody herb or shrub, 1-4 m, with few branches, hairy when young. LEAVES: Compound, on stalks 5-15 cm, with **4-9 pairs of grey-green leaflets,** each **narrow oval 2-6 cm,** shortly stalked, slightly hairy, the **tip sharply pointed.** FLOWERS: In **erect spikes** 5-30 cm long, 5 greenish sepals overlap **5 bright orange-yellow petals** with well-marked veins, 10 stamens of three sizes. FRUIT: **Flat oblong pods, papery cream-yellow,** 3-7 cm long, slightly curved, **dark flat seeds are visible inside,** finally set free when pod splits.

**Propagation:** Seedlings, wildings.

**Seed:**

**treatment:**

**storage**

**Management:**

**Remarks:** A traditional and widely used purgative, this species is grown commercially in the Sudan and India. In the Sudan, the crop grows on poor sandy soils with some irrigation. Pastoralists in Eritrea collect the leaves and sell them in the market for use as a purgative.

Senna alexandrina (Cassia alexandrina) *Caesalpinioideae*

## Senna siamea (Cassia siamea) *Caesalpinioideae*

S. E. Asia

*Eng: Ironzvood, Kassod tree*

**Ecology:** Cultivated all over the tropics from sub-humid to semi-arid and even arid zones. Prefers a high watertable. Tolerates a variety of soils, but does better in light to medium ones. In Eritrea, S. *siamea* is planted as an ornamental in Ghinda, Keren, Barentu and Mai-habar towns, 800-1,500 m.

**Uses:** Firewood, charcoal, poles, timber (furniture), medicine, bee forage, mulch, **ornamental,** shade, **soil conservation, windbreak.**

**Description:** An evergreen ornamental tree to 15 m, often shrub-like. BARK: Smooth, pale grey-brown. LEAVES: Compound, with 4—16 pairs of **leaflets, oblong,** round at base and **tip** which may be **notched,** dark, **shiny green above, stalk to 30 cm,** grooved. FLOWERS: **Pale yellow in dense heads** to 20 cm long, each flower 3 cm across. FRUIT: Pods in dense cluster, **flat yellow-brown and smooth,** slightly curved, 20 seeds within.

**Propagation:** Seedlings, wildings, direct sowing.

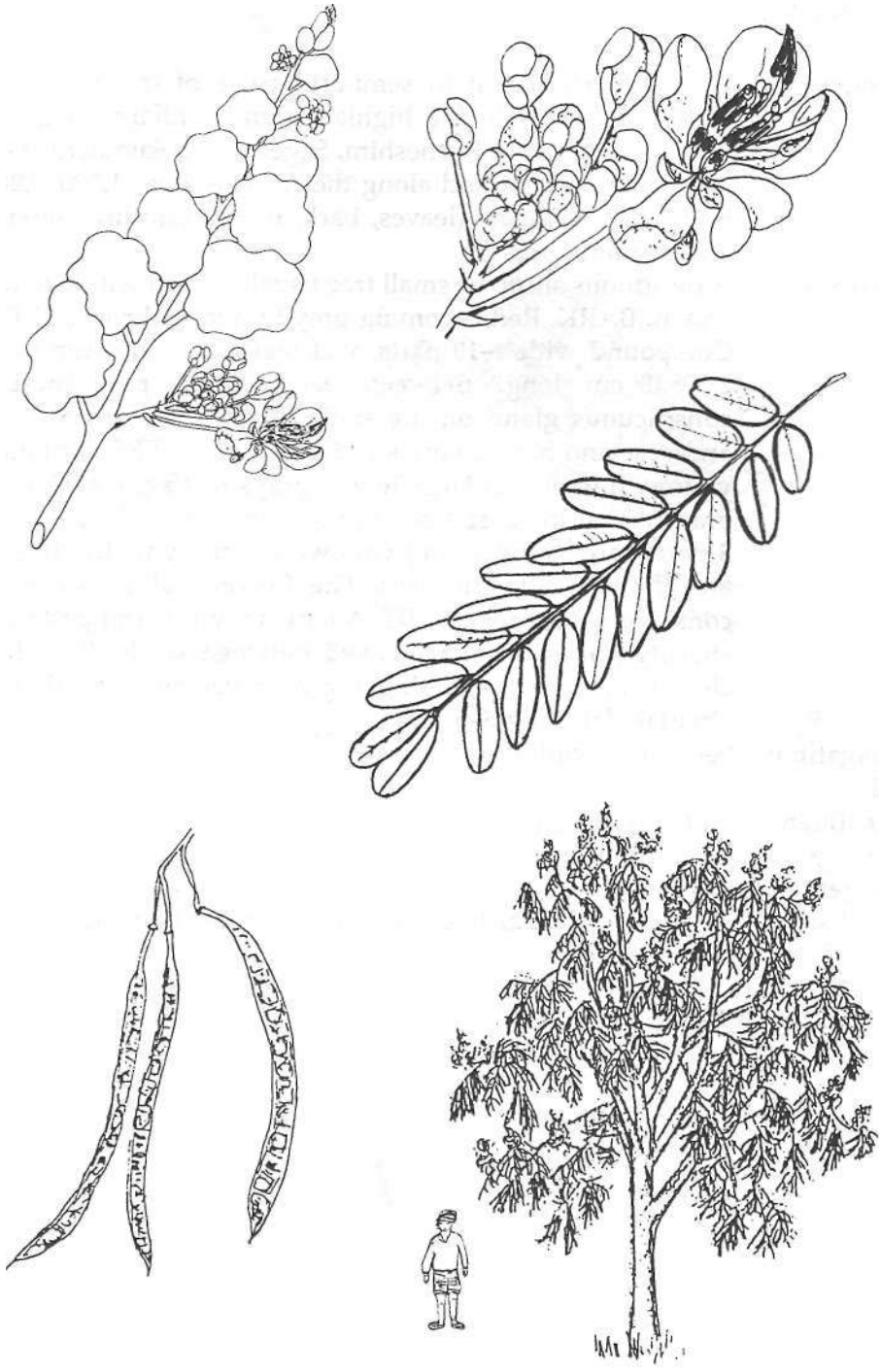
**Seed:** A prolific seeder. No. of seeds per kg: ±39,000.

**treatment:** Soak stored seed. Fresh seed requires no pre-treatment.

**storage:** Seed can be stored for up to a year but germination rate falls with time.

**Management:** Lopping, coppicing, pollarding.

**Remarks:** The name of this tree has recently been changed to *Senna siamea.* The tree is fast growing and since it is not browsed it is easy to establish. Foliage is poisonous to pigs but not to cattle or sheep. Competes with crops and is susceptible to powdery mildew attacks on the leaves. It is termite-resistant and coppices well. The dense wood makes good firewood, although the fire is smoky.



## Senna singueana (Cassia singueana) *Caesalpinioideae*

Indigenous

*Bl: Busa* *Eng: Winter cassia.* *Tg: Hambo hambo*
*Tr: Himboy*

**Ecology:** *A* widespread plant in semi-arid parts of tropical Africa. In Eritrea, it grows in the highlands and midlands, e.g. around Seharti, Dimbezan, Karneshim, Segenaiti, Dekemhare, Tselema, Halhal and Mensa and along the Anseba river, 1,300-2,200 m.

**Uses:** Firewood, medicine (leaves, bark, roots), **tannin, smoke bath,** local brooms.

**Description:** A deciduous shrub or small tree usually 4-5 m with a light open crown. BARK: Red becoming grey-brown and rough. LEAVES: Compound with **4-10 pairs oval leaflets** fresh green in colour 2.5-5.0 cm long. **Between each leaflet pair there is a conspicuous gland on the stalk.** Leaflets are round at the tip and base and have a very **short stalk.** FLOWERS: Striking **deep yellow,** fragrant, in large **loose sprays** to 15 cm, at the ends of branches on the bare tree (April-September). The **5 sepals and 5 petals are rounded and yellow,** to 3 cm long; the 10 stamens are of three different sizes. **The flower stalks, 2-4 cm, have conspicuous glands.** FRUIT: A **narrow cylindrical pod to 25 cm, sharply pointed and narrowed between seeds.** Pods hang in clusters and ripen the following year; yellow when ripe. **Seeds circular flat, only 5-6 mm.**

**Propagation:** Seedlings, wildings.

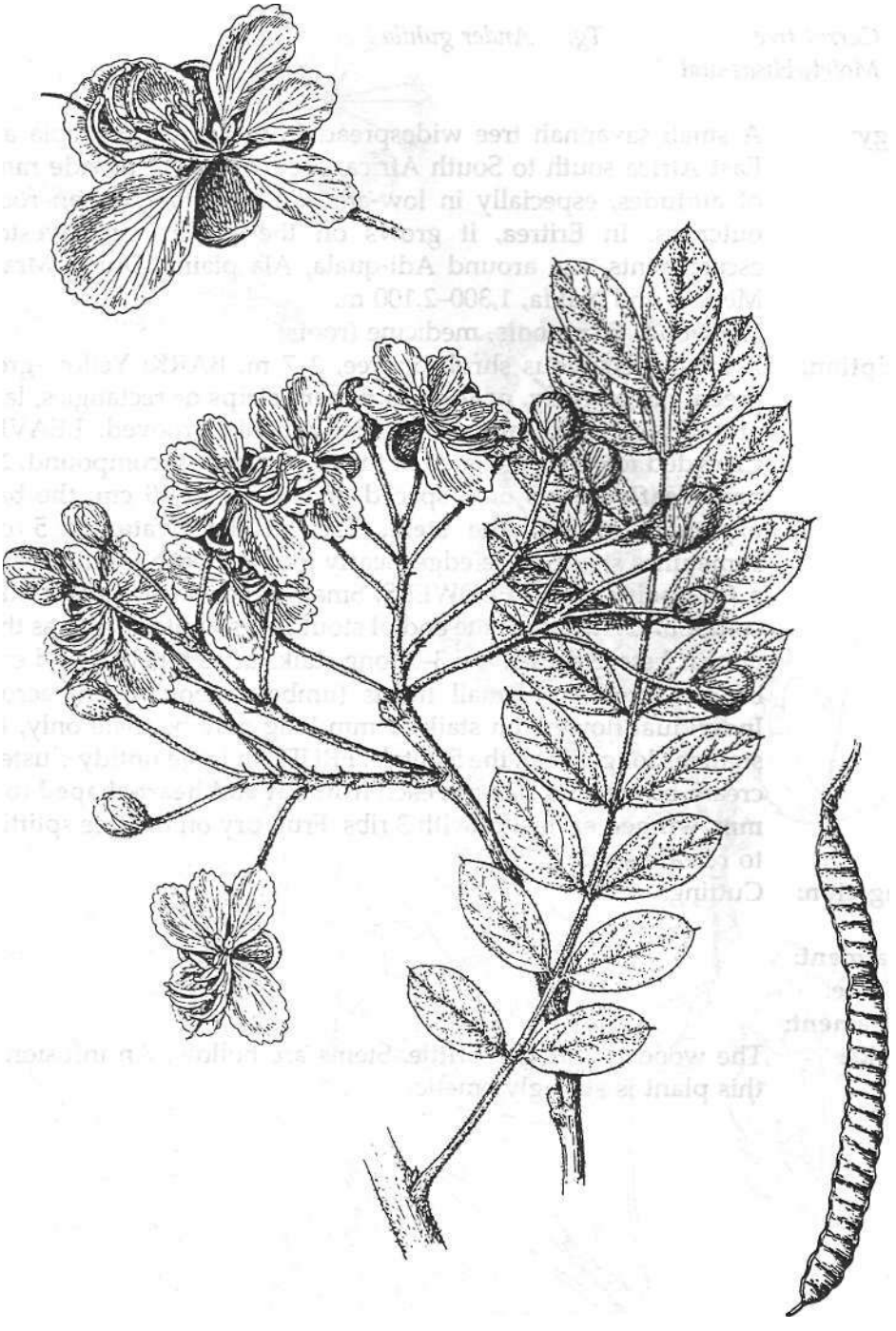
**Seed:**

**treatment:** Not necessary.

**storage:**

**Management:** Coppicing.

**Remarks:** A good medicinal tree for many ailments (e.g. stomach pains, syphilis, etc).



Indigenous

*Eng:* *Carrot tree* *Tg:* *Ander guhila*
*Tr:* *Motet, Hisas-atal*

**Ecology:** A small savannah tree widespread from Eritrea, Ethiopia and East Africa south to South Africa, occurring over **a** wide range of altitudes, especially in low-altitude woodland or on rocky outcrops. In Eritrea, it grows on the eastern and western escarpments, e.g. around Adi-quala, Ala plains, Durfo, Mrara, Mehlab and Nakfa, 1,300-2,100 m.

**Uses:** **Firewood, farm tools,** medicine (roots).

**Description:** A small deciduous shrub or tree, 2-7 m. BARK: Yellow-grey-green, rather **waxy, peeling in papery strips** or rectangles, later grey-brown, thick and corky, horizontally grooved. LEAVES: Crowded towards the ends of the few branches, compound, **2-3 pairs leaflets plus one,** spaced on a stalk to 10 cm, the base **expanded around the stem.** Each leaflet ovate, to 5 cm, sometimes stalked, the edge clearly toothed, each **tooth bearing a fine hairy point.** FLOWERS: Small, green-white, in rounded compound clusters at the end of stout twigs, quite showy as they appear before the leaves; 3-7 long stalks arise together and each bears a crown of small heads (umbels) about 8 cm across. Individual flowers on stalks 5 mm long may be male only, the stamens longer than the 5 petals. FRUIT: In large untidy clusters, cream-brown and **papery,** each fruit **flat and heart-shaped to 12 mm, winged each side** with 3 ribs. Fruit dry on the tree splitting to release seed.

**Propagation:** Cuttings.

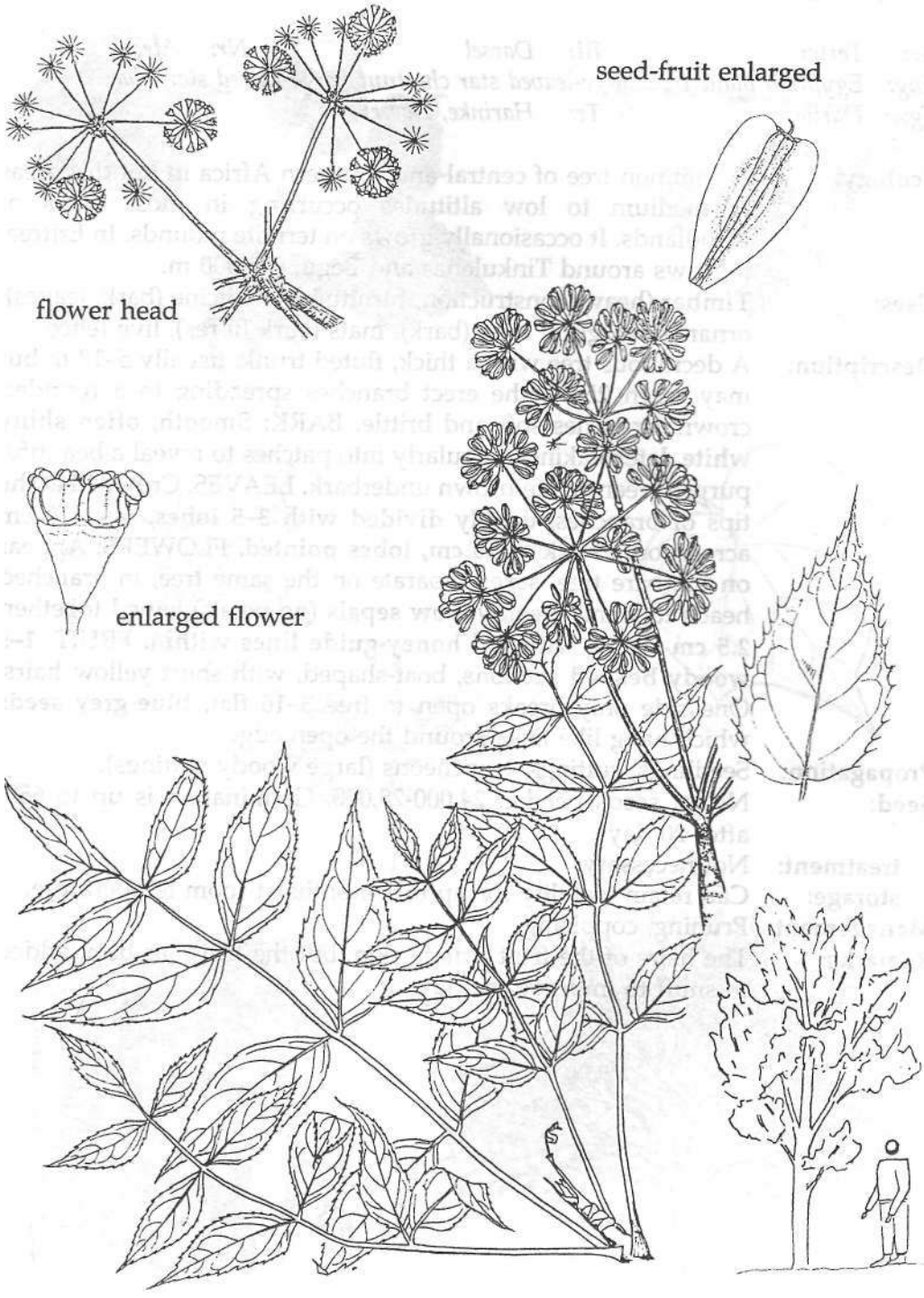
**Seed:**

**treatment:**

**storage:**

**Management:**

**Remarks:** The wood is soft and brittle. Stems are hollow. An infusion of this plant is strongly emetic.


seed-fruit enlarged
flower head
enlarged flower

## Sterculia africana *Sterculiaceae*

Indigenous

*Ar: Terter* *Bl: Darsel* *Nr: Alebo*
*Eng: Egyptian plane tree, large-leaved star chestnut, large-leaved sterculia*
*Tg: Darile* *Tr: Harinke, Darsel*

**Ecology:** A common tree of central and southern Africa in hot dry areas at medium to low altitudes occurring in most types of woodlands. It occasionally grows on termite mounds. In Eritrea, it grows around Tinkulehas and Begu, 0-1,400 m.

**Uses:** **Timber** (heavy construction, furniture), medicine (bark, leaves), ornamental, gum, **rope** (bark), mats (bark fibres), live fence.

**Description:** A deciduous tree with a thick, fluted trunk, usually 5-12 m but may reach 25 m, the erect branches spreading to a rounded crown. Branches soft and brittle. BARK: **Smooth, often shiny white,** later flaking irregularly into patches to reveal a beautiful purple-green-white-brown underbark. LEAVES: Crowded at the tips of branches, **deeply divided with 3-5 lobes,** over 10 cm across, on a **stalk to 10 cm, lobes pointed.** FLOWERS: Appear on the bare tree, sexes separate on the same tree, in branched heads to 9 cm, **green-yellow sepals** (no petals) joined together, **2.5 cm across with red honey-guide lines within.** FRUIT: **1-5 woody beaked sections,** boat-shaped, with short yellow hairs. One side only breaks open to free 3-10 flat, **blue-grey seeds** which hang like ticks around the open edge.

**Propagation:** Seedlings, cuttings, truncheons (large woody cuttings).

**Seed:** No. of seeds per kg: 24,000-28,000. Germination is up to 65% after 20 days.

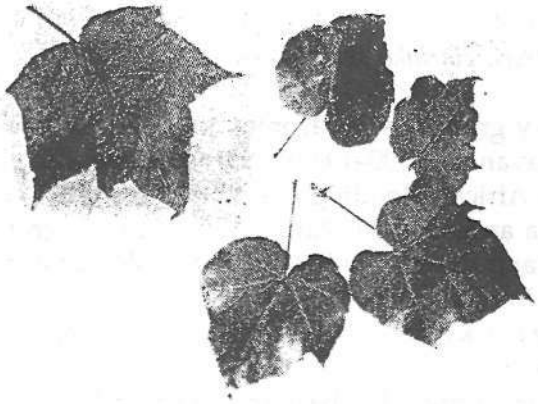
**treatment:** Not necessary.

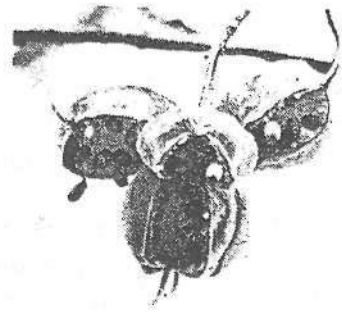
**storage:** Can retain viability for up to 2 months at room temperature.

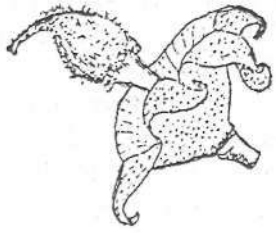
**Management:** Pruning, coppicing.

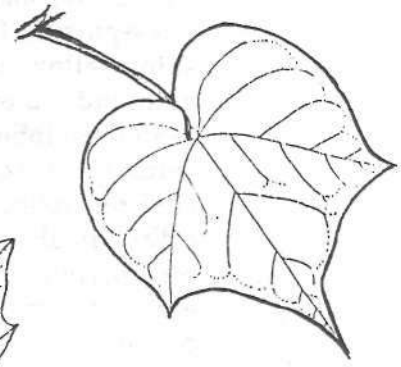
**Remarks:** The hairs of the fruit irritate skin, but the fruit has been added to snuff to improve the flavour.

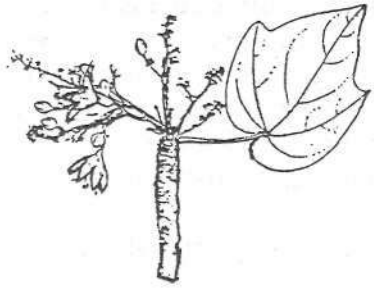
4

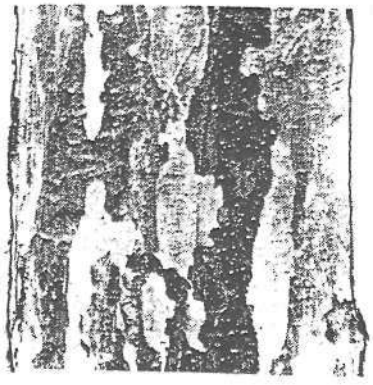


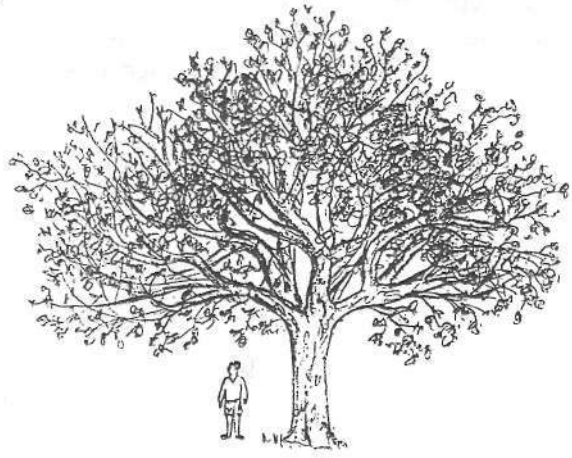












Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *Ar:* | *Terter* | *Bl:* | *Darsel* | *Nr:* | *Alebo* |
| *Tg:* | *Darile* | *Tr:* | *Darsel, Harinke* | | |

**Ecology:** This tree prefers rocky ground of escarpments or cliffs in semi-arid lowland scrub savannah, 500-1,800 m. It is frequent in the Sahel region of west Africa extending eastwards to the Sudan, Eritrea, eastern Africa and south to Angola. In Eritrea it grows in the Mutsub, Hidai and Chewet valleys, around Solomuna and Digdigta and on Mt. Boroka.

**Uses:** Food (fruit), medicine (bark and leaves), fodder, gum, **fibre** (bark used for mats and ropes).

**Description:** A deciduous tree to 16 m high, the base of the trunk thick and with small, sharp buttresses; crown dense and rounded. BARK: **Grey-purple, flaking in oblong scales to expose patches of shiny yellow bark** below. When cut the edge is red and a **white gum and watery sap exude.** LEAVES: Alternate, palmate with **3-5 lobes, lobes pointed, base rounded** to an **8-cm stalk, both sides furry, covered with tiny star-shaped hairs.** FLOWERS: Dull red-yellow-green in terminal groups, no petals, the **5-part calyx cup-shaped, hairy outside.** FRUIT: Green becoming grey-brown, covered with furry hairs, with **3-5 boat-shaped sections,** each 7-10 cm long. Sections split making a star and each section contains about **12 small grey seeds with a soft yellow aril.**

**Propagation:** Seedlings, cuttings, truncheons.

**Seeds:** No. of seeds per kg: 2,500-3,500.

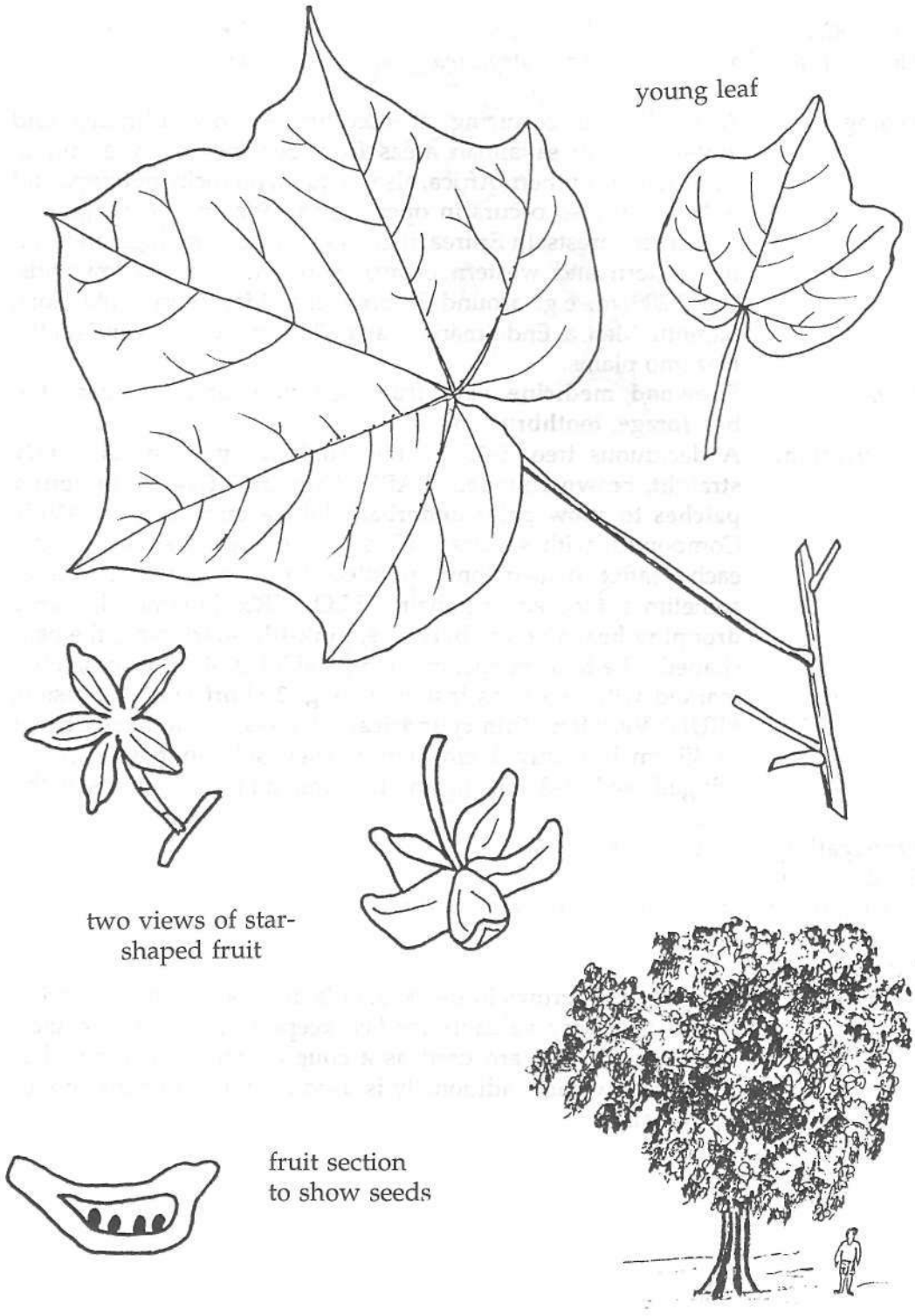
**treatment:** Not needed.

**storage:** Can only retain viability for a short period.

**Management:**

**Remarks:** The wood is soft, white and perishable, but it exudes a water-soluble gum which has potential export value.

**a**


young leaf
two views of star-
shaped fruit
fruit section
to show seeds

## Stereospermum kunthianum *Bignoniaceae*

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *Ar:* | *Khash* | *Km:* | *Usa* | *Nr:* | *Umberi* |
| *Sh:* | *Sabahambo* | *Tg:* | *Argizana* | *Tr:* | *Argizana* |

**Ecology:** A small tree occurring at medium to low altitudes and widespread in savannah areas from Senegal to Zaire and to eastern and southern Africa, also frequent on rocky outcrops and hillsides. It also occurs in open woodlands and at margins of evergreen forests. In Eritrea, it grows in the central highlands, on the eastern and western escarpments and western lowlands, 750-2,200 m, e.g. around Habrenkeka, Mai-tsebri, Tokombia, Barentu, Mensa, Enda-mariam-aila, Elabered, Ghinda and on the Hazemo plains.

**Uses:** **Firewood, medicine** (bark, fruit used on wounds), **ornamental, bee forage, toothbrushes.**

**Description:** A deciduous tree, 5-13 m, the trunk wavy or spiral, **rarely straight,** crown rounded. BARK: Grey and **flaking in round patches to show paler underbark** (like a gum tree). LEAVES: Compound, with 4 pairs leaflets plus one on a stalk to 7 cm, each leaflet oval-oblong, pointed to 8 cm, young leaves sometimes toothed and hairy. FLOWERS: Fragrant in **large drooping heads on the bare tree, pink-lilac-dark** pink, the bell-shaped tube to 3 cm opening to 5-petal lobes, 4 cm across, lobes marked with red lines inside, **2 long, 2 short stamens** inside. FRUIT: **Very long thin cylindrical capsules,** twisted, red-brown to 45 cm but only 1 cm across. They split to release many **winged seeds** 2-3 cm long and then remain many months on the tree.

**Propagation:** Seedlings, suckers.

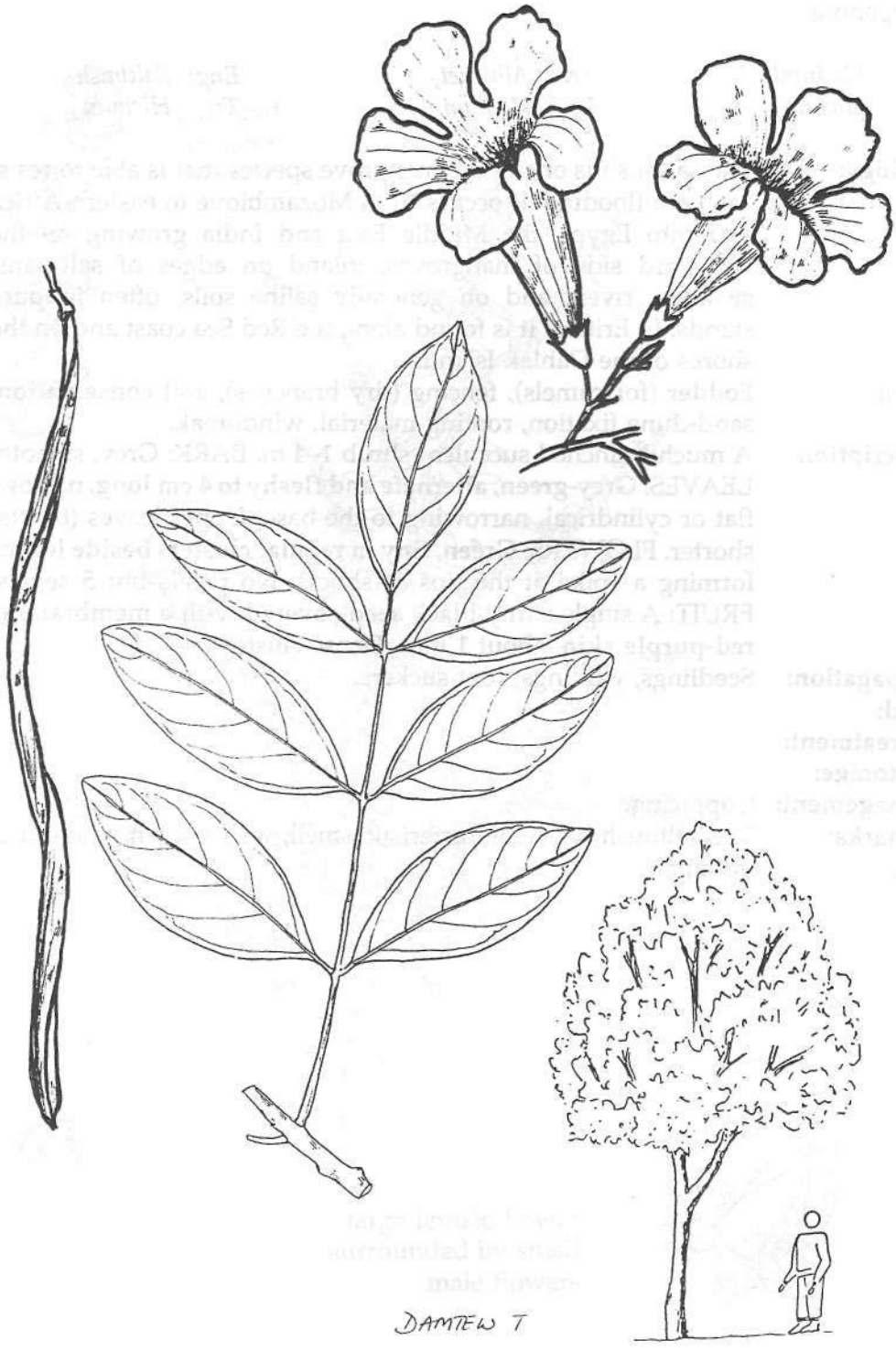
**Seed:**

**treatment:** Seeds often germinate poorly.

**storage**

**Management:**

**Remarks:** Since the tree grows in dense stands and has a long flowering period it is very valuable for bee keepers. The fruit capsules, chewed with salt, are used as a cough remedy. The wood is white-yellow and traditionally is used to splint fractured bones in animals.


DAMTEW T

## Suaeda monoica *Chenopodiaceae*

Indigenous

| | | |
|---|---|---|
| *Af: Hudumto* | *Ar: Alhamet* | *Eng: Saltbush* |
| *Sh: Hurum* | *Tg: Hichum* | *Tr: Hichum* |

**Ecology:** The saltbush is one of the mangrove species that is able to resist frequent flooding. It occurs from Mozambique to eastern Africa and into Egypt, the Middle East and India growing on the landward side of mangroves, inland on edges of salt-pans, swamps, rivers and on generally saline soils, often in pure stands. In Eritrea, it is found along the Red Sea coast and on the shores of the Dahlak Islands.

**Uses:** **Fodder** (for camels), fencing (dry branches), **soil conservation,** sand-dune fixation, roofing material, windbreak.

**Description:** A much-branched succulent shrub 1-4 m. BARK: Grey, smooth. LEAVES: **Grey-green, alternate and fleshy to 4 cm long,** narrow, flat or cylindrical, narrowing to the base. Upper leaves (bracts) shorter. FLOWERS: **Green, tiny in regular clusters beside leaves** forming a spike at the tips of shoots. No petals but 5 sepals. FRUIT: A single **shiny black seed covered with a membranous red-purple skin,** about 1 mm. Dense clusters.

**Propagation:** Seedlings, wildings, root suckers.

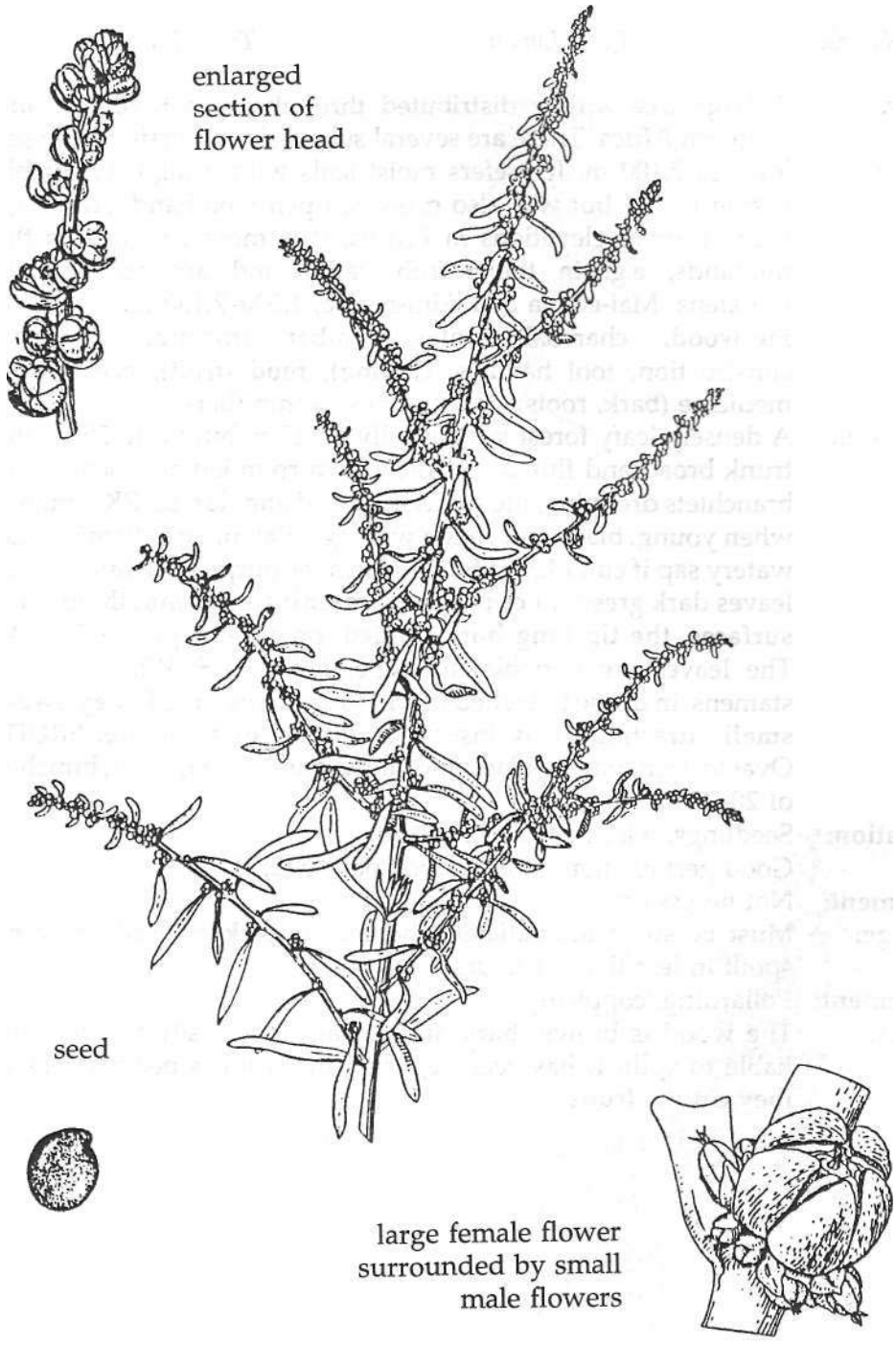
**Seed:**

**treatment:**

**storage:**

**Management:** Coppicing.

**Remarks:** The saltbush has a characteristic smell, well known where it is dominant.


enlarged
section of
flower head
seed
large female flower
surrounded by small
male flowers

## Syzygium guineense *Myrtaceae*

Indigenous

*Eng:* *Waterberry* *Tg:* *Liham* *Tr:* *Kurareas*

**Ecology:** A large tree widely distributed throughout east, central and southern Africa. There are several subspecies occurring from sea level to 2,100 m. It prefers moist soils with a high watertable beside rivers, but will also grow in open woodland. Although seen at lower elevations in Eritrea, it is more common in the midlands, e.g. in the Kuruh valley and around Mutsub, Kenafena, Mai-edaga and Aini-mereb, 1,300-2,100 m.

**Uses:** **Firewood,** charcoal, **poles, timber** (furniture, general construction, tool handles, carving), **food** (fruit), bee forage, medicine (bark, roots, leaves), dyes, tannin (bark).

**Description:** A densely leafy forest tree, usually 10-15 m but up to 25 m, the trunk broad and fluted and the crown rounded and heavy, the branchlets drooping, the stems thick and angular. BARK: Smooth when young, black and rough with age, flaking, producing a red watery sap if cut. LEAVES: Young leaves purple-red, but mature leaves dark green, **in opposite pairs, shiny and smooth on both surfaces, the tip long but rounded,** on a **short grooved stalk.** The leaves are variable in shape. FLOWERS: White, showy stamens, in dense branched heads 10 cm across, the **honey-sweet smell** attracting many insects; **stalks angular, square.** FRUIT: Oval to 3 cm, purple-black and shiny, one-seeded, in big bunches of 20-30.

**Propagation:** Seedlings, wildings, direct sowing.

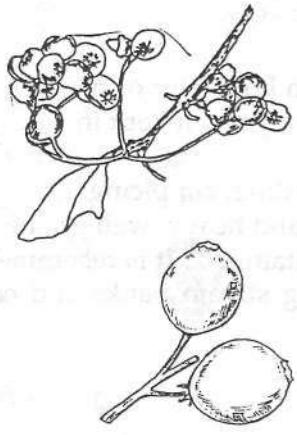
**Seed:** Good germination. No. of seeds per kg: 2,400-3,700.

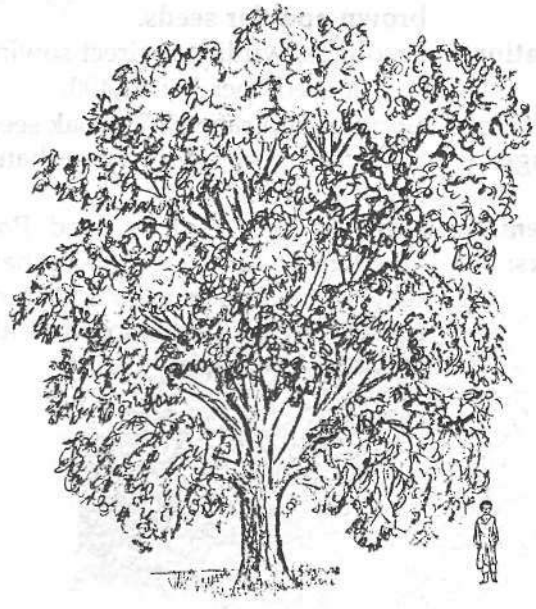
**treatment:** Not necessary.

**storage:** Must be sown immediately the fruit is picked. Seeds may be spoilt in less than 24 hours.

**Management:** Pollarding, coppicing.

**Remarks:** The wood is brown, hard and strong. It is easily worked but liable to split. It has been reported that camels become sick if they eat the fruits.





## Tamanndus indica *Caesalpinioideae*

Indigenous

| | | |
|---|---|---|
| *Ar: Ardeib* | *Bl: Shawa* | *Eng: Tamarind* |
| *Hd: Eradieb* | *Km: Ilia* | *Nr: Hindi* |
| *Sh: Humerto* | *Tg: Humer* | *Tr: Ketse, Humeri* |

**Ecology:** *A* well-known tree indigenous to tropical Africa. It is a very adaptable species and drought-hardy, preferring semi-arid areas and wooded grasslands. It grows in most soils but does best in well-drained deep alluvial soil; often riverine in very dry areas. In Eritrea, it grows around Molki, Lesse gurja, Filfil, Solomuna, Ghinda, Dongolo, Keru, the Hazemo plains, Shambuko, Tokombia, Augaro and Adobha, 500-1,500 m.

**Uses:** Firewood, charcoal, poles, **timber** (furniture, boats, general purposes), **food** (pulp for drink, fruit, spice), fodder (leaves, fruit), **medicine** (bark, leaves, roots, fruit), mulch, river-bank stabilization, ornamental, **shade,** windbreak, tannin (bark).

**Description:** A large tree to 30 m, with an **extensive dense crown.** The short bole can be 1 m in diameter. Evergreen or deciduous in dry areas. BARK: Rough, grey-brown, flaking. LEAVES: Compound, on hairy stalks to 15 cm, 10-18 pairs of leaflets, **dull green to 3 cm, oblong,** round at the tip and base, veins raised. FLOWERS: Small, in few-flowered heads, buds red, petals gold with red veins. FRUIT: Pale brown, **sausage-like,** hairy pods, cracking when mature to show **sticky brown pulp around 1-10 dark brown angular seeds.**

**Propagation:** Seedlings, wildings, direct sowing.

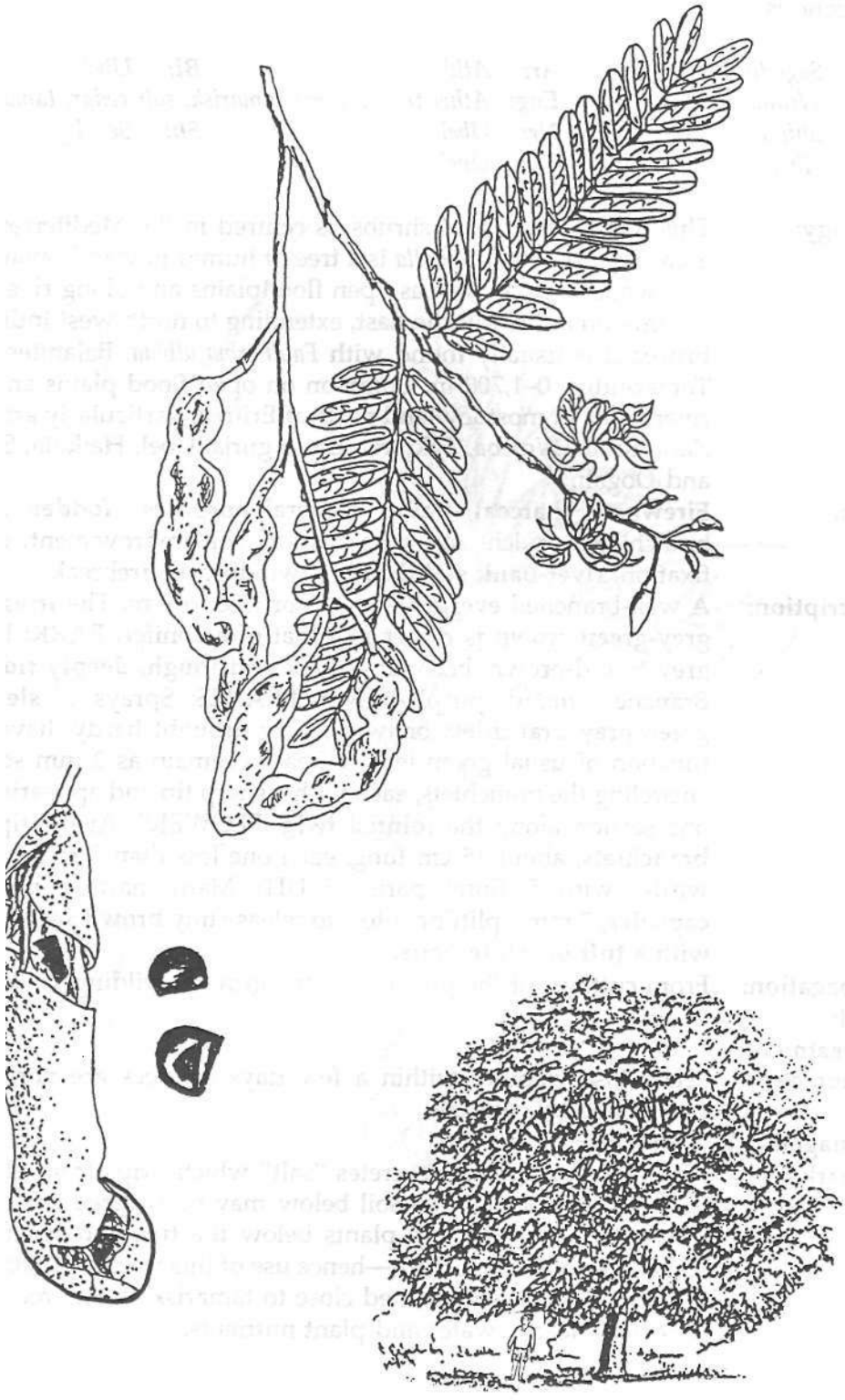
**Seed:** No. of seeds per kg: ±1,400.

**treatment:** Germination rate ±90%. Soak seed in hot water or nick the seed.

**storage:** Seed can be stored for more than two years if kept in a dry, cool and insect-free place.

**Management:** Slow growing but long lived. Pollarding, coppicing.

**Remarks:** The dark brown heartwood is hard and heavy, well grained and easy to polish. The pulp is rich in vitamin C. It is recommended for homestead plantation and along stream banks and can be part of a live fence.



Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *Af:* | *Segeito* | *Ar:* | *AM* | *Bl:* | *Ubela* |
| *Hd:* | *Weama* | *Eng:* | *Athel tree, leafless tamarisk, salt cedar, tamarisk* | | |
| *Km:* | *Shilla* | *Nr:* | *Ubel* | *Sh:* | *Segel* |
| *Tg:* | *Ubel* | *Tr:* | *Ubel* | | |

**Ecology:** This family, mainly of shrubs, is centred in the Mediterranean area. The species *T. aphylla* is a tree of humid lowland savannah and woodlands as well as open floodplains and along rivers. It is common in the Middle East, extending to north-west India. In Eritrea it is usually found with *Faidherbia albida,* Balanites and Tamarindus, 0-1,700 m. Common on open flood plains and on riverbanks in most lowland parts of Eritrea, particularly around Zara, Rihib, Wojeba, Tekreret, Lesse gurja, Ubel, Haikota, Sheib and Dogali.

**Uses:** **Firewood, charcoal,** timber (general purposes), **fodder** (leafy branchlets), mulch, soil conservation, soil improvement, dune fixation, **river-bank stabilization,** windbreak, firebreak.

**Description:** A well-branched evergreen shrub or tree to 9 m. The **irregular grey-green crown** is rather like that of a conifer. BARK: Light grey to red-brown, becoming **thick and rough, deeply ridged.** Branches smooth purple-brown. LEAVES: Sprays of **slender green-grey branchlets** or twigs, very drought hardy, have the function of usual green leaves. Leaves remain as 2 mm scales, encircling the branchlets, each with a sharp tip and appearing as one section along the **jointed twig.** FLOWERS: At the tips of **branchlets,** about **15 cm long,** each one less than 3 mm, **pink-white,** with 5 floral parts. FRUIT: Many narrow pointed **capsules, 5** mm, splitting into 3 to release tiny **brown seeds** each with a **tuft of white hairs.**

**Propagation:** From cuttings of the previous year's growth, wildings.

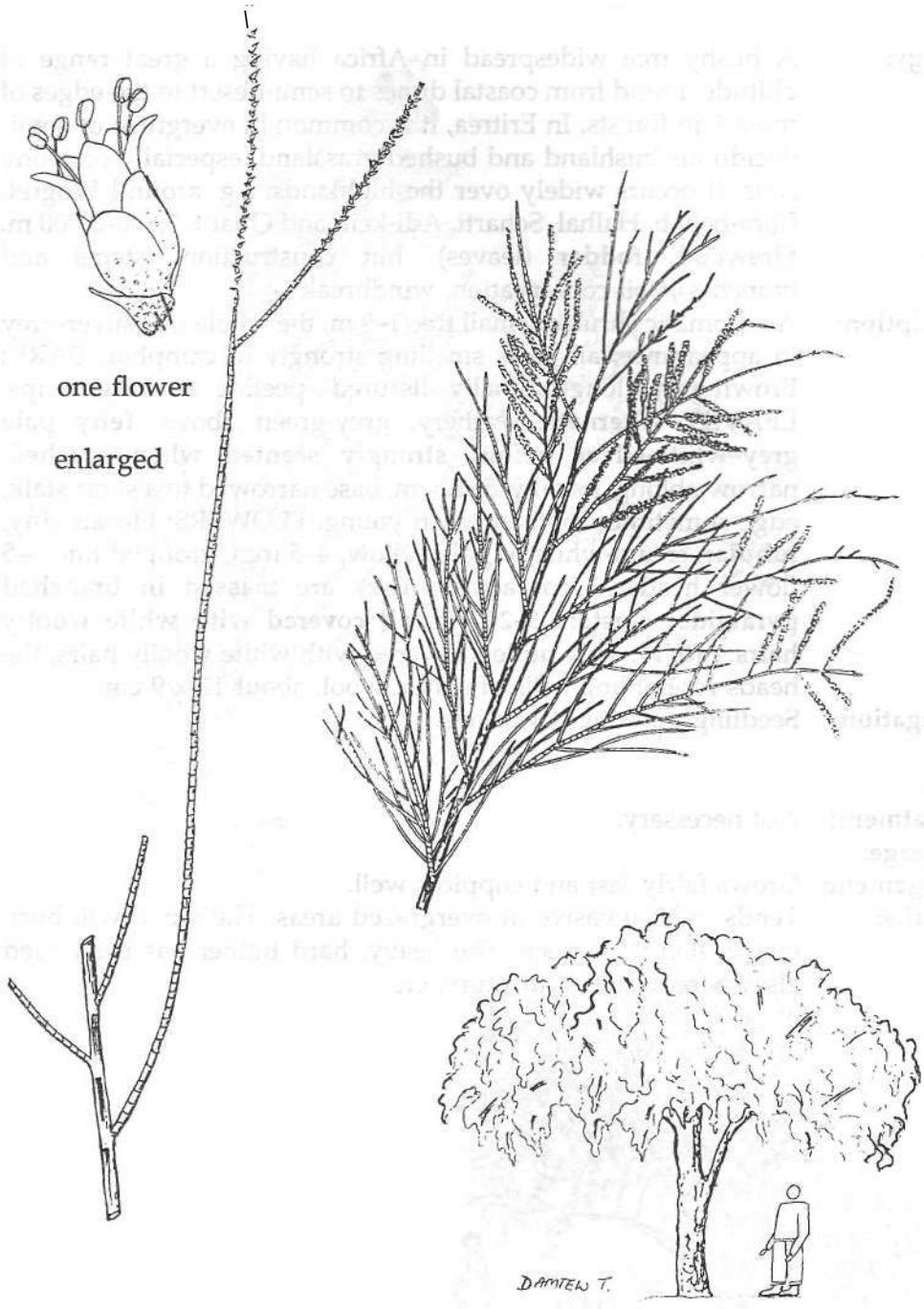
**Seed:**

**treatment:**

**storage:** Seeds lose viability within a few days so trees are normally established by cuttings.

**Management:** Coppicing.

**Remarks:** Like other tamarisk, it excretes "salt" which drips from glands in the leaves at night so soil below may be covered with salt. This salty drip kills any plants below the tree and the fallen leaves are too salty to burn—hence use of this tree as a firebreak. Crops should not be planted close to tamarisk as the tree roots collect all nearby water and plant nutrients.


one flower
enlarged
DAMTEW T.

## Tarchonanthus camphoranthus *Compositae*

Indigenous

*Sh:* *Ebokh* *Tg:* *Ebokh* *Tr:* *Sarakan*

**Ecology:** A bushy tree widespread in Africa having a great range of altitude, found from coastal dunes to semi-desert to the edges of mountain forests. In Eritrea, it is common in evergreen or semi-deciduous bushland and bushed grassland, especially on stony soils. It occurs widely over the highlands, e.g. around Wogret, Rora-habab, Halhal, Seharti, Adi-keih and Quatit, 1,800-3,000 m.

Uses: **Firewood, fodder** (leaves), hut construction (stems and branches), soil conservation, windbreak.

**Description:** An aromatic shrub or small tree 1-9 m, the whole tree silver-grey in appearance; all parts smelling strongly of camphor. BARK: Brown-grey, longitudinally fissured, peeling in long strips. LEAVES: **Alternate,** leathery, grey-green above, **felty pale grey-white-silver below, strongly scented when crushed,** narrow oblong, usually 5-10 cm, base narrowed to **a** short stalk, edge sometimes toothed when young. FLOWERS: **Florets tiny, tubular,** cream-white or pale yellow, 4-5 mm, grouped into 3-5 flower heads, 1 cm across. They are **massed in branched pyramidal clusters 5-20 cm, all covered with white woolly hairs.** FRUIT: Tiny nutlets covered with white woolly hairs, the heads resembling balls of cotton wool, about 12 x 9 cm.

**Propagation:** Seedlings, cuttings, wildings.

**Seed:**

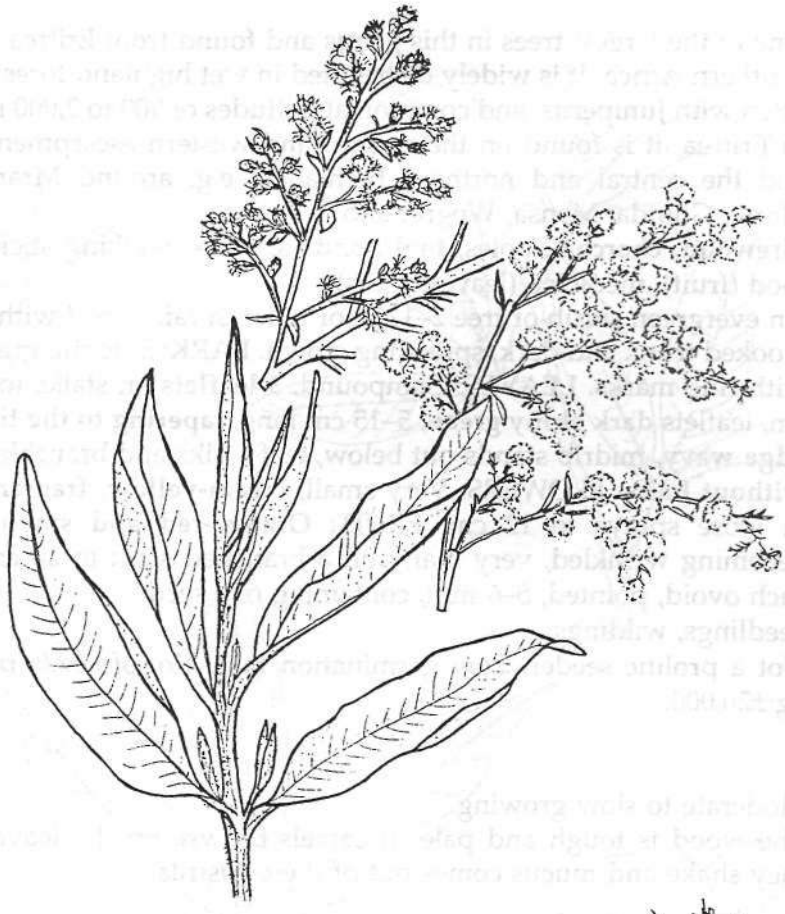
**treatment:** Not necessary.

**storage:**

**Management:** Grows fairly fast and coppices well.

**Remarks:** Tends to be invasive in overgrazed areas. The wood will burn even when it is green. The heavy, hard timber has been used elsewhere to make furniture, etc.

Tarchonanthus camphoranthus *Composttae*



## Teclea nobilis *Rutaceae*

Indigenous

*Bl:* *Serina* *Eng:* *Small-fruited teclea* *Sh:* *Suluha*
*Tg:* *Suluh, Sulha* *Tr:* *Shuluh*

**Ecology:** One of the largest trees in this genus and found from Eritrea to southern Africa. It is widely distributed in wet highland forests, often with Juniperus, and common at altitudes of 900 to 2,000 m. In Eritrea, it is found on the eastern and western escarpments and the central and northern highlands, e.g. around Mrara, Marat, Ghinda, Mensa, Wogret and Tselema.

**Uses:** **Firewood, charcoal,** poles, **tool handles,** clubs, walking sticks, food (fruit), medicine (leaves, roots).

**Description:** An evergreen shrub or tree 2-12 m or taller in rain forest with a crooked trunk and dark, spreading crown. BARK: Smooth, grey, with ring marks. LEAVES: Compound, **3 leaflets** on stalks to 6 cm, leaflets **dark shiny green,** 5-15 cm long, **tapering to the tip, edge wavy,** midrib stands out below, leaf stalks and branchlets **without hairs.** FLOWERS: Very small, **cream-yellow, fragrant,** in loose sprays to 12 cm. FRUIT: **Orange-red and smooth** becoming wrinkled, very many on a branched stalk to 20 cm, each ovoid, pointed, 5-6 mm, containing one seed.

**Propagation:** Seedlings, wildings.

**Seed:** Not a prolific seeder. Low germination rate. No. of seeds per kg:±20,000.

**treatment:**

**storage:**

**Management:** Moderate to slow growing.

**Remarks:** The wood is tough and pale. If camels browse on the leaves, they shake and mucus comes out of their nostrils.

Teclea nobilis *Rutaceae*

## Terminalia brownii *Combretaceae*

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *Af:* | *Weibaito* | *Ar:* | *Darot* | *Bl:* | *Enkema* |
| *Hd:* | *Todfaf* | *Km:* | *Dura* | *Nr:* | *Tibila* |
| *Sh:* | *Weibo* | *Tg:* | *Weiba* | *Tr:* | *Tsehat* |

**Ecology:** One of a very useful group of trees growing in semi-arid areas from Nigeria, the Sudan, Eritrea, Ethiopia and Somalia to eastern Zaire. It is found in woodland, bushed grassland and riverine forest and does best in well-drained soils. The commonest and most widespread Terminalia in Eritrea, it occurs throughout the country between 200 and 2,000 m, for example around Filfil, Solomuna, Debremaar, Dongolo, Boroka, Barentu, Quatit, Mai-quak, Elabered, Mensa, Seber, in Hidai valley, Ala and Tobo.

**Uses:** **Firewood, charcoal,** timber (tool handles, mortars, pestles), poles, posts, **medicine** (leaves and bark), **fodder** (leafy branches), mulch, soil improvement, shade, dye, smoke bath, stuffing (local pillows).

**Description:** A semi-deciduous tree, 7-13 m, densely shady, **somewhat layered,** foliage drooping. BARK: Grey, fissured, young shoots hairy. LEAVES: Oval, **7-10** cm, wider at the tip, pointed or notched, edge wavy, side veins clear, **leaf stalk and underleaf hairy,** leaves turn red before falling. FLOWERS: **Whitish, with an unpleasant smell, in spikes to 12 cm.** FRUIT: A winged oval seed, **red to purple, 5 cm, tip rounded or notched,** narrowed to base.

**Propagation:** Seedlings, wildings.

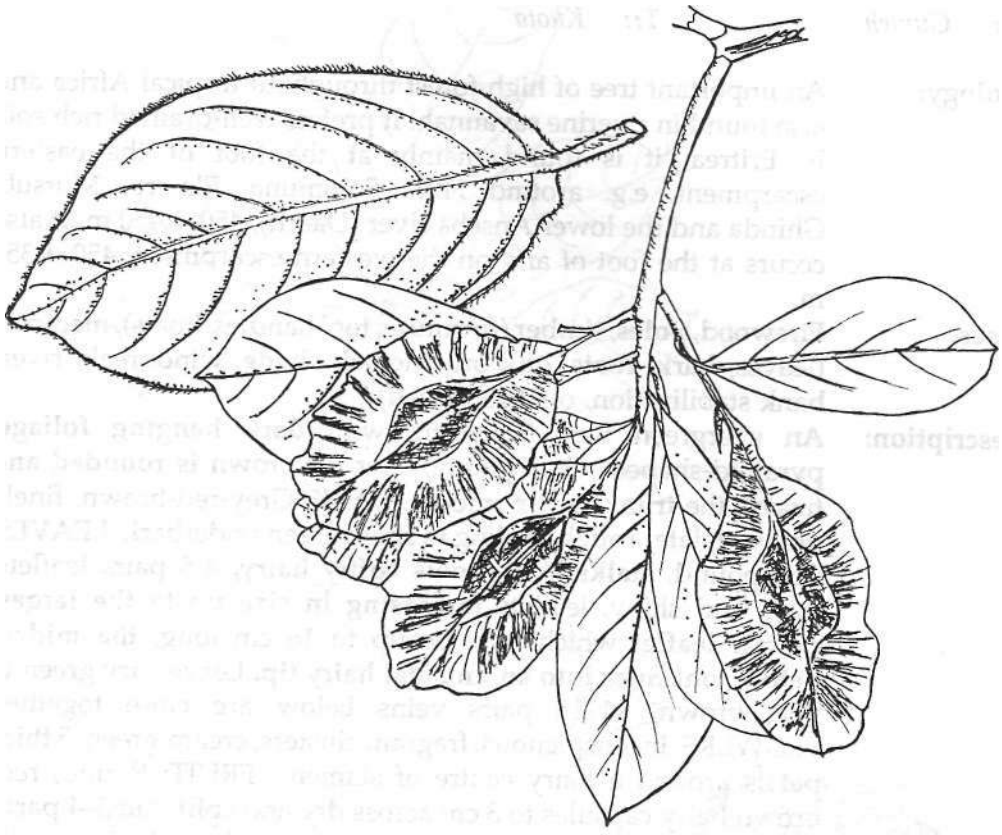
**Seed:** A prolific seeder, but with a low germination rate. The tree seeds more or less continuously. No. of seeds per kg: ±3,000.

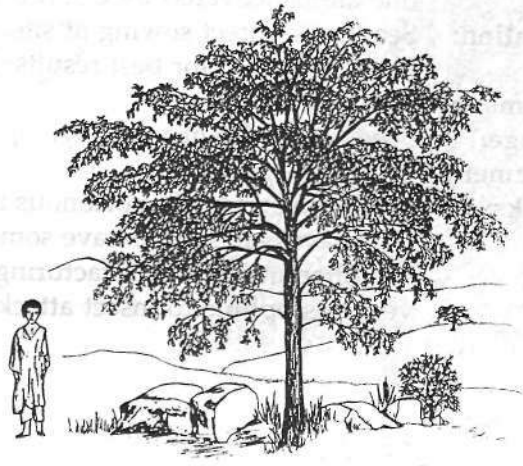
**treatment:** Remove wings.

**storage:** Seed can be stored for very long periods if insect free.

**Management:** Fairly fast growing on good sites. Lopping, pollarding, coppicing.

**Remarks:** Terminalia timber is yellow-brown, medium hard, light and termite-resistant and thus highly valued for house construction, poles, utensils and for building grain stores. In spite of its dense canopy, crops do well underneath.





## Trichilia emetica (T. roka) *Meliaceae*

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| ***Bl:*** | *Kota* | *Eng:* | *Cape mahogany* | *Sh:* | *Assurto* |
| ***Tg:*** | *Gumeh* | *Tr:* | *Kuota* | | |

**Ecology:** An important tree of high forest throughout tropical Africa and also found in riverine savannah. It prefers well-drained rich soil. In Eritrea, it is found mainly at the foot of the eastern escarpment, e.g. around Filfil, Solomuna, Ela-ero, Mutsub, Ghinda and the lower Anseba river (Daarit), 450-1,450 m. It also cccurs at the foot of and on the western escarpment, 450-1,350 m.

**Uses:** Firewood, **poles, timber** (furniture, tool handles, boats), medicine (leaves, bark, roots, oil), ornamental, **shade,** windbreak, river-bank stabilization, oil/soap (seed).

**Description:** An evergreen tree, 15-30 m, with **dark hanging foliage,** pyramid-shaped when young, later the **crown is rounded and heavy,** the trunk rather smooth. BARK: Grey-red-brown, finely grooved, later rough, scaling to show green underbark. LEAVES: Compound, **stalks and shoots softly hairy,** 4-5 pairs leaflets, thick and shiny, leaflets **increasing in size up to the largest central leaflet** which may be up to 16 cm long, **the midrib below continues into an unusual hairy tip.** Leaves dry green to pale brown, 11-18 pairs veins below are close together. FLOWERS: Inconspicuous, fragrant clusters, cream-green, 5 thick petals around a hairy centre of stamens. FRUIT: Round, red-brown hairy capsules to 3 cm across dry and split into 3-4 parts. **A clear neck to 1 cm long** connects the capsule to the fruit stalk. Up to 6 shiny black seeds hang out of the open capsules, each one almost covered by a soft orange-red aril.

**Propagation:** Seedlings, direct sowing at site, wildings.

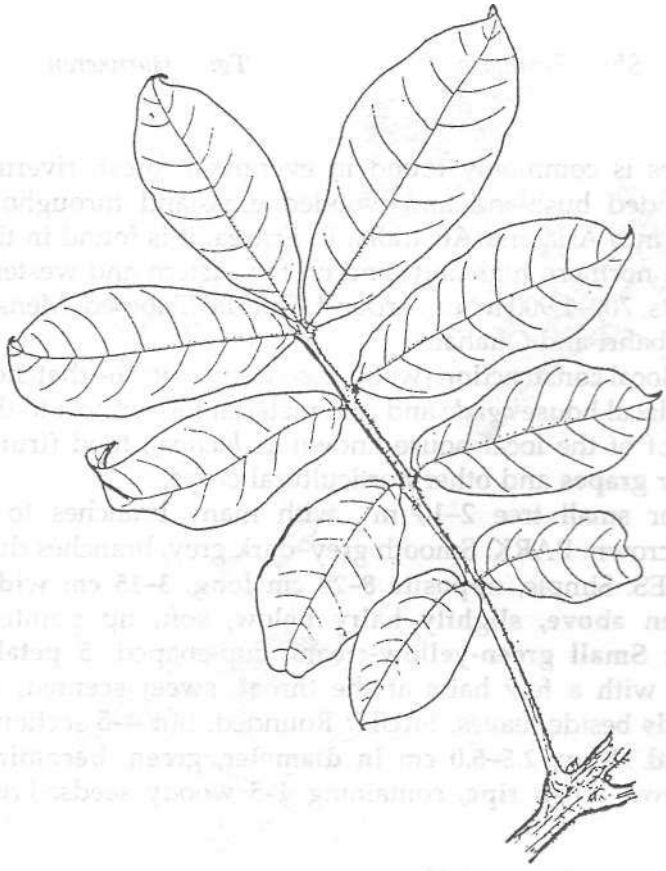
**Seed:** Sow fresh seed for best results. No. of seeds per kg: about 800.

**treatment:** Not necessary.

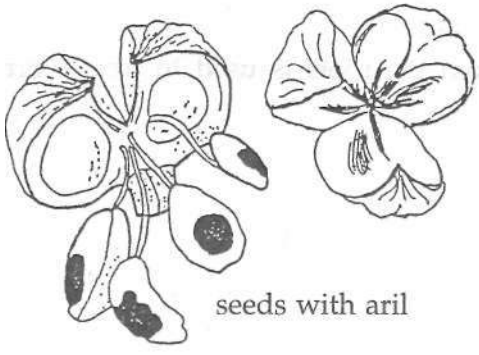
**storage:** Seeds lose viability quickly.

**Management:** Fairly fast growing.

**Remarks:** Seeds are extremely poisonous if eaten but they contain a useful oil. Leaves are said to have some soapy properties and could be exploited in soap manufacturing. The pink-grey-brown timber is very susceptible to insect attack.



open fruit capsule



seeds with aril

## Vangueria madagascariensis (V. venosa) *Rubiaceae*

Indigenous

*Bl:* *Sinara* *Sh:* *Firanfaro* *Tg:* *Harnkeren*
*Tr:* *Sangosango*

**Ecology:** This species is commonly found in evergreen forest, riverine forest, wooded bushland and wooded grassland throughout Africa and into Asia and Australia. In Eritrea, it is found in the central and northern highlands and on the eastern and western escarpments, 700-1,900 m, e.g. around Ghinda, Elabered, Mensa, Semenawi-bahri and Quahain.

**Uses:** **Firewood,** local **construction** (wood used to support the thatched roof of the local house *agudo* and also material for support to the earthen roof of the local house known as *hudmo),* food (fruit), **support for grapes** and other horticultural crops.

**Description:** A shrub or small tree 2-10 m with many branches **to a** spreading crown. BARK: Smooth grey-dark grey, branches dull red. LEAVES: Simple, **opposite 8-28 cm long, 3-15 cm wide, shiny green above, slightly hairy below,** soft, tip pointed. FLOWERS: **Small green-yellow-cream,** cup-shaped, **5 petals,** smooth or with a few hairs at the throat, **sweet scented, in dense heads** beside leaves. FRUIT: Rounded, but 4-5 sections, **smooth and shiny, 2.5-5.0 cm in diameter, green, becoming yellow-brown when ripe,** containing 4-5 woody seeds. Fruit edible.

**Propagation:** Seedlings.

**Seed:**

**treatment:**

**Storage**

**Management:**

**Remarks:** In Tanzania an extract from the roots is used to treat worm infections.

## Vernonia amygdalina *Compositae*

Indigenous

*Eng: Bitter leaf, Tree vernonia* *Tg: Grawa*

Ecology: A woody shrub of sub-Saharan Africa from west to east and also in Yemen. It is found in a wide range of bushland, woodland and forest in most parts of Eritrea, 750-2,500 m. It is common around houses, especially in Asmara and Senate, and along river banks.

Uses: **Firewood,** charcoal, food (leaves), fodder, **bee forage, medicine** (roots, bark, leaves), mulch, soil improvement, ornamental, **live fence,** toothbrushes (stems), stakes, leaves are used to scour pots used for making local beer *(sewa).*

Description: A single-stemmed shrub to 3 m, sometimes a tree to 10 m with a wide bole. BARK: Pale grey then rust-dark brown, rather rough, flaking later, branches brittle. LEAVES: Alternate, rather coarse and rough, oval, up to 20 x 5 cm, **tapering at both ends,** dark green above, **soft pale hairs below,** edge may be widely but regularly toothed. FLOWERS: White-green-pink, each only 6 mm across, in dense branching rounded heads **to** 30 cm **across,** sweet scented in the evening. FRUIT: Tiny seeds with stiff white hairs.

Propagation: Cuttings, seedlings.

Seed:

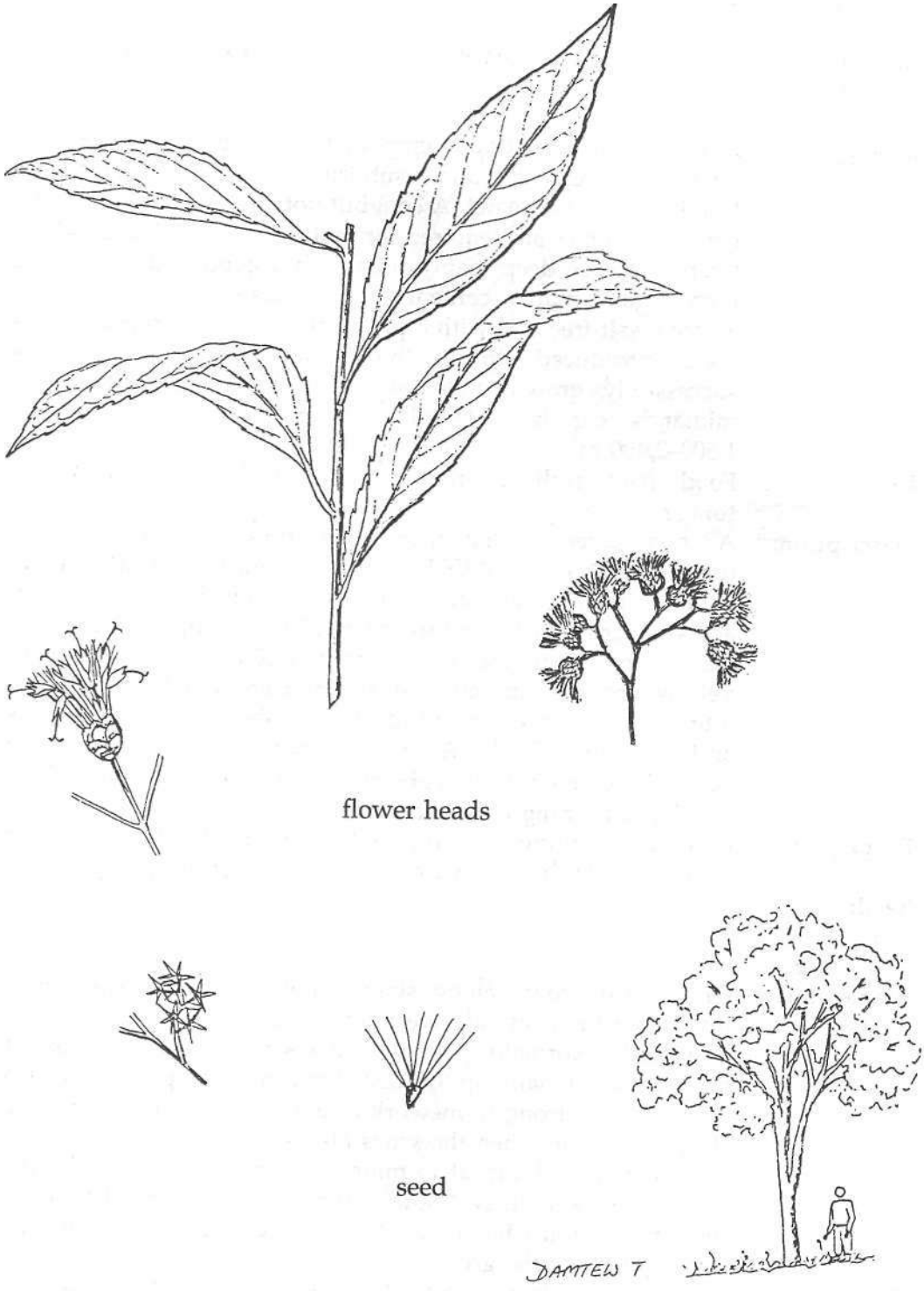
**treatment:** Not necessary.

storage:

Management: Medium to fast growing, coppicing.

Remarks: The wood is termite-resistant making the branches useful for fences, support for earth works and stakes. The dried stems are light but strong. The leaves and bark are bitter but have several medicinal uses. This is a very valuable tree for bees, making dark aromatic honey.

Vernonia amygdalina *Compositae*



## Vitis vinifera *Vitaceae*

Mediterranean, Western India

*Ar:* *Enab* *Eng:* *Grape* *Tg:* *Weini*
*Tr:* *Enab*

**Ecology:** A well-known deciduous crop that grows best in warm, dry temperate regions and sub-tropics with winter rain (Mediterranean climate). A cool but not very cold winter and a dry hot summer are required for best results (5-20°N, 20-40°S). Grapes require deep loamy soils with a good structure and a high organic-matter content that are also well drained and aerated, salt-free and with a pH of around 6. In Eritrea, grapes were introduced during the Italian occupation and are successfully grown under irrigation in the highlands and midlands, e.g. in Elabered, Asmara, Dekemhare, Adi-keih, 1,500-2,400 m.

**Uses:** Food (fruit fresh or dried, raisins), drink (juice, wine), **bee forage.**

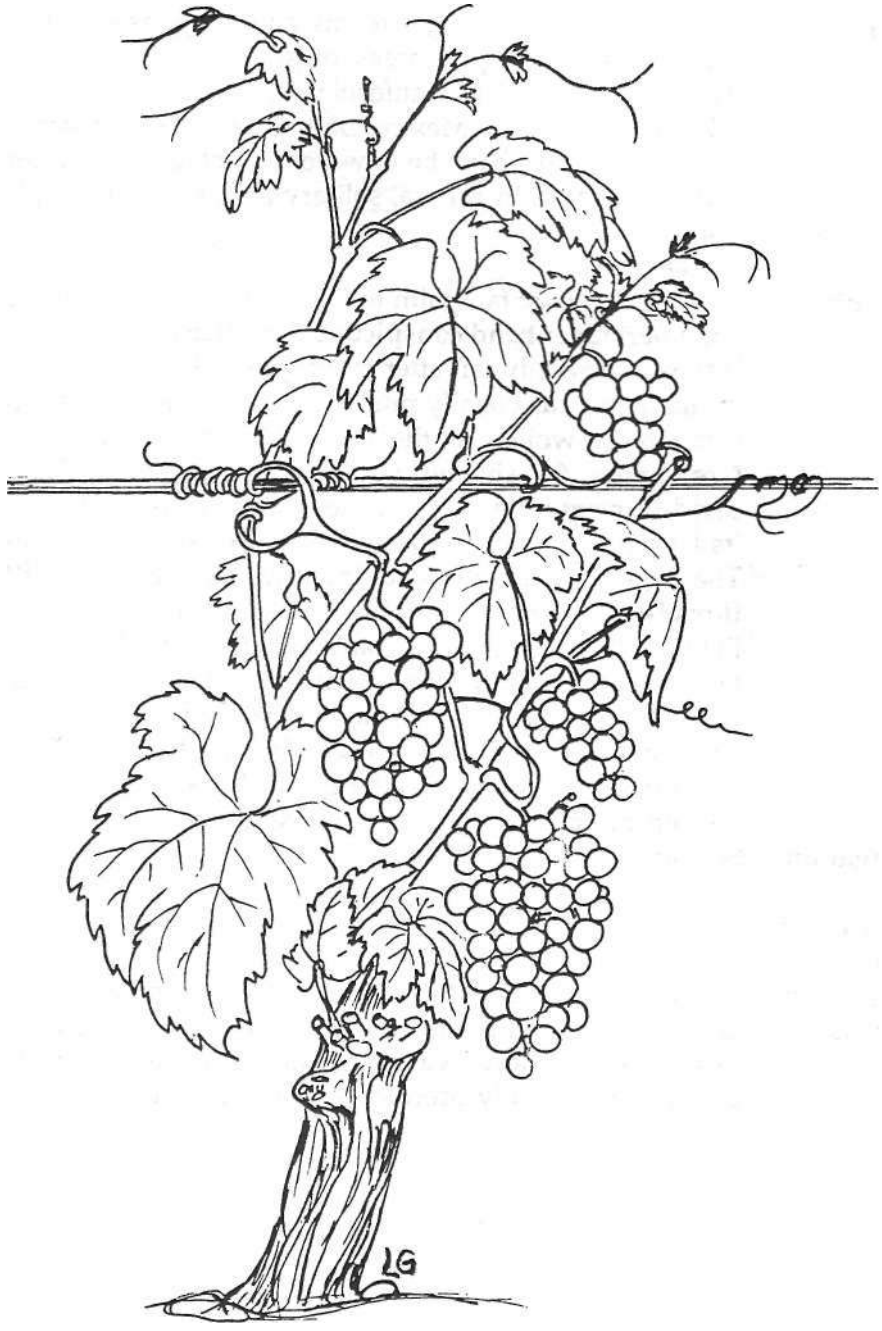
**Description:** A woody perennial climber or trailer with stems up to 20 m long (unless pruned). LEAVES: Alternate, **roughly heart-shaped,** entire to **deeply cut into 3-5 lobes,** the thin leaf about 20 cm across, **edges sharply and irregularly toothed,** tip often pointed, base often rounded, sometimes hairy. FLOWERS: Small, **green-yellow,** produced in **dense clusters 5-20 cm long beside leaves,** 5 tiny green petals drop off together to show 5 central stamens and the ovary. FRUIT: A berry, generally **oval and juicy,** the skin yellow-green or violet-black, **1-4 cm long, the sweet flesh edible, containing a few hard seeds.**

**Propagation:** Budding, grafting, cutting and layering. Vines are easily propagated by hard wood cuttings from good mother plants.

**Seed:**
**treatment:**
**storage:**

**Management:** Grapes are grown along stakes, trellises or pergolas which involves a high capital investment when they are grown on a large scale. Normally planted at 2 x 4 m, i.e. 1,250 plants per hectare, occasionally up to 2,000. Plants must be pruned in such a way that a strong framework of branches is formed. Pruning should be done when the vines are dormant, and pruning the first year should aim at forming the permanent shape for the plant. There should be a single stem which is allowed to make two branches just below the bottom line of the trellis (or take two stems from the ground level).

**Remarks:** Visits by honeybees increase both yield and quality of fruit.


LG

# Washingtonia filifera *Palmae*

California, Arizona

***Eng:*** *Desert fan palm, Petticoat palm*

**Ecology:** This palm occurs along streams and canyons and near water sources in more open areas of southern California, western Arizona and in Baja California. The very closely related *W. robusta* is found into Mexico. Both are excellent ornamentals for city avenues and have been widely planted in the drier tropics and sub-tropics. In Eritrea, solitary palms have been planted in Asmara.

**Uses:** **Ornamental.**

**Description:** A striking robust fan palm to 25 m. The crown of young foliage has a **permanent and conspicuous "petticoat" of dead, withered leaves** which only fall after many years. The trunk is up to 1 m in diameter, but usually much less, ringed with close leaf scars; sometimes swollen at the base. BARK: Dark grey. LEAVES: **Grey-green, fan-shaped, very large, 2 m across.** The blade is divided irregularly into 5 or more sections to about one-third of its length, the single-fold segments with strong midribs below. The **segments are divided into two at the tip, splitting off thread-like fibres** (filifera) and hanging down when mature. FLOWERS: Develop **on many-branched stalks between the leaves, as long as or longer than the leaves.** The white flowers are spirally arranged and single, each with 3 unusually large straw-like sepals. FRUIT: **Dark brown-black, 1.5 cm, oval,** smooth, often falling with the split calyx attached and **the style still on the tip.** Fruit contain **one shiny brown seed.**

**Propagation:** Seedlings.

**Seed:**

**treatment:**

**Storage**

**Management:** Grows quite quickly. Germination may be rather slow.

**Remarks:** One of the easiest palm trees to propagate from seed. They will grow well in any warm climate but prefer dry-to-humid conditions and only produce seed under optimum conditions.

## Ximenia americana *Olacaceae*

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *An* | *Abu khamira* | *Bl:* | *Terengi* | | |
| *Eng:* | *Hog plum, Wildplum* | *Hd:* | *Ex hassab* | *Tg:* | *Mullo* |
| *Tn* | *Melhitta* | | | | |

**Ecology:** A pan-tropical tree species growing in African savannah, America and tropical Asia. In Eritrea it is found between 1,300 and 1,900 m in Acacia woodland and wooded grassland often together with *Acacia abyssinica, A. etbaica* and *Terminalia brownii.* It occurs around Mensa, Bogos, Semenawi-bahri, Debubawi-bahri, Quatit, Mt. Seled, Dembelas and western Rora-habab.

Uses: **Firewood,** charcoal, timber **(utensils), food** (seed), oil (seed), medicine (roots, bark, leaves), fodder, bee forage, **live fence.**

**Description:** Usually a spiny shrub or small tree, 4-8 m. BARK: Brown-black; twigs bear small scales, spines, **1 cm, thin and straight.** LEAVES: Alternate, **simple or tufts,** oblong, up to 7 x 3 cm, blue-grey-green, **folding upwards** along midrib, **tip round or notched.** FLOWERS: Very fragrant, small green-white (white hairs in throat) in small branched clusters. FRUIT: Oval to 2.5 cm, **thin skin red, yellow to orange pulp,** sour but refreshing, around 1 large seed containing oil.

**Propagation:** Seedlings, wildings.

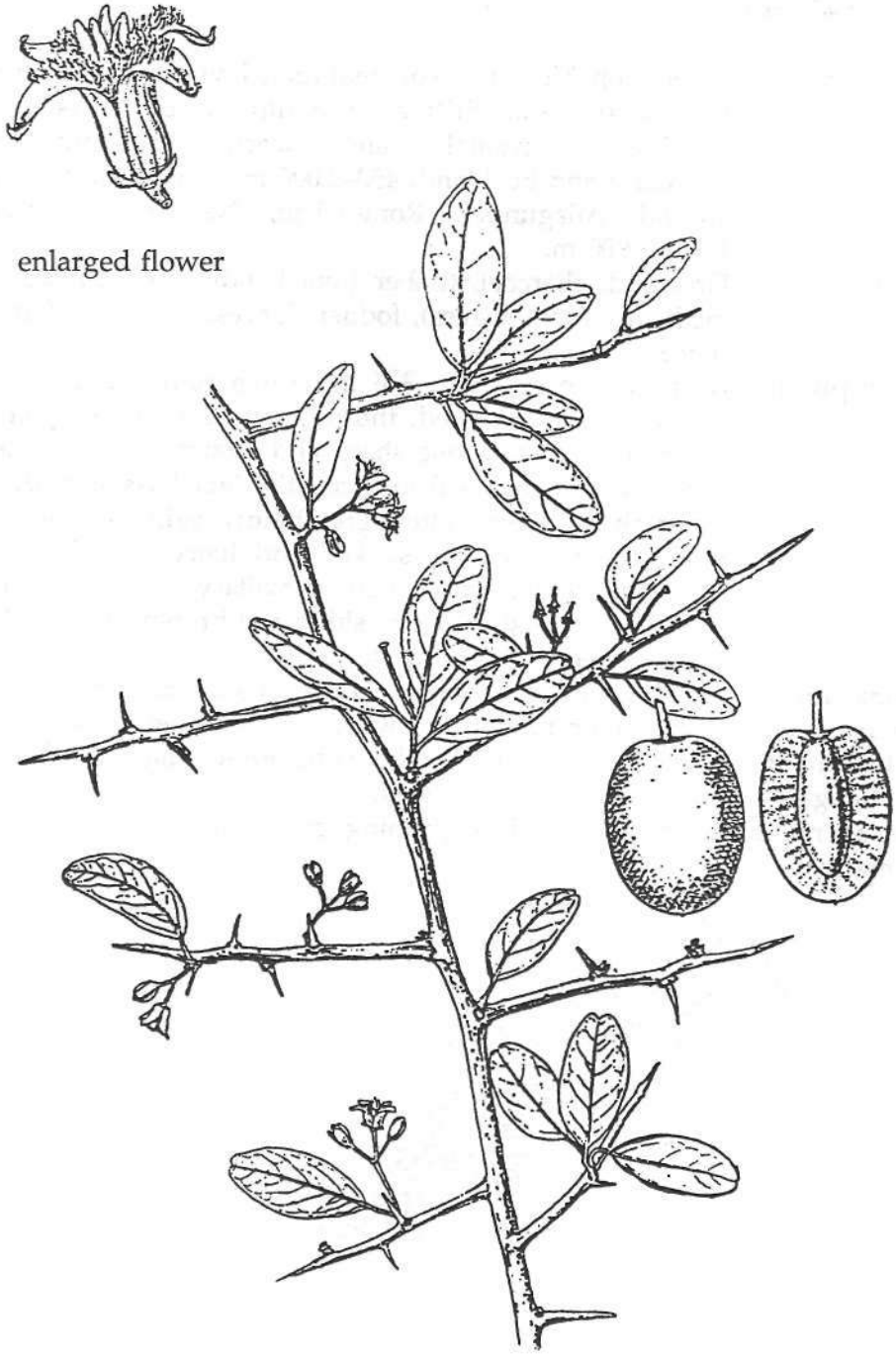
**Seed:** No. of seeds per kg: 660-1,400.

**treatment:** Maceration to separate seed from pulp.

**storage:** Seed cannot be stored for long periods. Sow fresh seed for good germination.

**Management:** Protect natural regeneration.

**Remarks:** A useful tree for arid and semi-arid areas as it is drought resistant. The wood is heavy, hard and very durable. The seed contains a non-drying oil suitable for soap and lubrication. It has also been used as body and hair oil and for softening leather.


enlarged flower

## Ziziphus abyssinica *Rhamnaceae*

Indigenous

*Tg: Gaba-agdi* *Tr: Kuslet*

Ecology: A common African tree of medium to low altitudes from Senegal to Ethiopia and Eritrea to South Africa. It is found in Combretum-Terminalia and Acacia woodland, wooded grassland and bushland, 450-2,000 m. In Eritrea, it is common around Ailagundet, Rora-habab, Nefasit and Kenafena, 1,300-1,900 m.

Uses: Firewood, charcoal, timber (tool handles), posts, **food** (fruit), medicine (roots, leaves), fodder (leaves, fruit), bee forage, **live** fence.

Description: A spiny tree or shrub 3-6 m, **crown rounded.** BARK: Grey-brown, deeply grooved, thorns may be single or paired, one recurved, the other one sharp and straight to 2 cm. LEAVES: Leathery, broadly oval to 8 cm, **the leaf base unequal,** shiny green above, hairy yellow-grey **below, veins distinctive,** edge finely toothed, shortly stalked and hairy. FLOWERS: Small, greenish yellow, star-shaped in axillary heads to 2 cm long. FRUIT: **Rounded** to 3 cm, shiny **red-brown** and edible when ripe, 1-2 seeds inside the stone.

Propagation: Seedlings, direct sowing at site, root suckers, cuttings.

Seed: Germination rate often low. No. of seeds per kg: 430-2,000.

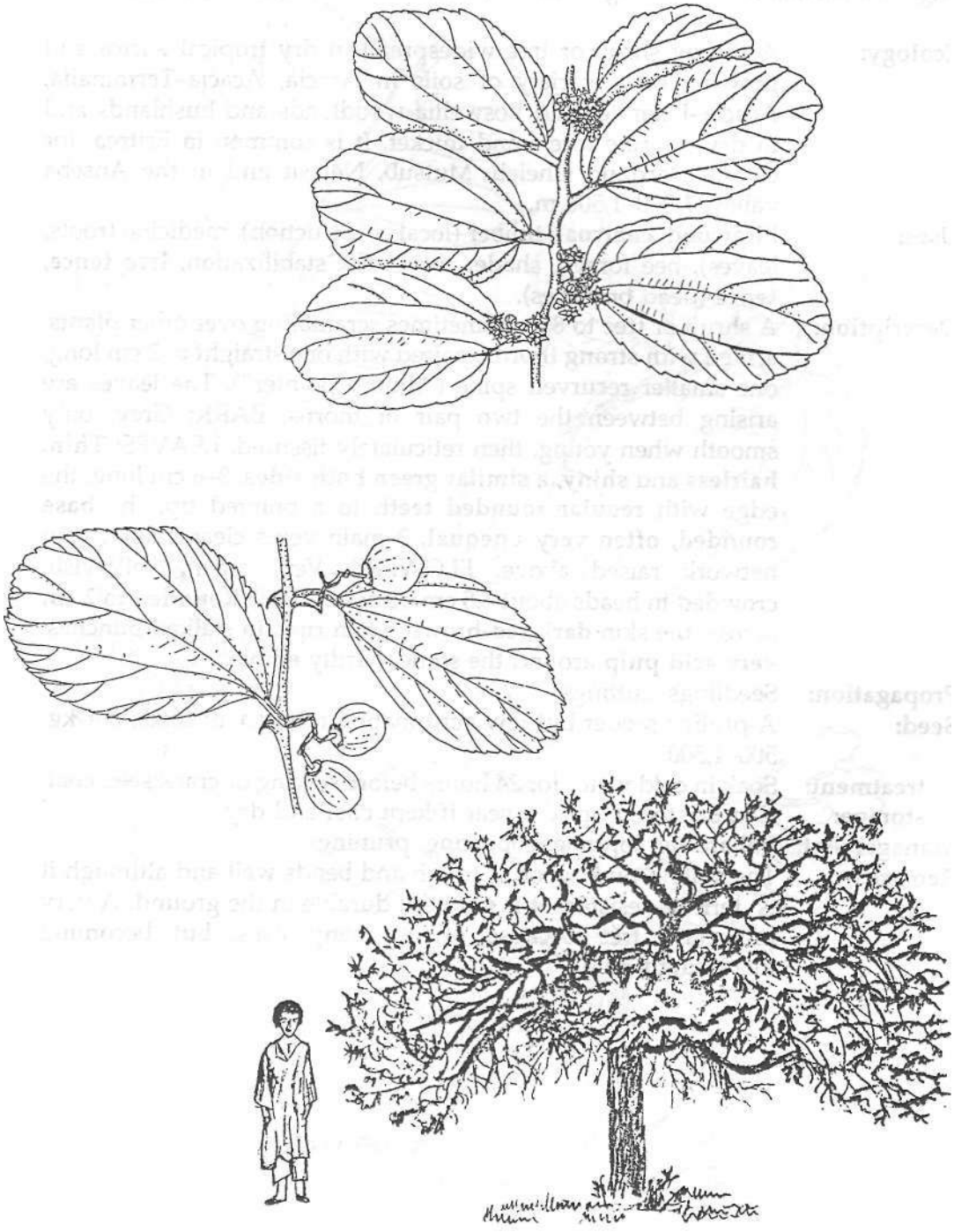
treatment: Soak in cold water for 24 hours before sowing or crack seed coat.

storage: Can be stored up to a year.

Management: Lopping, pollarding, pruning, coppicing.

Remarks:

Ziziphus abyssinica *Rhamnaceae*



## Ziziphus mucronata *Rhamnaceae*

Indigenous

*Eng: Buffalo thorn* *Tg: Gaba-harmaz* ***Tr:*** *Hal-kus r a*

**Ecology:** A thorny shrub or tree widespread in dry tropical Africa and growing on a variety of soils in Acacia, Acacia-Terminalia, Acacia-Balanites and Boswellia woodlands and bushlands and in dry riverine forest and thicket. It is common in Eritrea, for example around Gheleb, Mutsub, Nefasit and in the Anseba valley, 1,000-1,500 m.

**Uses:** **Firewood, charcoal,** timber (local construction), medicine (roots, leaves), bee forage, shade, river-bank stabilization, **live fence, fence** (dead branches).

**Description:** A shrub or tree to 8 m, sometimes scrambling over other plants, armed with **strong thorns,** paired with one straight to 2 cm long, one smaller recurved spine ("thumb pointer"). The leaves are arising between the two pair of thorns. BARK: Grey, only smooth when young, then reticulately fissured. LEAVES: **Thin, hairless** and **shiny,** a **similar green both sides,** 3-6 cm long, the edge with **regular rounded teeth** to a pointed tip, the **base rounded, often very unequal,** 3 main veins clear below, vein network raised above. FLOWERS: Very small, yellowish, crowded in heads about 1.5 cm across. FRUIT: **Rounded to 2 cm** across, the skin **dark red-brown** when ripe, in stalked bunches, **very acid pulp** around the stone, hardly edible.

**Propagation:** Seedlings, cuttings.

**Seed:** A prolific seeder but low germination rate; no. of seeds per kg: 500-1,500.

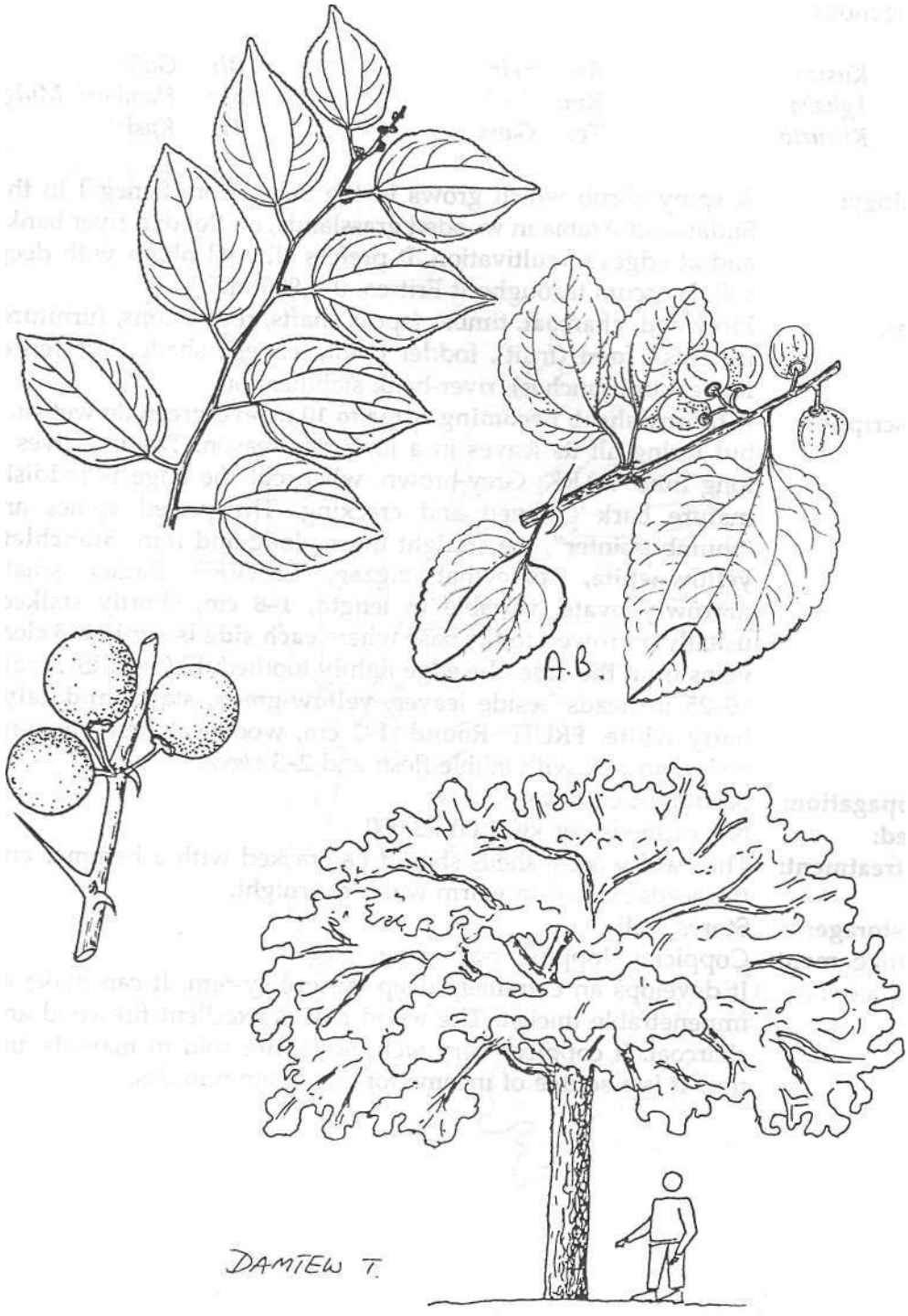
**treatment:** Soak in cold water for 24 hours before sowing or crack seed coat.

**storage:** Can be stored up to a year if kept cool and dry.

**Management:** Pollarding, lopping, coppicing, pruning.

**Remarks:** The yellow-pink wood is tough and bends well and although it is termite-resistant it is not very durable in the ground. A very important tree because of its many uses, but becoming increasingly rare.

Ziziphus mucronata *Rhamnaceae*



## Ziziphus spina-christi *Rhamnaceae*

Indigenous

| | | | | | |
|---|---|---|---|---|---|
| *Af:* | *Kusrto* | *Ar:* | *Sidr* | *Bl:* | *Guff* |
| *Hd:* | *Tghaba* | *Km:* | *Aseba* | *Nr:* | *Hamburi, Mulgi* |
| *Sh:* | *Kusurto* | *Tg:* | *Gaba* | *Tr:* | *Kuslet* |

**Ecology:** *A* spiny shrub which grows in the Sahel from Senegal to the Sudan and Arabia in wooded grasslands, on flooded river banks and at edges of cultivation. It prefers alluvial plains with deep soil. It occurs throughout Eritrea, 0-1,900 **m.**

**Uses:** **Firewood, charcoal,** timber (spear shafts, roof beams, furniture, utensils), **food** (fruit), fodder (fruit, leaves), shade, live fence, **fence** (cut branches), river-bank stabilization.

**Description:** A **thorny shrub becoming a tree to 10 m,** evergreen on wet sites but losing all its leaves in a long dry season. The tree lives a long time. BARK: Grey-brown, when cut the edge is reddish, mature bark grooved and cracking. The paired spines are "thumb pointer", the straight thorns long and thin. **Branchlets yellow-white,** somewhat zigzag. LEAVES: Rather small, **narrowly ovate,** variable in length, 1-8 **cm,** shortly stalked, usually narrowed to the base where **each side is similar,** 3 clear veins from the base, the edge lightly toothed. FLOWERS: Small, 10-25 in heads beside leaves, **yellow-green, stalks and calyx hairy white.** FRUIT: Round, 1-2 cm, woolly at first, ripening yellow to red, with edible flesh and 2-3 seeds.

**Propagation:** Seedlings, cuttings.

**Seed:** No. of seeds per kg: 1,000-2,000.

**treatment:** The hard woody shells should be cracked with a hammer and the seeds soaked in warm water overnight.

**storage:** Stores well.

**Management:** Coppicing, lopping, pollarding.

**Remarks:** It develops an extremely deep taproot system. It can make an impenetrable thicket. The wood makes excellent firewood and charcoal. It coppices very well. Seeds are sold in markets and thus it is a source of income for rural communities.

Ziziphus spina-christi *Rhamnaceae*

PART III

# SUMMARY TABLE OF SPECIES AND THEIR USES

| | Wood | | | | | | | | Food | | | | | | | Fodder | | Environmental | | | | | | | Other Uses | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Firewood/Fuel | Charcoal | Timber / Furniture | Poles/Posts | Beehives | Tools/Tool handles | Farm implements | Carvings / Utensils/Walking sticks | Fruit / Food / Nut | Vegetable | Seasoning / Flavouring | Drink / Soup | Oil / Edible gum | Jam / Syrup | Medicine | Fodder | Bee forage | Shade | Ornamental/Avenue tree | Mulch | Nitrogen fixation | Soil conservation/improvement | River bank/sand stabilisation | Windbreak | Fibre / Weaving / Rope | Thatch / Roofing / Mats | Resin / Gum / Glue / Latex | Tannin / Dye | Vermifuge/Veterinary medicine | Toxin / Insecticide | Cosmetic / Soap / Perfume/Oil | Live fence / Dry fencing | Ceremonial / Boundary marking | Smoke bath | Brooms | Toothbrushes / Stuffing |
| Acacia abyssinica | x | x | | x | | x | | | | | | | | | x | x | x | x | | | x | x | | | | | | | | | | x | | | | |
| Acacia asak | x | x | x | | | | | | | | | | | | x | x | x | | | | | | | | | | | | | | | | | | | |
| Acacia ehrenbergiana | | | | | | | | | | | | | | | | x | | | | | x | | x | | x | | | | | | | | | | | |
| Acacia etbaica | x | | x | | | | x | x | | | x | | | | x | x | x | | | | | | | | | | | x | | | | | | | | |
| Acacia laeta | x | x | | x | | | | | | | | | x | | | x | | | | | | | | | x | | x | | | | | x | | | | |
| Acacia lahai | x | x | x | x | | | | | | | | | | | | | | x | | | | | | | | | | x | | | | | | | | |
| Acacia mearnsii | x | x | | x | | | | | | | | | | | x | | x | | x | | x | x | | x | x | | | x | | | | | | | | |
| Acacia melanoxylon | x | x | x | x | | | | | | | | | | | | | | x | x | | | | | x | | | x | | | | | | | | | |
| Acacia mellifera | x | x | | | | | | x | | | | | | | x | x | x | | | | x | x | | | | | | | | | | x | | | | |
| Acacia nilotica | x | x | | x | | x | | x | | | | | | | x | x | x | | | | x | x | | x | | | x | x | | | | x | | | | x |
| Acacia oerfota | x | | | | | | | | | | | | | | x | x | | | | | | | | | x | | | | x | | | | | | | |
| Acacia polyacantha | x | x | x | x | | | x | | | | | | | | x | x | | | x | | x | x | x | | | | | | | | | x | | | | |
| Acacia saligna | x | | | x | | | | | | | | | | | | x | x | x | x | | x | x | | x | | | x | | | | | x | | | | |
| Acacia senegal | x | x | | x | | x | | | x | | | | | | x | x | | | | | | x | | | | | x | x | | | | | | | | |
| Acacia seyal | x | x | | x | | | | | | | | | | | x | x | x | x | | | x | x | | x | x | | x | x | | | | x | | | | |

SUMMARY TABLE OF SPECIES AND THEIR USES

| | Wood | | | | | | | | Food | | | | | | | Fodder | | Environmental | | | | | | | Other Uses | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Firewood/Fuel | Charcoal | Timber / Furniture | Poles/Posts | Beehives | Tools/Tool handles | Farm implements | Carvings / Utensils/Walking sticks | Fruit / Food / Nut | Vegetable | Seasoning / Flavouring | Drink / Soup | Oil / Edible gum | Jam / Syrup | Medicine | Fodder | Bee forage | Shade | Ornamental/Avenue tree | Mulch | Nitrogen fixation | Soil conservation/infiprovement | River bank/sand stabilisation | Windbreak | Fibre / Weaving / Rope | Thatch / Roofing / Mats | Resin / Gum / Glue / Latex | Tannin / Dye | Vermifuge/Veterinary medicine | Toxin / Insecticide | Cosmetic / Soap / Perfume/Oil | Live fence / Dry fencing | Ceremonial / Boundary marking | Smoke bath | Brooms | Toothbrushes / Stuffing |
| Acacia sieberiana | x | x | x | | | x | x | x | | | | | | | | x | | | | | | | | | | | x | | | | | x | | | | |
| Acacia tortilis | x | x | x | x | | | | | | | | | | | | x | x | x | | | x | x | | | x | | | | | | | x | | | | |
| Acokanthera schimperi | | | | | | x | | | | | | | | | x | | | x | x | | | | | | | | | | | x | | | | | | |
| Adansonia digitata | x | | | | | | | x | x | x | | x | | | x | x | | x | x | x | | | | | x | | | x | | | | | | | | |
| Adenia venenata | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | |
| Agave sisalana | | | | x | | * | | | | | | | | | | | x | | | | | | | | x | x | | | | | | x | | | | |
| Albizia amara | x | x | x | x | | | x | | | | | | | | x | x | | | x | x | x | x | | | | | x | | | | | | | | | |
| Albizia anthelmintica | x | | x | | | | | | | | | | | | | x | x | | | | x | | | | | | | x | x | | | | | | | |
| Albizia lebbeck | x | x | x | x | | | | | | | | | | | x | x | x | x | x | x | x | x | | x | | | | x | | | x | | | | | |
| Albizia lophantha | x | | | | | | | | | | | | | | | x | x | x | x | | x | x | | | | | | | | | | | | | | |
| Allophylus abyssinicus | x | | x | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aloe macrocarpa | | | | | | | | | | | | | | | x | | x | | | | | x | | | | | | | | | | | | | | |
| Annona muricata | | | | | | | | | x | | | x | | | x | | | | x | | | | | | | | | | | x | | | | | | |
| Anogeissus leiocarpus | x | x | | x | | | | | | | | | | | | x | | | | | | | x | | | | | | | | | | | x | | |
| Araucaria cunninghamii | | | x | | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | |

| | Wood | | | | | | | | Food | | | | | | | Fodder | | Environmental | | | | | | | Other Uses | | | | | | | | | | | |
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| | Firewood/Fuel | Charcoal | Timber / Furniture | Poles/Posts | Beehives | Tools/Tool handles | Farm implements | Carvings / Utensils/Walking sticks | Fruit / Food / Nut | Vegetable | Seasoning / Flavouring | Drink / Soup | Oil / Edible gum | Jam / Syrup | Medicine | Fodder | Bee forage | Shade | Ornamental/Avenue tree | Mulch | Nitrogen fixation | Soil conservation/improvement | River bank/sand stabilisation | Windbreak | Fibre / Weaving / Rope | Thatch / Roofing / Mats | Resin / Gum / Glue / Latex | Tannin / Dye | Vermifuge/Veterinary medicine | Toxin / Insecticide | Cosmetic / Soap / Perfume/Oil | Live fence / Dry fencing | Ceremonial / Boundary marking | Smoke bath | Brooms | Toothbrushes / Stuffing |
| Arundo donax | | | | | | | | x | | | | | | | | x | | x | | | | | x | | x | x | | | | | | x | | | | |
| Avicennia marina | x | | x | x | | | | | | | | | | | x | x | | | | | | | x | x | | | | | | | | x | | | | |
| Azadirachta indica | x | x | x | x | | | | | | | | | | | x | x | x | x | x | | | x | | x | | | | | | x | x | | | | | |
| Balanites aegyptiaca | x | x | x | x | | x | x | x | x | | | | | | x | x | | x | | x | | | | x | | | x | | | x | x | x | x | | | |
| Barbeya oleoides | x | x | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Becium grandiflorum | | | | | | | | | | | | | | | x | x | x | | | | | x | | | | | | | | | | | x | | | |
| Bersama abyssinica | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Boscia angustifolia | | | x | | | | x | x | | | | | | | | x | | | | | | | | | | | | | x | | | | | | | |
| Boscia salicifolia | x | | | x | | | | | | | | | | | x | x | | x | x | | | | | | | | | | | | | | | | | |
| Boscia senegalensis | x | | | x | | | | | x | | | | | | | x | | | | | | | | | | | | | | | | | | | | |
| Boswellia papyrifera | | | | | | | | | | | | | | | | x | | | | | | | | | | | x | | | | | x | | | | |
| Bougainvillea spectabilis | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | | | | | x | | | | |
| Brucea antidysenterica | x | | | | | | | | | | | | | | x | | | | | | | | | | | x | | | | | | | | | | |
| Buddleia polystachya | x | x | x | | | | | | | | | | | | x | x | x | | x | | | | | | | | | | | | x | x | | | | |
| Cadaba farinosa | x | | | | | | | | | x | x | | | | x | x | | | | | | | x | | | | | | | | | | | | | x |

| | Wood | | | | | | | | Food | | | | | | | Fodder | | Environmental | | | | | | | Other Uses | | | | | | | | | | | |
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| | Firewood/Fuel | Charcoal | Timber / Furniture | Poles/Posts | Beehives | Tools/Tool handles | Farm implements | Carvings / Utensils/Walking sticks | Fruit / Food / Nut | Vegetable | Seasoning / Flavouring | Drink / Soup | Oil / Edible gum | Jam / Syrup | Medicine | Fodder | Bee forage | Shade | Ornamental/Avenue tree | Mulch | Nitrogen fixation | Soil conservation/improvement | River bank/sand stabilisation | Windbreak | Fibre / Weaving / Rope | Thatch / Roofing / Mats | Resin / Gum / Glue / Latex | Tannin / Dye | Vermifuge/Veterinary medicine | Toxin / Insecticide | Cosmetic / Soap / Perfume/Oil | Live fence / Dry fencing | Ceremonial / Boundary marking | Smoke bath | Brooms | Toothbrushes / Stuffing |
| Cadaba rotundifolia | | | | | | | | | | | | | | | | x | | | | | | | x | | | | | | | | | | | | | | |
| Caesalpinia decapetala | | | | | | | | | | | | | | | x | x | x | | x | x | | | | | | | | | | | | x | | | | |
| Cajanus cajan | x | | | | | | | | x | | | | | | | x | x | | | x | x | x | | x | x | | | | | | | | | | | |
| Calotropis procera | x | | | | | | | | | | | | | | x | | | | | | | | x | | x | | | | x | | | | | | | x |
| Calpurnia aurea | x | | | x | | x | x | x | | | | | | | x | | x | | x | | | | | | | | | | x | x | | x | | | | |
| Capparis decidua | | | | | | | | | x | | | | | | | x | | | x | | | x | x | | | | | | | | | | | | | |
| Capparis tomentosa | | | | | | | | | | | | | | | x | x | | | | | | | x | | | | | | | | | x | | | | |
| Carica papaya | | | | | | | | | x | | x | x | | x | x | | | | | | | | | | | | x | | | | | | | | | |
| Carissa edulis | x | | | | | | | x | x | | | | | | x | x | x | | x | | | | | | | | | | | | | x | | | | |
| Casimiroa edulis | x | | | | | | | | x | | | | | | | | x | | | | | | | x | | | | | | | | | | | | |
| Casuarina cunninghamiana | x | x | x | x | | | | | | | | | | | | x | | x | x | x | x | x | | x | | | | | | | | | | | | |
| Ceiba pentandra | | | | | | | | | | | | | | | x | x | | | x | | | | | | x | | | | | | | | | | | x |
| Celtis africana | x | | x | | | x | x | | | | | | | | | x | | x | | | | | | | | | | | | | | | | | | |
| Citrus limon | x | | | | | | | | x | | x | x | x | x | x | | | | x | | | | | | | | | | | | x | | | | | |
| Citrus paradisi | | | | | | | | | x | | | x | | | x | | | | | | | | | | | | | | | | | | | | | |

| | Wood | | | | | | | | Food | | | | | | | Fodder | | Environmental | | | | | | | Other Uses | | | | | | | | | | | |
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| Citrus reticulata | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Citrus sinensis | | | | | | | | | x | | | x | | | | | | | | | | | | | | | | | | | | | | | | |
| Combretum aculeatum | x | | | | | | | | x | | | | | | x | x | | | | | | | | | | | | | | | | x | | | x | |
| Combretum fragrans | x | | x | | | | | | x | x | | | | | x | x | | | | | | | | | | | x | | | | | | | | | |
| Combretum molle | x | x | x | x | | x | | | | | x | | | | x | | x | | | x | | | | | | | | | | | | | | x | | |
| Commiphora africana | x | | x | | | | | x | x | | | x | | | x | x | | | | | | | | | | | x | x | | | | x | | | | |
| Commiphora erythraea | | | | | | | | | | | | | | | x | | | | | | | | | | | | x | | | x | | | | | | |
| Conocarpus lancifolius | x | x | x | x | | | | x | | | | | | | | x | x | x | x | x | | x | x | x | | | | | | | | | | | | |
| Cordia africana | x | | x | | x | | | x | x | | | | | | x | x | x | x | x | x | | x | | | | | | | | | | | | | | |
| Cordia monoica | x | | | x | | x | | x | x | | | | | | x | | x | | | | | | | | | | | | | | | | | | | |
| Croton macrostachyus | x | x | x | x | | x | | | | | | | | | x | x | x | | | x | | x | | | | | | | | | x | | | | | |
| Cupressus lusitanica | x | | x | x | | | | | | | | | | | | | | x | x | | | | | x | | | | | | | | x | x | | | |
| Dalbergia melanoxylon | x | | x | | | | | x | | | | | | | x | x | x | | | | x | | | | | | | | | | | | | | | |
| Delonix elata | | | x | | | | | | | | | | | | x | x | | | x | | | | | | | | | x | | | | | | | | |
| Delonix regia | | | | | | | | | | | | | | | | | x | x | x | | | | | | | | | | | | | | | | | |

| | Wood | | | | | | | | Food | | | | | | | Fodder | | Environmental | | | | | | | Other Uses | | | | | | | | | | | |
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| Dichrostachys cinerea | x | x | | x | | x | | | | | x | | | | x | x | x | | | | x | x | | | x | | | | | | | x | | | | |
| Diospyros abyssinica | x | x | x | | | x | x | x | | | | | | | | | | x | | | | | | | | | | | | | | | | | | |
| Diospyros mespiliformis | x | | x | | | | | x | x | | | x | | | x | | x | x | | | | | | | | | | | | | | | | | | |
| Dobera glabra | | | x | | | | | | x | | | | | | | x | | x | | | | | | | | | x | | | | | | | | | x |
| Dodonaea angustifolia | x | x | | x | | x | | | | | | | | | x | | x | | | | | x | | x | | x | | | | | | x | | x | x | x |
| Dombeya torrida | x | | x | x | | | x | | | | | | | | | | x | | | x | | x | | | x | | | | | | | | | | | |
| Dovyalis abyssinica | | | | | | | | | x | | | | | | x | | x | | | | | x | | | | | | | | | | x | | | | |
| Ehretia amoena | x | | x | | | x | x | x | | | | | | | | | x | | | | | | | | | | | | | | | | | | | |
| Ehretia cymosa | x | | x | | | | x | x | | | | | | | x | x | x | | | x | | | | | x | | | | | | | | | | | |
| Entada abyssinica | x | | x | | | | | | | | | | | | x | x | | x | | | x | | | | x | | | | | | | x | | | | |
| Eriobotrya japonica | x | | | x | | | | x | x | | | | | x | | | x | x | x | x | | | | x | | | | | | | | | | | | |
| Erythrina abyssinica | x | | | | x | | | x | | | | | | | x | | x | | | x | x | x | | | | | | | x | | | x | x | | | |
| Eucalyptus camaldulensis | x | x | x | x | | | | | | | | | | | | | x | | x | | | | | x | | | | | | | | | | | | |
| Eucalyptus cladocalyx | x | | x | x | | | | | | | | | | | | | x | | | | | | | x | | | | | | | | | | | | |
| Eucalyptus globulus | x | x | x | x | | | | | | | | | | | x | | x | | | | | | | x | | | | | | | x | | | | | |

| | Wood | | | | | | | | Food | | | | | | | Fodder | | Environmental | | | | | | | Other Uses | | | | | | | | | | | |
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| Eucalyptus rudis | x | | x | x | | | | | | | | | | | | | | | x | | | | | x | | | | | | | | | | | | |
| Euclea schimperi | x | | | | | x | x | | x | | | | | | x | | | | x | | | x | | | | x | | | | | | x | x | x | | x |
| Euphorbia abyssinica | x | | x | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | | |
| Euphorbia polyacantha | | | | | | | | | | | | | | | x | | | | x | | | x | | | | | | | | x | | x | | | | |
| Euphorbia tirucalli | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | x | | x | x | | | |
| Faidherbia albida | x | x | x | x | | | | x | x | | x | | | | x | x | | x | | x | x | x | x | x | | | | x | | | x | x | | | | |
| Ficus carica | | | | | | | | | x | | | | | | x | | | x | | | | | | | | | | | | | | | | | | |
| Ficus elastica | | | | | | | | | | | | | | | | | | x | x | | | | | | | | | | | | | | | | | |
| Ficus glumosa | | | x | | x | | | x | x | | | | | | | | | x | | | | x | | | | | | | | | | | | | | |
| Ficus sycomorus | x | | | | x | | | x | x | | | | | | x | | | x | x | x | | x | x | | | | | | | | | | | | | |
| Ficus thonningii | | | | | | | | | | | | | | | x | x | | x | x | x | | | | | x | | x | | | | | | x | x | | | |
| Ficus vasta | x | | x | | | | | x | x | | | | | | | | | | | | | | x | | | | | | | | | | | | | |
| Flueggia virosa | x | | x | | | | | | x | | | | | | x | | | | | | | | | | | | | | | | | | | | | |
| Grevillea robusta | x | x | x | x | | | | | | | | | | | | x | x | x | x | | | x | | x | | | | | | | | | | | | |
| Grewia ferruginea | x | | x | | | | x | | x | | | | | | | x | x | | | | | | | | x | | | | | | | | | | | |

| | Wood | | | | | | | | Food | | | | | | | Fodder | | Environmental | | | | | | | Other Uses | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Firewood/Fuel | Charcoal | Timber / Furniture | Poles/Posts | Beehives | Tools/Tool handles | Farm implements | Carvings / Utensils/Walking sticks | Fruit / Food / Nut | Vegetable | Seasoning / Flavouring | Drink / Soup | Oil / Edible gum | Jam / Syrup | Medicine | Fodder | Bee forage | Shade | Ornamental/Avenue tree | Mulch | Nitrogen fixation | Soil conservation/improvement | River bank/sand stabilisation | Windbreak | Fibre / Weaving / Rope | Thatch / Roofing / Mats | Resin / Gum / Glue / Latex | Tannin / Dye | Vermifuge/Veterinary medicine | Toxin / Insecticide | Cosmetic / Soap / Perfume/Oil | Live fence / Dry fencing | Ceremonial / Boundary marking | Smoke bath | Brooms | Toothbrushes / Stuffing |
| Grewia flavescens | | | | | | | | x | x | | | | | | x | x | | | | | | | | | | | | | | | | | | | | |
| Grewia mollis | x | | | | | x | | x | x | | | | | | | x | | | | | | | | | x | x | | | | | | | | | | |
| Grewia tenax | | | | | | | x | x | x | | | | | | | x | | | | | | | | | x | | | | | | | | | | | |
| Grewia villosa | x | | | x | | x | x | x | x | | | | | | x | x | | | | | | | | | x | | | | | | | | | | | |
| Gyrocarpus americanus | x | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Heteromorpha arborescens | | | | | | | | | | | | | | | x | x | | | | | | | | | | | | | | | | | | | | |
| Hyphaene thebaica | | | x | | | | | | x | | | x | | | | x | | | | | | | x | | x | x | | | | | | | | | x | |
| Jacaranda mimosifolia | x | | x | x | | x | | x | | | | | | | | | x | x | x | | | | | x | | | | | | | | | | | | |
| Jasminum floribundum | x | | | | | | | | | | x | | | | x | | x | | | | | | | | | | | | | | | | | | | |
| Juniperus procera | x | | x | x | | | | | | | | | | | x | | | x | x | | | | | x | | | | | | | | | | | | |
| Kigelia africana | x | | x | | | | x | | | | | | | | | x | x | | | | | | x | | | | | x | | | | | | | | |
| Lannea fruticosa | | | x | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | |
| Lantana camara | | | | | | | | | x | | | | | | | | x | | x | | | | x | x | | | | | | | | x | | | | |
| Lawsonia inermis | x | | | | | | | | | | | | | | x | x | | | | | | x | | | x | | | x | | | x | x | | | | |
| Leucaena leucocephala | x | x | x | x | | | | | | | | | | | | x | x | | x | x | x | x | | | | | | | | | | | | | | |

| | Wood | | | | | | | | Food | | | | | | | Fodder | | Environmental | | | | | | | Other Uses | | | | | | | | | | | |
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| | Firewood/Fuel | Charcoal | Timber / Furniture | Poles/Posts | Beehives | Tools/Tool handles | Farm implements | Carvings / Utensils/Walking sticks | Fruit / Food / Nut | Vegetable | Seasoning / Flavouring | Drink / Soup | Oil / Edible gum | Jam / Syrup | Medicine | Fodder | Bee forage | Shade | Ornamental/Avenue tree | Mulch | Nitrogen fixation | Soil conservation/improvement | River bank/sand stabilisation | Windbreak | Fibre / Weaving / Rope | Thatch / Roofing / Mats | Resin / Gum / Glue / Latex | Tannin / Dye | Vermifuge/Veterinary medicine | Toxin / Insecticide | Cosmetic / Soap / Perfume/Oil | Live fence / Dry fencing | Ceremonial / Boundary marking | Smoke bath | Brooms | Toothbrushes / Stuffing |
| Lonchocarpus bussei | x | x | x | x | | x | | | | | | | | | | x | x | | | | | | | | | | | | | | | | | | | |
| Maerua angolensis | x | | x | | | | | | | | x | | | | | x | x | | | | | | | | | | | | | | | | | | | |
| Maesa lanceolata | x | | | | | | | | | | x | | | | x | | | | | | | | | | | | | | | | | x | | | | |
| Malus domestica | | | | | | | | | x | | | x | | | | | | x | x | | | | | | | | | | | | | | | | | |
| Mangifera indica | x | | | | | | | | x | | | | | | | x | x | x | x | | | x | | x | | | x | | | | | | | | | |
| Maytenus arbutifolia | x | | | | | | x | | | | | | | | | x | x | | | | | | | | | | | | | | | x | | | | |
| Maytenus senegalensis | x | x | | | | | | x | | | | | | | x | x | x | | | | | | | | | x | | | | | | x | | | | |
| Melia azedarach | x | | x | x | | x | | | | | | | | | x | | x | x | x | | | | | x | | | | | | | | | | | | |
| Meriandra bengalensis | x | | | | | | | | | | | | | | x | | x | | | | | x | | | | x | | | | | | | | | | |
| Mimusops kummel | x | x | x | | | x | | x | x | | | | | | | | | | | | | | | | | | | | | | | | x | | | |
| Mimusops schimperi | x | | x | | | | | | x | | | | | | | | | x | x | | | | x | | | | | | | | | | | | | |
| Moringa oleifera | | | | | | | | | x | x | x | | | | x | x | x | x | | | | x | | x | x | | | | | | x | x | x | | | |
| Musa sapientum | | | | | | | | | x | | | x | | | | | | | | | | | | | | | | | | | | | | | | |
| Myrica salicifolia | x | | x | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | |
| Nuxia congesta | x | x | | | | | | | | | | | | | x | | x | | | | | | | | | | | | | | | x | | | | |

| | Wood | | | | | | | | Food | | | | | | | Fodder | | Environmental | | | | | | | Other Uses | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Firewood/Fuel | Charcoal | Timber / Furniture | Poles/Posts | Beehives | Tools/Tool handles | Farm implements | Carvings / Utensils/Walking sticks | Fruit / Food / Nut | Vegetable | Seasoning / Flavouring | Drink / Soup | Oil / Edible gum | Jam / Syrup | Medicine | Fodder | Bee forage | Shade | Ornamental/Avenue tree | Mulch | Nitrogen fixation | Soil conservation/improvement | River bank/sand stabilisation | Windbreak | Fibre / Weaving / Rope | Thatch / Roofing / Mats | Resin / Gum / Glue / Latex | Tannin / Dye | Vermifuge/Veterinary medicine | Toxin / Insecticide | Cosmetic / Soap / Perfume/Oil | Live fence / Dry fencing | Ceremonial / Boundary marking | Smoke bath | Brooms | Toothbrushes / Stuffing |
| Olea europaea | x | x | x | x | | | | x | | | x | | | | x | | x | | | | | | | | | | | | | | | | | | | x |
| Oncoba spinosa | x | | x | | | | | | x | | | | | | x | | | | x | | | | | | | | | | | | | | | | | |
| Opuntia ficus-indica | | | | | | | | | x | | | | | | | x | x | | | | | x | x | | | | | | | | | x | | | | |
| Ormocarpum pubescens | x | | x | | | | | x | | | | | | | x | x | | | | | | | | | | | | | | | | | | x | | |
| Osyris quadripartita | x | | | | | | | | | | | | | | | | x | | | | | x | | | | | | x | | | | | | | | |
| Otostegia fruticosa | x | | | | | | | | | | | | | | | x | | | x | | | | | | | | | | | | | | | x | | |
| Otostegia integrifolia | | | | | | | | | | | x | | | | x | | x | | | | | | | | | x | | | | x | | | | | | |
| Oxytenanthera abyssinica | | | | x | | | | x | | | | | | | | x | | | | | | | | | | | | | | | | x | | | | |
| Ozoroa insignis | | | x | | | | | | | | | | | | x | | | | | | | | | | | | x | | | | | | | | | |
| Pappea capensis | x | | | | | | | | | | | | | | x | x | | | | | | | | | | | | | | | | | | | | |
| Parkinsonia aculeata | x | x | | | | | | | | | | | | | | x | x | x | x | x | | x | | x | | | | | | | | x | | | | |
| Phoenix canariensis | | | | | | | | | | | | | | | | | | x | x | | | | | | | | | | | | | | | | | |
| Phoenix dactylifera | x | | | x | | | | x | x | | | | | | x | x | | x | x | | | | | x | | x | | | | | | | | | | |
| Phoenix reclinata | | | | | | | | | | | | | | | | | | | x | | | x | | | x | x | | x | | | | | x | | | |
| Phytolacca dodecandra | | | | | | | | | | | | | | | x | | x | | | | | x | | | | | | | | x | x | | | | | |

| | Wood | | | | | | | | Food | | | | | | | Fodder | | Environmental | | | | | | | Other Uses | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Firewood/Fuel | Charcoal | Timber / Furniture | Poles/Posts | Beehives | Tools/Tool handles | Farm implements | Carvings / Utensils/Walking sticks | Fruit / Food / Nut | Vegetable | Seasoning / Flavouring | Drink / Soup | Oil / Edible gum | Jam / Syrup | Medicine | Fodder | Bee forage | Shade | Ornamental/Avenue tree | Mulch | Nitrogen fixation | Soil conservation/improvement | River bank/sand stabilisation | Windbreak | Fibre / Weaving / Rope | Thatch / Roofing / Mats | Resin / Gum / Glue / Latex | Tannin / Dye | Vermifuge/Veterinary medicine | Toxin / Insecticide | Cosmetic / Soap / Perfume/Oil | Live fence / Dry fencing | Ceremonial / Boundary marking | Smoke bath | Brooms | Toothbrushes / Stuffing |
| Piliostigma thonningii | x | x | x | x | | | | | x | | | x | | | x | x | x | | x | x | | x | | | x | | | x | | | | | | | | |
| Pithecellobium dulce | x | | x | x | | | | | x | | | x | | | | x | x | x | x | | x | x | x | x | | | | x | | | x | x | | | | |
| Premna resinosa | x | | | | | | | | | | | | | | | x | | | | | | x | | | | | | | x | | | | | | | | |
| Prosopis chilensis | x | x | x | x | | | | x | x | x | | | | | x | x | x | x | | | x | x | x | x | | | | | | | | x | | | | |
| Prunus persica | x | | | | | | | | x | | | | | | | | x | | | | | | | | | | | | | | | | | | | |
| Psiadia punctulata | x | | | | | | | | | | | | | | x | | | | | | | x | | | | x | | | | | | | x | x | | |
| Psidium guajava | x | | | | | x | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Psydrax schimperiana | x | | | x | | x | x | | | | | | | | | x | | x | | | | | | | | | | | | | | | | | | |
| Pterolobium stellatum | x | | | | | | | | | | | | | | | x | | | x | | | | | | | | | x | | | | x | | | | |
| Rhamnus prinoides | x | | | | | | | | | | x | | | | x | | | | | | | | | | | | | | | | | | | | | |
| Rhamnus staddo | x | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | x | | |
| Rhus glutinosa | x | | x | | | | | x | x | | | | | | | | x | | | | | | | | | | | | | | | | | | | x |
| Rhus natalensis | x | x | | | | x | x | | x | | | | | | x | | x | | | | | | | | | | | | | | | | | | | x |
| Rhus retinorrhoea | x | | | | | | x | x | | | | | | | | | x | | | | | | | | | | | | | | | | | | | |
| Ricinus communis | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | x | | | | | |

| | Wood | | | | | | | | Food | | | | | | | Fodder | | Environmental | | | | | | | Other Uses | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Firewood/Fuel | Charcoal | Timber / Furniture | Poles/Posts | Beehives | Tools/Tool handles | Farm implements | Carvings / Utensils/Walking sticks | Fruit / Food / Nut | Vegetable | Seasoning / Flavouring | Drink / Soup | Oil / Edible gum | Jam / Syrup | Medicine | Fodder | Bee forage | Shade | Ornamental/Avenue tree | Mulch | Nitrogen fixation | Soil conservation/improvement | River bank/sand stabilisation | Windbreak | Fibre / Weaving / Rope | Thatch / Roofing / Mats | Resin / Gum / Glue / Latex | Tannin / Dye | Vermifuge/Veterinary medicine | Toxin / Insecticide | Cosmetic / Soap / Perfume/Oil | Live fence / Dry fencing | Ceremonial / Boundary marking | Smoke bath | Brooms | Toothbrushes / Stuffing |
| Rosa abyssinica | | | | | | | | | x | | | | | | x | | | | x | | | | | | | | | | | | | x | | | | |
| Rumex usambarensis | x | | | | | | | | | x | | | | | | | x | | | | | x | | | | x | | | | | | | | | | |
| Sageretia thea | | | | | | | | | | | x | | | | | x | | | | | | | | | | | | x | | | | | | | | |
| Salvadora persica | x | | | | | | | | x | | | | | | x | x | | x | | | | x | x | | | | | | | | | | | | | x |
| Schinus molle | x | x | | | | | | | | | x | | | | | | x | x | x | | | x | | x | | | | | | x | | | | | | |
| Sclerocarya birrea | x | | x | | x | | | x | x | | | x | x | | x | x | x | | | | | | | | | | | x | | | | | | | | |
| Securidaca longepedunculata | | | | x | | | | | | | | | | | x | | x | | | | | | | | x | | | | | | | | | | | |
| Senna alexandrina | | | | | | | | | | | | | | | x | | | | | | | x | | | | | | | | | | | | | | |
| Senna siamea | x | x | x | x | | | | | | | | | | | x | | x | x | x | x | | x | | x | | | | | | | | | | | | |
| Senna singueana | x | | | | | | | | | | | | | | x | | | | | | | | | | | | | x | | | | | | x | x | |
| Steganotaenia araliacea | x | | | | | | x | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | |
| Sterculia africana | | | x | | | | | | | | | | | | x | | | | x | | | | | | x | x | x | | | | | x | | | | |
| Sterculia setigera | | | | | | | | | x | | | | | | x | x | | | | | | | | | x | x | x | | | | | | | | | |
| Stereospermum kunthianum | x | | | | | | | | | | | | | | x | | x | | x | | | | | | | | | | | | | | | | | x |
| Suaeda monoica | | | | | | | | | | | | | | | | x | | | | | | x | x | x | | x | | | | | | x | | | | |

| | Wood | | | | | | | | Food | | | | | | | Fodder | | Environmental | | | | | | | Other Uses | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Firewood/Fuel | Charcoal | Timber / Furniture | Poles/Posts | Beehives | Tools/Tool handles | Farm implements | Carvings / Utensils/Walking sticks | Fruit / Food / Nut | Vegetable | Seasoning / Flavouring | Drink / Soup | Oil / Edible gum | Jam / Syrup | Medicine | Fodder | Bee forage | Shade | Ornamental/Avenue tree | Mulch | Nitrogen fixation | Soil conservation/improvement | River bank/sand stabilisation | Windbreak | Fibre / Weaving / Rope | Thatch / Roofing / Mats | Resin / Gum / Glue / Latex | Tannin / Dye | Vermifuge/Veterinary medicine | Toxin / Insecticide | Cosmetic / Soap / Perfume/Oil | Live fence / Dry fencing | Ceremonial / Boundary marking | Smoke bath | Brooms | Toothbrushes / Stuffing |
| Syzygium guineense | x | x | x | x | | x | | x | x | | | | | | x | | x | | | | | | | | | | | x | | | | | | | | |
| Tamarindus indica | x | x | x | x | | | | | x | | x | x | | | x | x | | x | x | x | | x | x | x | | | | x | | | | | | | | |
| Tamarix aphylla | x | x | x | | | | | | | | | | | | | x | | | | x | | x | x | x | | | | | | | | | | | | |
| Tarchonanthus camphoranthus | x | | | | | | | | | | | | | | | x | | | | | | x | | x | | | | | | | | | | | | |
| Teclea nobilis | x | x | | x | | x | | x | x | | | | | | x | | | | | | | | | | | | | | | | | | | | | |
| Terminalia brownii | x | x | x | x | | x | | x | | | | | | | x | x | | x | | x | | x | | | | | | x | | | | | | x | | x |
| Trichilia emetica | x | | x | x | | x | | | | | | | | | x | | | x | x | | | | x | x | | | | | | | x | | | | | |
| Vangueria madagascariensis | x | | | | | | | | x | | | | | | | | | | | | | | | | | x | | | | | | | | | | |
| Vernonia amygdalina | x | x | | | | | | | | x | | | | | x | x | x | | x | x | | x | | | | | | | | | | x | | | | x |
| Vitis vinifera | | | | | | | | | x | | | x | | | | | x | | | | | | | | | | | | | | | | | | | |
| Washingtonia filifera | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | |
| Ximenia americana | x | x | x | | | | | x | x | | | | | | x | x | x | | | | | | | | | | | | | | x | x | | | | |
| Ziziphus abyssinica | x | x | x | x | | x | | | x | | | | | | x | x | x | | | | | | | | | | | | | | | x | | | | |
| Ziziphus mucronata | x | x | x | | | | | | | | | | | | x | | x | x | | | | | x | | | | | | | | | x | | | | |
| Ziziphus spina-christi | x | x | x | | | | | x | x | | | | | | | x | | x | | | | | x | | | | | | | | | x | | | | |

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The Swedish International Development Cooperation Agency, Sida, has supported rural development programmes in countries in Eastern Africa since the 1960s. Many of these programmes have over the years developed a clear environmental profile. It has been recognized that conservation of soil, water and vegetation must form the basis for sustainable utilization of land. Hence the importance of integrating conservation in smallholder farming systems.

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V J

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