



Making hay from grass growing naturally under Melia trees



Hay stored on a raised barn on-farm

## 6. Constraints

Some of the constraints experienced by the farmer include:

- Livestock damage to trees.
- Diseases incidences especially stem canker.

## Acknowledgement

The authors acknowledge Mr. Jonathan Kituku of Kibwezi, Makueni County for providing information on Melia growing, which enabled compilation of this manuscript.

CADEP-SFM documented this information to enhance knowledge sharing in Africa. CADEP therefore acknowledges all institutions involved in development and promotion of this good practice.

## Compiled by:

Samson Fessehatsion, Major Brhane, Dawit Mebratu, Aquilino Lado, Mary Sitina, Justin Igu, Damaris Mwende, Michael Mukolwe, James Gituri and Teijima Shigenharu

**With contributions from:** Paul Tuwei, Dorothy Ochieng, Victor Kamau, Josephine Wanjiku and HonjoYuki

For more Good Practices and Case Studies visit:  
[www.kefri.org/cadep](http://www.kefri.org/cadep)

For more information contact:

**The Director:**

**Kenya Forestry Research Institute**

**P. O. Box 20412 - 00200 Nairobi, Kenya**

**Telephone: +254 722 157 414 / 734 251 888**

**E-mail: [director@kefri.org](mailto:director@kefri.org)**

**Website: [www.kefri.org](http://www.kefri.org)**



Melia tree with stem canker

## 7. Lessons Learnt

- Farmer modification to technology through increasing tree spacing maximizes tree and land productivity.
- Farmers raising own Melia seedlings ensures sustainability as seedlings are readily available during planting season.
- Intercropping Melia trees with food crops and pasture grasses ensures food security, fodder availability, and increased income through sale of diverse products.

## 8. Conclusion

Growing of Melia on-farm is a viable enterprise and has potential to; improve farmers incomes, conserve environment, and enhance mitigation and adaptation to climate change. The good practice on Melia growing has been widely adopted within Makueni County since it has economic and environmental benefits.



## CADEP-SFM Good Practice No. 7

January 2021

# Growing *Melia volkensii* for Improved Livelihood and Environmental Conservation in Makueni County, Kenya

## A Guide for Farmers and Extension Agents



Melia trees for seed production



Melia woodlot on a farm in Makueni County

## 1. Introduction

Makueni County is generally semi-arid in nature. The average annual rainfall and temperatures are 600 mm and 23°C respectively. The soils are primarily sandy and acidic. The County is also characterized by a rapidly growing population, water scarcity, falling food production, and low resilience to climate change. These challenges have led to; food and nutritional insecurity, land degradation, as well as low incomes for many smallholder farm families.

Economic empowerment for farmers living in Makueni County lies in diversification and investment in low risk ventures such as growing of suitable high value trees. A suitable candidate tree is *Melia volkensii* (Melia, Mukau), a tree species native to drylands of Eastern Africa.

Melia is deciduous (sheds leaves in the dry season), drought tolerant, fast growing and produces high quality timber that is termite resistant. Other products from Melia include; poles, posts, fodder, bee forage, medicine and firewood.

## 2. Objectives of growing Melia on-farm

- Diversification of farmers income sources through sale of varied tree products
- Environmental conservation
- Mitigation and adaptation to climate change effects



### 3. Approach

Over the years, rainfall in Makueni County has been erratic leading to low crop production, hence the need for other investment alternatives such as tree growing. Melia growing was introduced on-farm after identification of the species as suitable for growing in dryland conditions, and training model farmers by KEFRI. One such farmer is Mr. Jonathan Kituku. The farmers were trained on Melia seed processing, seedling production, tree establishment and management.

To establish Melia, site preparation is carried out through; clearing of land, fencing, ploughing, harrowing and levelling. Planting holes measuring 45 cm deep x 45 cm wide x 45 cm long, spaced at least 4 m x 4 m are then dug before the onset of rains. Melia seedlings should be planted at the start of the rainy season.

Management of the tree is through; weeding twice per year for the first three years, and pruning which is carried out through removal of buds (de-budding). De-budding should begin three months after planting, and is carried out up to two thirds of the tree height until a desirable clear bole of about 5 - 6 m is attained.



Bud on Melia branch



Removing bud



De-budded Melia tree



Melia tree with clean straight bole

### 4. Impact

- Growing Melia on farms has improved farmers income through; sale of Melia seed, seedlings, timber and firewood. The farm gate price of one kilogram of processed Melia seed is about Ksh 5,000 (~US\$ 50) while that of a seedling is about Ksh 50 (~US\$ 0.5). To earn more money from mature trees farmers are advised to saw timber rather than sell whole trees.
- Growing of Melia has contributed to; soil and water conservation, improved soil fertility, enriched biodiversity, and improved resilience to climate change.
- The trees have also improved; microclimate on the farm, aesthetic value of land, and act as windbreak.



Fruiting Melia trees in a seed orchard



Unprocessed harvested Melia seeds



Processed Melia seeds



On-farm Melia tree nursery

### 5. Innovations and Success Factors

- Melia growing has been adopted by many farmers in Makueni County. Adoption has been enhanced through training of Melia growing farmers who in turn raise own seedlings in on-farm tree nurseries.
- In order to increase quality and volume of Melia timber, Mr. Kituku a model farmer in Makueni has continuously increased Melia spacing from initial 4 m x 4 m which was introduced by KEFRI, to 5 m x 5 m, 6m x 6 m, 7 m x 7 m, and plans to increase to 8 m x 8 m.
- The farmer intercrops Melia trees with food crops such as green-grams, and natural pasture grasses to diversify income sources and maximize land usage.