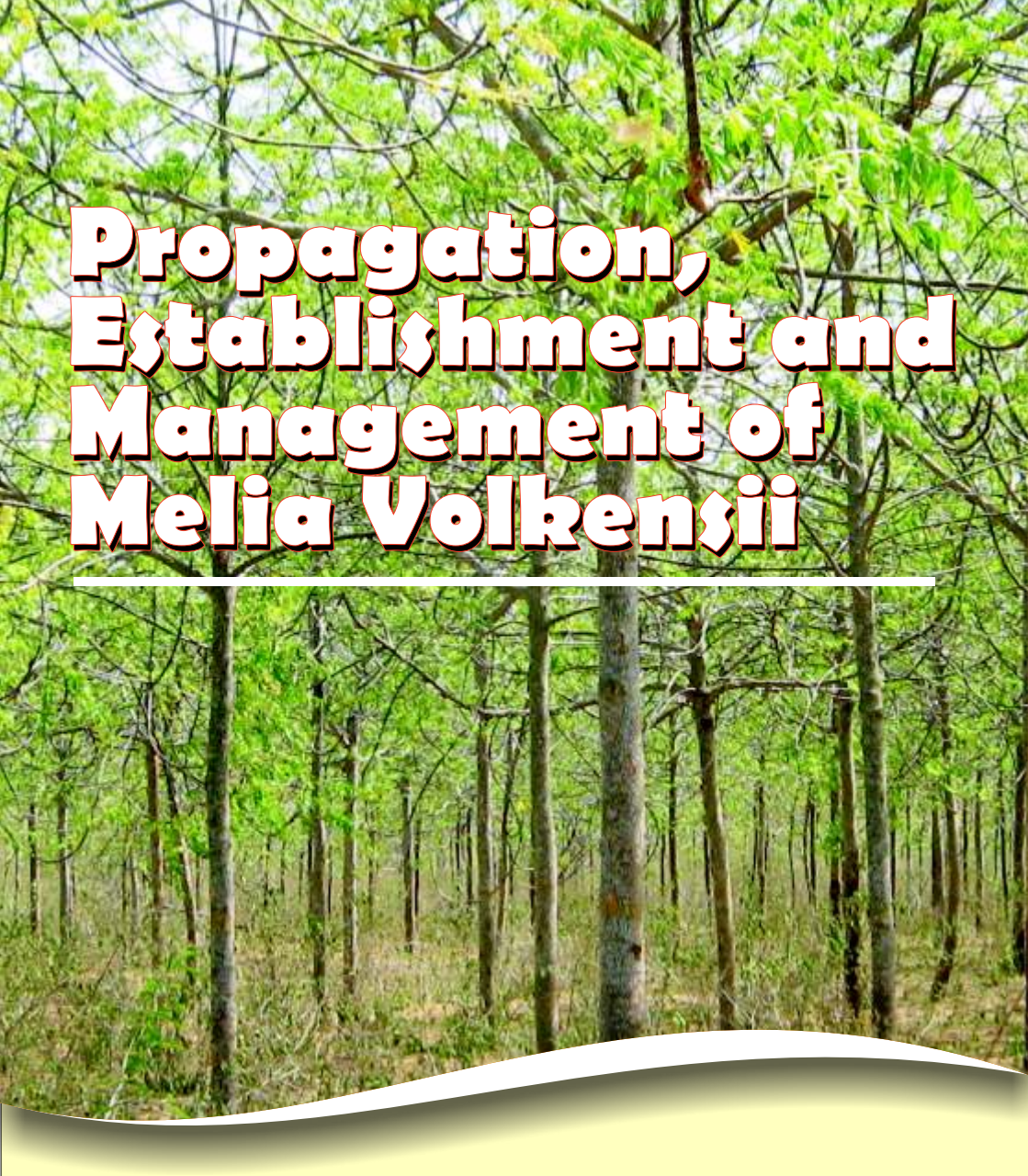

Propagation, Establishment and Management of Melia Volkensii

INADES FORMATION
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KENYA OFFICE

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INTRODUCTION

Melia volkensii (common name Mukau;-kamba) is found naturally in semi arid zones of kenya. It can grow on most soils; sandy, clay and shallow stony soils, but preferably sandy soils with good drainage. The species is mainly planted for its timber which is durable and comparable to camphor and also termite resistant. The timber is used for construction and furniture and is one of the principle species used to make log hives because the wood is easy to work and shape

It coppices well and is fast growing with a rotation of 10 - 15 years. Twigs, leaves and fruits are fodder for goats, cattle and sheep during the dry season. The species also contains compounds that are toxic to insects and aqueous extracts of the fruit are traditionally used to control fleas and ticks. In parts of Kenya, it is the most commonly planted tree on cultivated and cleared lands. Because of its drought tolerance and high timber value this species is popular and has greater potential for farmers especially in dry land areas

PROPAGATING MELIA VOLKENSII (MUKAU) FROM SEEDS

Identifying plus seeds

It is good to identify good mother trees from which seed collection should be done.

For growing melia volkensii for timber, the selected mother tree should be fast growing with large straight bole free from nodes

Seed collection

Mature fruits are collected directly from the tree. Mature nuts are yellow in color and easily drop on their own.

Collected fruits should not be stored in gunny bags for a long period as putrifaction sets in making the seeds loose their viability.

Ensure collection is not done from a single tree or from trees within 30m radius.

The collected fruits are de-pulped using mortar and pestle. The nuts obtained are washed and dried for at least a day.

Depulping using mortar and pestle

Seed extraction

Extraction of the seed from the nuts can be done using a knife and a plunk of wood or by use of nut cracker machine

Seeds extracted from nuts obtained from fresh fruits are brown in color and sometimes black. One nut contains 1-5 seeds and on average there are 200 seeds per kg of nuts

(Nut Cracker machine)

(Plunk of wood)

Pre germination treatment

Mukau seeds contain two coats, which hinder moisture penetration necessitating a pre-treatment process before sowing

Pre treatment involves 3 steps

1. Nipping of the seed
2. Soaking of the seed in cold water for 12 - 24 hrs
3. Slitting the seed coat longitudinally

Avoid damage to the seed cotyledon and the embryo during nipping and slitting.

Sowing

The seeds are sown in a germination/propagation chamber in a medium of sand partly sterilized by using jik or heating. Propagators can also be improvised using old washing basins covered with polythene sheet and tightly wrapped with rubber band

Water thoroughly ONCE but ensure the propagator maintains high humidity. The objective is to afford a MOIST BUT NOT WET MEDIUM

The temperatures in the chamber should range between 25 -30°c. the months of July and rainy season are not very favorable for Mukau germination due to low temperatures (but if the temperature remains high you can still germinate Mukau)

Mukau seeds are highly prone to fungal attack and use of fungicides such as benlate/benovap is advisable

(A `KEFRI style' standard propagator)

(Farmers improvised brick & bucket propagators)

Pricking out

Germination takes place after 3-6 days with low altitude high humidity areas having lesser germination period

Age of pricking period is very important. Late pricking out results in higher shock to the seedlings and hence high juvenile mortality, Recommended pricking out time is 1-3 days after germination.

Once the seedlings have been pricked out, removal of seed coat reduce fungal attack to the seedlings

Pricked out seedlings are kept under moderate shade (50 70%) for 2 weeks before transferring them to open nursery area

Mukau seedlings are sensitive to water logging and control of watering is very important. Overwatering predisposes the seedlings to fungal attack (fusarium spp) causing dumping off

Seedlings are therefore watered once in two days or when the pot is dry.

PLANTING AND MANAGEMENT

Preparation for planting

4 weeks before planting season begins, seedlings earmarked for transplanting should be well prepared for the harsh conditions in the field through hardening off. Watering frequency is reduced by half and the seedlings exposed to more direct sunshine

Select site for planting months before the onset of rains:

- The site should be easy to access and manage.
- Planting on slopes require construction of soil erosion structures
- Remove bushes and vegetation while conserving existing valuable tree species
- Improve infiltration by tilling along the contour

The recommended spacing for melia volkensii is 4metres by 4 metres. Planting holes should be at least 30cm by 30cm and 60 cm deep. Larger holes are advantageous during initial stages of tree growth as they hold more rainwater and make it available for the plant for a longer time

Refill the planting hole with original topsoil just before the rains begin

Actual planting

Generally tree planting should start immediately the rain season begins. The ideal planting season in the eastern dry lands is during October December rain season.

Dig up soil from the lower horizons of your planting pit after afew days of continous rain, this should be done on a non rainy day. Scoop a considerable amount of soil in your hand and squeeze. If the soil particles form a muddy wet bond, then this is the ideal planting time. However if the soil particles disintegrate on releasing your hold, then you must wait for more rainfall. Planting should be done on a cloudy day to enhance survival of the seedlings.

Select only healthy and strong seedlings of at least 30 cm in height for your planting.

Make a hole the size of the seedling container using a jembe or a panga in the middle of the planting pit.

Hold the container and slightly squeeze the sides to loosen the potting soil, then gently remove the container while carefully retaining the pot soil.

Transfer the seedling into the pit with the pot soil while maintaining the same root collar level, loosen the pot soil completely so that it mixes well with the covering wet soil layer.

Gently compact the surface around the planting spot by hand and thereafter by foot to increase contact between seedling roots and soil.

Field management

There are several management practices required to get the best timber. These include

1. Supporting

   m. volkensii is fast growing species and generates a lot of branches, which make it bend deforming the useful bole. If this situation happens, it is recommended to support the falling or bent stems to an upright position

2. pruning

   Pruning should be done early enough in order to get clean long and straight bole with few and small knots. This will improve the quality of timber. It is recommended to start pruning as early as three months after planting and to be done up to two thirds of tree height

3. weeding

   Complete weed control is important for survival and growth of young planted trees. Two or or three times weeding per season is recommended within the first two years after establishment

4. protection

   The major problem experienced in growing of m.volkensii is the browsing of young trees. Domestic animals such as donkey and even goats sometimes de-bark stems of mature trees. To get quality end products, the planted trees should be fully protected from browsers for atleast 1-2 years after establishment

Marketing

M. volkensii produces timber in short rotations than any other timber species. It takes less than ten years to produce sawn sized timber. M volkensii timber is classified as a valuable hardwood comparable to camphor.

See Comparative timber prices in Kitui

See Comparative timber prices in Kitui

Species	Timber size	Price (Ksh/ft)
Pine	8 x 1	25
	6 x 1	16
	4 x 2	24
	3x2	16
Cypress	8 x 1	26
	6 x 1	20
	4 x 2	26
	3 x 2	20
Grevillea	8 x 1	18
	6 x 1	14
	4 x 2	16
	3 x 2	14
m. Volkensii	8 x 1	35
	6 x 1	30
	4x 2	35
	3 x2	30
	2 x 2	20

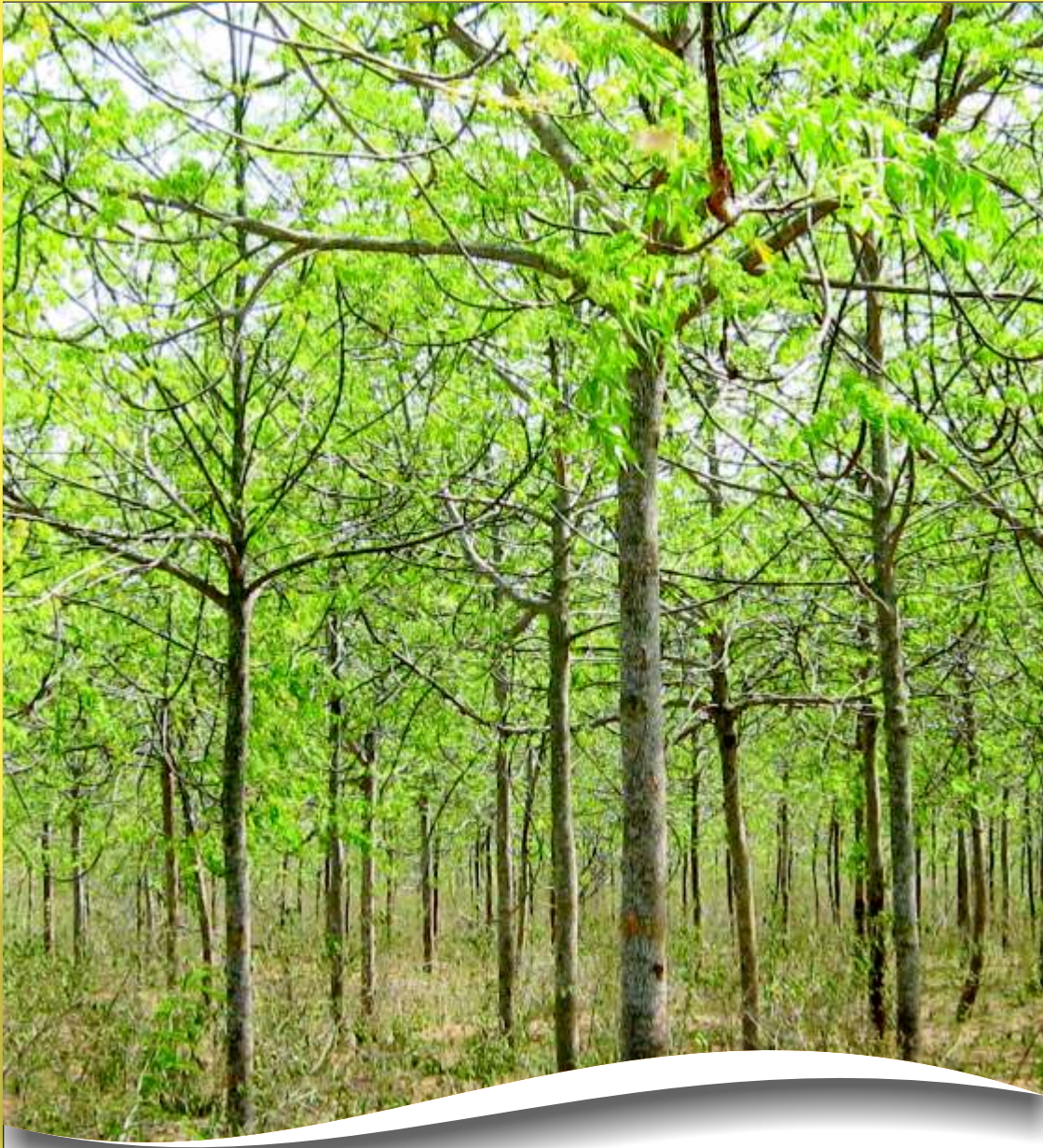
Investing in melia production is a highly profitable venture. One hectare of m. volkensii (625 trees) can be harvested at 10 -15 yrs with each tree producing 90 running feet of 6x1 feet timber. With the timber retailing at ksh 30 per foot, a melia tree yields Ksh. 3000. 1 ha of m volkensii therefore has the potential of yielding Ksh. 1,687,500 after 10 - 15 years.

LITERATURE CITED

Beentje, H. 1994. Kenya, trees, shrubs and lianas. National Museums of Kenya, Nairobi, Kenya

Kidundo, M. 1997. Melia Volkensii propagating the tree of knowledge, special issue: improved trees for agro forestry. Agro-forestry today 9:2, 21-22

Schumetter, H, (ed.) 1995. The neem tree Azadirachta indica A. Juss and other meliaceous plants. VCH, Germany



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