



Intergovernmental Authority on Development (IGAD)
Biodiversity Management Programme (BMP) in the Horn of Africa
Project Title: Tana-Kipini Laga Badana Bush Bushle Land and Seascapes



Farmer to Farmer tour

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Executive summary

BMP project target to support the training of at least 500 farmers on improved integrated soil and water resource management including rain water harvesting (RWH) techniques for sustainable availability of water to livestock, humans and crop as well as drainage. Specifically, the project targeted to support one farmer exchange within the project area. A group of 37 (30 farmers from Witu groups and 7 partners) went for an exchange visit to Mpeketoni in Lamu. Participants visited Agriculture Training Centre (ATC) at - Lake Kenyatta in Mpeketoni, Lamu interacted with three farmers and visited a youth group supported by the Lamu County Government. All participants from Soroko adapted crop husbandry along with integrated soil/water management practices learnt: nine farmers from Soroko and one from Tangeni are ready for a method demonstration on seed pretreatment as their plots are ready for seed propagation. Inputs supplied by BMP Project will be used to set the adoption plots.

Introduction and Background information

Rainwater harvesting techniques such as the on-farm household runoff storage systems (i.e. farm ponds) have proven to increase household resilience and can transform the livelihoods and income earning potential of poor families. Farmers that previously could only manage to grow basic rain-fed crops have been able to diversify and increase farm productivity for the growing horticultural markets. A farm pond helps ensure water availability either for bridging the intra-seasonal dry spells (supplemental irrigation) or off-season dry spells (full irrigation). The benefit for women who have a farm pond on their land is that they do not have to work for hours on end to fetch water from rivers and other water sources. Farm ponds also provide water for small-scale livestock production (poultry, zero-grazing dairy cows/goats, aquaculture, tree seedlings nurseries, brick-making, among other productive uses), hence increasing household food security, nutrition and health. Other benefits of the farm ponds are increased farm productivity, farm incomes, and farmers' co-existence with nature. Moreover, there is increased bio-diversity conservation and climate resilience as a result of farm pond technology (Ngigi, 2009). Other benefits have been the increased resilience to climate change.

Runoff ponds depend on availability of runoff arrested and stored during rainy periods. Low, erratic and in some cases no rainfall has resulted in no surface runoff during the last three seasons in Lamu County thus making developed ponds (support by BMP Project)remain dry throughout the period while some water have been collected from roofs into ponds. Farmers with shallow wells had water for both domestic and irrigation purposes even during the driest periods of the year.

It is with this in mind that farmers from Witu who are participating in the BMP agroforestry and rainwater harvesting demonstration sites were taken for a tour to Mpeketoni to see/learn technological options at Lake Kenyatta Farmer Training Centre and have a farmer to farmer interactive tour to farms in the locality.

To achieve this, ICRAF facilitated farmers to visit the following sites

Site I: Agriculture training Centre

The farmers visited the farmer training Centre in Mpeketoni. During the visit to the Centre, the farmers were trained on;

Multi storey kitchen garden

Multi-storey gardening is an innovative technology for year round vegetable gardening suitable for urban gardening. The technology is low input as it utilizes cheap readily available inputs such as sacks animal manure and uses low amount of water to maintain. This technology can also be adopted for dry, non-fertile soils and areas where labor and other resources are scarce. It can be used to grow green leafy vegetables, tomatoes, cabbages, carrots, tubers and indigenous vegetables.

Setting up Multi-Storey Gardens

Materials required for multi-storey gardening include empty cereal bag or animal feed bag, one empty oil can or perforated six inch Polyvinyl chloride (PVC) pipe with holes, two buckets small stones, six buckets soil, six buckets manure, seeds, adequate water to irrigate the garden and gardening tools.

The steps to set up the garden is;

1. Mix the soil and well decomposed manure thoroughly.
2. Cut out the bottom of the oil can and make holes on the sides.
3. Fold back the bag and fill the bottom 15cm with small stones.
4. Place the can on top of the small stones in the Centre of the bag.
5. Fill the oil can with small stones
6. Fill the area between the oil can and the bag with the soil-manure mixture up to the can level.
7. Pull up the can to the level of the soil compost mixture with a tilting motion



Training and demonstration on Multi-storey gardening. Photo by Wilfred Muriithi, ICRAF

Tissue culture bananas

Tissue culture is a method of producing plants from roots, leaves or stems under sterile conditions and in huge quantities. It is easily adoptive to existing planting materials that are indigenous and abundant and can be for distribution to farmers at household and commercial levels. The banana are early maturing (bananas can be harvested nine months from the time they are planted). The Bananas are also highly resistant to diseases and pests. Suckers can be used as planting material, but they should be harvested during the rainy season. The seedling should be planted in a hole not less than three feet for excellent results.



Mr Mbuvi the ATC Principal, training farmers on establishment and management of tissue culture bananas. Photo by Wilfred Muriithi ICRAF

Management of Citrus orchard

Orchard management starts from planting and goes through to harvest to get good fruit that meets the market demands. It includes orchard establishment, irrigation, nutrition, canopy management and orchard protection which entails pest, disease management and fencing off to prevent interference. In order to establish an orchard, the following should be considered;

Site

A site with good drainage, appropriate soil, water availability and likelihood of frost should be considered when choosing the orchard site. Depending on the varieties planted one could require isolation from other citrus in order to get low-seeded fruit.

Windbreaks for citrus fruits

Wind is one of the biggest factors that negatively affect the quality of citrus fruits. The only way to minimize wind damage is with well managed windbreaks.

Clean nursery stock

Pest and diseases are the main threat to fruit orchard. This can be prevented by using quality planting stock. The main pest include tree girdler which is prominent in Lamu county affecting the mango product, also fruit flies cause lots of losses to farmers.

Orchard monitoring

Establishing activities that collect information about your orchard can be critical for decision-making. Some examples of orchard monitoring are:

- pest, disease and disorders
- flowering and growth stages
- fruit size
- water use
- management practices
- actual yield

Fruit size management

Tree management that can be used to manipulate the crop and influence fruit size includes:

- flower suppression
- pruning
- chemical thinning
- hand thinning

Irrigation

Irrigation is one of the most important factors in producing a good yield of quality citrus. Without a proper irrigation scheduling, your orchard is susceptible to nutrient deficiency, physiological disorders, pests and diseases.

Nutrition

Nutrients can be applied in solution using fertigation equipment and spreading in a solid format under the trees.

Canopy management

Managing the canopy through hedging and pruning is important for managing light penetration, fruit size and quality and yield. The best time for pruning is just after harvest.



Farmers at a demonstration on pest management by trapping in fruits orchard. Photo by Wilfred Muriithi, ICRAF.

Site II: Mr. Ezekiel Mundia farm

At Mr. Mundia farm, the participants were trained on the following:

Solar drier

Mr. Ezekiel demonstrated to the participants how one can establish a solar drier using locally available material. The solar drier addresses the problem when something is in season, you have more than you can handle, and then there's nothing for the rest of the year. The solution is to preserve what is in abundant and drying with the sun is one of the easiest, most energy-efficient ways to do so. It also maintains a lot more of the original nutrients than canning or freezing. Drying is an excellent way to preserve produce, but exposing fruits and vegetables to direct light can cause vitamin loss. This design relies on indirect solar power, meaning the drying food is not exposed to the sun but instead to solar-heated air.

The food is laid out on trays, which sit behind a transparent polycarbonate sheet. As heated air rises through the food, cool air is drawn in through the bottom vent, and the heated, moisture-laden air flows out the exhaust at the top.



Solar drier in Mr. Ezekiel farm (Photo by Wilfred Muriithi ICRAF).

To construct a solar drier, one needs to have; wood Screws (big and small), nails, staples, metal screen, hinges, clear plastic/glass, corrugated plastic panel, wood, black paint. For making the stand you need: wooden post, corks from bottles, link chain and bolts.

Raised fish ponds

There are new developments within the country where you do not need to dig a fish pond. You just need about eight cubic meters to rear about 1000 catfish or about 300-400 tilapia. You will need to build a wooden framework and then add a polythene liner to reduce seepage. . The liner used on the pond has a life-span of about 30 years with another local company offering six year warranty on the liner. Fingerlings will come at Kshs. 10 each though you can still get them at Kshs. 5-6 each. At maximum, 1000 fingerlings will cost KShs.10,000. The liner for this kind of pond will be two meters width by four meters length by one meter height will be about 25 square meters maximum. A one meter squared will cost about KShs.150-200. Fish feeds include *Omena* (fresh water sardines), soya beans, sunflower, rice and maize bran. Fish are fed in the morning and evening.

Factors to consider when building a fish pond.

Area. Different fish requires different weather conditions. For example, Trout is best reared in cold places. Tilapias and catfish do well in warm places.

Water availability. Fish are aquatic animals and therefore require water for survival. The quality of the pond water will determine the health of your fish. Always ensure that the pond water is clean and that there is good flow of air into the water. A good water inlet and outlet will enhance good circulation of oxygen in the water.

Size. The size of the fish pond determines the number of mature fish that the pond can hold. Never overpopulate a pond as fish will compete for space and food.

Type of fish you are going to put in the pond. This will help one make a stable decision of the size of the pond/dam and the number to put in each pond.

Location. The most ideal place is where there is enough shade and where run-off water cannot flow as it could bring harmful organisms that could contaminate the pond. The fish pond should never be constructed under a shade.

Soil. The soil should be of good quality with little or no gravel or rocks. The best soil is clay soil or at least the soil should have some clay layers below the surface at least to prevent downward seepage.



Raised fish pond in Mr. Ezekiel farm.

Site iii: Mr. Joseph Muriuki farm



Agroforestry practice and enterprise combination, photo by Wilfred Muriithi, ICRAF



Horticulture crops on farm which include; dhanias, kales, amaranthus, tomatoes and bananas



Zero grazing unit, Napier grass and maize Stover produced in the farm is chopped, mixed and fed to animals

Site IV: Jubilee youth group farm

The Jubilee youth group consists of 20 young people supported by the Lamu County Government in practicing mixed. They depend on groundwater from a neighbouring farm as the water on their farms is saline. They own five acres of land which is split into quarters. Each quarter is managed by an assigned member. The reason behind assigning different persons to manage different quarters is to encourage full participation by members to ensure project success. The proceeds from the produce sold is shared equally.



Mr. Munene, the Ward Agricultural officer, give participants a) tour the farm. Photo by Wilfred Muriithi ICRAF

Site V: Mzee nyuki- Jeremias

Mzee Jeremiah Nyuki who does bee keeping in Witu after struggling with farming with no success for 20 years due to interference with wild animals, informed the survey team that he resorted to alternative sources of livelihood other than farming. 'You spend all day on the farm and the baboons harvest everything', he lamented. After many years of unpredictable harvests from his farm, he took up beekeeping for honey production. He now supports his family of six without worry and spending time at night guarding his farm.



Mzee nyuki demonstrate the product from bee keeping which has sustained his family of six.
Photo by Wilfred Muriithi ICRAF

Site VI: Jennifer Kabora farm

In the transition from subsistence to commercial agriculture, smallholders need to get better organized to match market demand in terms of product volume and quality. Mrs. Kabora informed the participants that in her quarter acre plot, she can generate up to Kshs. 40,000 from faming.



Visit to Jennifer farm where within a small plot one can produce surplus for the market. In the background(left photo), Jennifer, with Mr. Mbuvi standing next to her is seen advising farmers to be market focused while left photo shows her arrow roots production technology. Photo by Wilfred Muriithi ICRAF

Conclusion

Through the exchange visit, the farmer gained addition skills on agroforestry and biodiversity conservation which they intended to practice on their farms.

List of participants

29/9/2016 Mpeketoni town

LI	NAME	ID	TEL.	AMT.	SIGN.
	1. EZEKIEL OINO ✓		0723295882	900	
	2 MAZOU MWAMBIINGU	2953977	0737981839	1000	
	3 FREDRICK NYARE ✓		073526487	1100	
27	4 IMANYARA M'NILANATA ✓		0729246235	1000	
23	5 MAIMUNA GOLAH ✓		0711237498	1000	
20	6 SHOKOLE OLO ✓		0723850897	1000	
43	7 SALIMA SAID ✓		0710698275	1000	
	8 EMILLY MULOLO ✓		0719564906	1000	
	9 JANE NYABONYI ✓		0703515636	1000	
	10 BERNARD KITHERA ✓		0700590874	1000	
	11 JOSEPH MAKORI ✓		0710530320	1000	
	12 OLPHA KEMUNTO ✓		072848786	1000	
	13 DANIEL MAKANGA ✓		0727910804	1000	
34	14 ARNES RIZIKI ✓		0723042313	1000	
7	15 BEATRICE KADZO ✓		0729252117	1000	
41	16 JOHN OGIRI ✓		071307673	1000	
	17 SYLVESTER JEFNA KALL ✓		0721706667	900	
	18 ANDERSON NZARO ✓		0723903385	1000	
	19 DAMA KADENCE CHAO ✓		0786654571	900	
	20 ELIZABETH KANJALA ✓		0717431578	900	
	21 PAULINA MATATA ✓		0725051596	900	
	22 JOYCE MUTHONI ✓		0716102746	900	
	23 ANN NGENDO ✓		0738591652	900	
	24 JENIMA MATAI ✓		0726505901	900	
	25 HASSAN KIRINGO ✓		0791369812	900	
	26 ESTHER WATIRU ✓		0703647482	900	
	27 JENIFER KABIRAI ✓		0721625304	1500	
	28 HASSAN YUSUF HASSAN ✓		0714448533	1500	
	29 MOHAMED ALI BADDI ✓		0704802909	1500	
	30 BETH MWARINAA ✓		0727782601	1500	
	31 KADENCE MWATETE ✓		0726726250	1500	
	32 CALEB OGWERI ✓		070258371	1000	
	33 SILAS DREMP ✓		0720765320	1000	

