



Title: Moringa Plantation Development in Machakos County, Kenya

Target Audience: Farmers, extension Agents and SMEs

Introduction

Over the years, Machakos County have been experiencing low rainfall leading to low crop production, hence the need for alternative investment such tree farming which require little water for growth. *Moringa oleifera* was selected as a species that can do well in dryland Machakos due to its ability to do well in hot weather and low rainfall. The species also has many nutritional and medicinal benefits derived from the various plant parts. The leaves are a good source of protein, vitamins A, B and C, and minerals such as calcium and iron; the pods, green peas and seeds can also be eaten, while and the flowers can be either eaten or used to make tea. Products such as moringa powder, tea, and massage oil from the leaves and seeds can be made from the plant. Moringa powder can be used as a food supplement to treat ailments such as diabetes, high blood pressure, skin disorders indigestion, anaemia and aides in faster healing of wounds.

Moringa oleifera plantation development in Mukaa, Machakos County started in 2015, when the farm site was leased to a Chinese national by a local owner. The main purpose of the plantation was to produce various products for export market as well as to empower the local communities through creation of employment at the farm and through recruiting farmers in out grower schemes.

Objectives

Objectives include;

- To increase income generation through export of various moringa products
- To empower the local communities through employment opportunities.
- Improve farmers income through an out grower scheme
- To enhance land productivity.

Approach

- To establish the moringa plantation, the entrepreneur initially undertook direct sowing, however the germination rate was poor. The entrepreneur then opted to start a nursery, where Moringa seedlings would be raised and later planted on the farm. A water reservoir was also constructed to provide water needed for raising the seedlings.
- To plant moringa seedlings land is ploughed, planting holes are dug, 1 kg of compost manure added per hole, and 2 seeds planted per hole (direct seeding).
- If establishing from seedling, square holes 1 m deep and 1 m wide spaced at 3m x 2m apart are dug.
 - Add compost manure mixed with soils from the hole, return mixture to the planting hole and water before planting
- Plant the seedlings and make water basins which are well mulched. Mulch should be put far from the moringa stem to keep termites away.
- Mechanically control termite by scraping away soil from the stem
- As the plant establishes and reaches a height of 1.5 m, the top is cut to allow for more top branching.
- Management of the plantation is done by weeding, pruning, occasional watering, and termite control, nipping flowers and leaves. Mulching to enhance soil water retention and prevent weeds emergency.
- The trees start to flower after eight months. Some of the flowers are harvested leaving 40% for seed production. Flowers have a higher monetary value compared to seeds. Harvesting flowers also avoids over seeding which could overburden the tree as the species is a prolific seeder.
- Pods are harvested when they are completely dry for maximum quality of the product. Pods are threshed and seeds prepared for export.
- The harvested flowers and seeds are exported to China.

Impact

- Moringa growing has led to improvement of livelihoods for the people in Mukaa area by providing job opportunities at the farm.
- Integrating the Moringa tree with *Aloe vera* and tobacco have also contributed to; soil and water conservation, improved soil fertility and plant cover, enriched bio-diversity, and improved resilience to climate change.
- Trees have also improved microclimate, aesthetic value and act as windbreak.

Innovations and Success Factors

- Integrating Moringa with *Aloe vera*, tobacco and beekeeping to enhance land productivity.
- When Moringa tree is about to 1.5 m, the top is cut off to encourage multiple branching while discouraging growth in height.
- The farm is centrally located for ease of accessibility and transportation of the produce.
- Out grower schemes encourages large amounts of products that can satisfy export market

Constraints

Some of the constraints experienced in Moringa farm include:

- Low rainfall
- Poor germination rate of about 25% only when direct sowing is undertaken
- Termite attack
- Fluctuation in Moringa productivity leads to job losses of farm workers.

Lessons Learnt

Some lessons learnt include:

- Collaborations between local administration and investor is important to boost acceptance of project within the community.
- Multiple branching for Moringa trees is encouraged to increase production.
- Mulching is necessary to prevent weed growth and to also encourage soil water retention.
- Integration of different crops on same land unit increases land productivity.
- Honey produced within the Moringa farm has high medicinal value.
- The farm is located near the road to ease accessibility and transportation of the produce.

Conclusion

Moringa growing and integration with *Aloe vera*, tobacco and beekeeping are viable enterprises and has potential to; improve community's income, conserve environment, and enhance mitigation and adaptation to climate change. The local communities have also benefited by being employed in the plantation and participating in the out grower scheme.

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