



Title: Cultivating African Sandalwood On-farm in Kitui County

Target Audience: The main beneficiaries of this practice are the farmers, learning and research institutions, adjacent communities and extension agents.

Introduction

African sandalwood (*Osyris lanceolata*) exploitation in Kenya started in the 1980s when the tree bark and roots started illegally harvested. These tree parts contain essential oil used in the pharmaceutical and cosmetic industries. At local level, the species is also used to smoke containers used for milk fermentation. African sandalwood is semi-parasitic and requires a host plant in order to survive. Recent research findings by KEFRI have revealed that *Acacia kirkii*, *Euphorbia sp.* and *Croton megalocarpus* are some of the best host plants for sandalwood. Sandalwood has a rotation age of about 60 years.

The species is over-exploited from the wild. One alternative that offers great potential for sandalwood conservation is domestication of the species. Mr. Ngovi Mutunga in Wikilyle, Kitui County is one of the farmers taking part in domesticating and protecting the sandalwood trees on-farm.

Objectives

Objectives of cultivating sandalwood on-farm are:

- To propagate sandalwood as a tree of high value.
- To domesticate and conserve sandalwood.

Approach

Over the years, rainfall has been declining leading to low crop production in agricultural landscapes of Kitui County, hence the need for other investment alternatives such tree planting. Sandalwood prefers rocky areas and grows in association with other host species for mutual benefits. The species adaptation characteristics makes it a potential species for domestication in the dry land Kitui County.

Although the species takes many years to attain maturity, propagation from seeds is now a viable option provided the appropriate host plant is integrated. However, sandalwood is still very difficult to propagate from seeds because out of every ten (10) seeds only two (2) are viable. Seed viability is tested by use of floatation method. Viable seeds usually sink in the water and non-viable ones float.

Cultivation of sandalwood is carried out by farmers in Kitui using seedlings. Appropriate land preparation measures, which include timely clearing, pitting, back-filling, post-planting protection and weeding should be ensured.

Impact

African sandalwood is a high value tree and farmers are likely to benefit from lucrative marketing of its products.

Farmers in Wikilye are increasingly adopting the cultivation of sandalwood due to its contribution in; soil and water conservation, improved soil fertility, enriched biodiversity and enhanced resilience to climate change.

Trees have also improved farm micro-climate, aesthetic value and act as windbreak.

There are enhanced opportunities for species propagation from seeds and domestication on-farm.

Innovations and Success Factors

Training of farmers by KEFRI on alternative ways of raising sandalwood seedlings from air-layering and cuttings.

The most effective method of raising a large quantity of seedlings is through seeds and air-layering.

Raising seedlings through cuttings is only feasible in specialized tree nurseries that have the capacity to control fungal attack which is prevalent on cuttings.

Constraints

Some of the constraints experienced include:

- Semi-parasitic nature of sandalwood, hence there is need to identify the right host plant.
- Slow growing.
- Poor seed germination ability.

Lessons Learnt

Some of the lessons learnt are that:

- Sandalwood is an indigenous parasitic tree species with many uses.
- Sandalwood cannot grow on its own it needs a host plant.
- The species is highly threatened by poaching.
- The species can tolerate semi-arid conditions.

- Further research is required on seed handling, alternative propagation methods other than seed, and species-host relationships.

Conclusion

Cultivation of the African sandalwood is a viable enterprise and has potential to; improve farmer's income, conserve environment and the threatened species from over-exploitation, as well as strengthen resilience to climate change.

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