Examples of such wood lots commonly planted are; Sesbania Markamia Species.

Wind breaks: A wind break is one or more rows of trees or shrubs planted in a manner to provide shelter from the wind

Trees along rivers and lakes
This enhances and protects environments and other resources.

Trees around homes
These are trees grown in the homestead or near homestead .For example, Fruit trees, Ornamentals and shade trees.

Shamba system
This is the practice in which crops are grown between tree seedlings during the first few years after planting.

Improved fallow
This is the use of fast growing tree species to obtain the benefits of natural fallow .For example, Leguminous shrubs such as Sesbania, Tephrosia and crotolaria that Nitrogen fix Nitrogen are planted with aim of improving the soil nutrient.

Trees in the rangeland
Trees scattered in the range land Provide shade for livestock, fodder and wood.

Apiculture
Bee keeping is an Agroforestry practice that enhances the environment and contributes to crop production.

WAYS OF IMPROVING DECLINING SOIL FERTILITY/ LAND DEGRADATION

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Introduction

The declining food production in Africa is associated with declining soil fertility. The soil nutrients are gradually depleted by crop harvest, leaching and soil erosion.

Why SLM

Sustainable land management (SLM) is the antidote, helping to increase average productivity, reducing seasonal fluctuations in yields, and underpinning diversified production and improved incomes.

Sustainable Land management in Practice

Sustainable land management is simply about people looking after the land – for the present and for the future. The main objective of SLM is thus to integrate people's coexistence with nature over the long-term.

MULCHING

Mulching is process of covering the soil surface with organic matter that returns nutrients in soil .The soil is covered with crop residues such as maize stalks, bean stalks and tree litter/leaves.

MANURE MANAGEMENT

It involves the handling of animal dung and urine (Farm yard manure).This helps to build soil fertility.

Green manuring

Planting of fast growing species of legume crops such as beans and later they are ploughed before flowering. This plants release Nitrogen into the soil.

TILLAGE AND RESIDUE MANAGEMENT

Minimum tillage: Cultivation operations where by soil surface is disturbed a little as possible to produce a crop. Mulch from previous crop is left on ground to retard weed growth, conserve moisture and control erosion

No till/Zero tillage

Form of minimum tillage where is soil is only sufficiently deep and wide to deposit and cover seed.

Trash lines

These are made from crop residues, Grass and other materials collected from field. They are constructed along the contours lines to slow down the surface run off and improve water infiltration.

Agronomic practices

Cover crop

Cover crops are planted to conserve the soil on bare or fallowed land

Cover crops help to protect soil from excessive heat, wind erosion and moisture loss.

Green manure

The term used for fast growing legumes like Cow peas amd Mucuna, when they flower they are ploughed down into the soil to enrich it.

Intercropping

This is the planting of two or more crops in same field at the same time. For example, Maize and Beans.

Crop rotation

Planting different many crops in the same field over time. For example, High feeder cereal with beans (A nitrogen fixing legume). The practice maintains the fertility of the soil.

Soil and Water management

This is the prevention and reduction of the amount of soil lost through erosion

Fanya juu: This is made by digging trenches and throwing the soil up slope to form a ridge. To stabilize the soil, plant risers with grass such as Napier.

Terraces: The terrace walls are earth structures and beds are leveled in order to encourage rain water infiltration.

Drainage channels

These remove excessive water from the land, this help facilitate good aeration of the soil.

Agro- forestry practices

Agro-forestry is land use system where wood perennials are integrated with crops and animals on the same land.

Wood lots: An area on the farm set aside for production of wood or flowers for nectar

GENERAL INFORMATION AND AGRONOMIC ASPECTS

Coffee is vital to the economy of East and Central Africa, providing a major source of foreign exchange earnings, provides employment through cultivation, processing, marketing, transportation, and exportation of the crop. It constitutes a cash crop of fundamental importance to the livelihoods of millions of resource poor farmers across the continent, many relying on coffee as their only source of income. The main varieties of coffee are Robusta and Arabica. The ideal temperature range for Arabica is 18 and 24^0C. Arabica coffee is grown from altitude 1400m to 2,000m with rain fall of not less than 1000mm /year.

Robusta coffee is well adopted to warm and humid equatorial climate with temperature range of 22-26^0C and well distributed annual rain fall of 2000mm.

Coffee wilt disease (CWD), attributed to Gibberella xylarioides (Fusarium xylarioides), caused losses to coffee production in Uganda and Africa at large.

CWD devastated Robusta coffee production in parts of Western, eastern and central Uganda. Unlike many other diseases of coffee, CWD rapidly kills an infected mature tree, often within as little as 6 months following appearance of the first external symptoms, and thus ultimately result in total yield loss.
Berries of affected trees turn red and appear to ripen prematurely. Dark brown-black necrosis of younger branches may be pronounced and laterally restricted, while a similar necrosis may also be apparent along leaf veins.

Management of CWD
In the face of this threat, BugiZARDI sourced six entries CWD resistant materials (NARO-ROBUSTA COFFEE1, 2, 3, 4, 5, 6, 7, 8, 9 and10 from NaCORRI and established a mother garden at Ikulwe station in Mayuge district in October 2014.

However, Farmers can also use the old Robusta clonal materials; $1^s/2$, $1^s/3$, 1s/6, 223/32, 257/53 and 258/24.

Establishment of mother garden
Clonal and tissue culture materials were established in the field at spacing of 1m x1m .After 6months coffee is bend and pegged down in horizontal position to encourage growth of vertical shoots (orthotropic shoots).

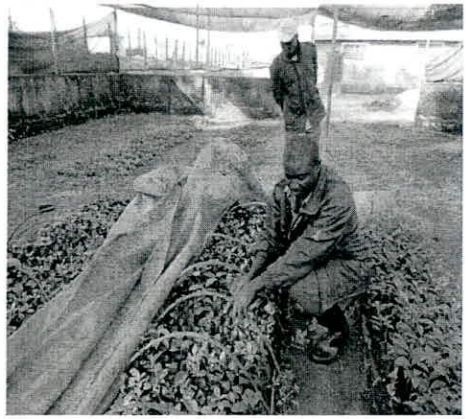
Harvesting of suckers
Suckers are harvested from mother trees when they are 6 months old and bearing 6 internodes.
Harvesting is done early in the morning.

Cloning/Making of cuttings
Single node semi-hard cuttings of 7-9cm long are made by making cut at an angle while retaining the pair of leaves.

The cut end is dipped in rooting hormones seradix 2 (used for semi hard wood) before planting in well watered root media.

Construction of propagators
The propagator with width of 2.5ft is constructed in 60cm foundation with wall 50cm raised above the ground.

Fill the first 15cm with gravel and covered with layer of sand to control drainage. Finally, rooting media is placed on top of sand. The rooting media can be, **saw dust, sand and sub- soil.**



The propagators are covered with clear polythene sheet, gauge 1000 suspended 1m above rooting media on steel or wooden frames.
Erect shade 9ft (2.75ft) from the ground. The recommended shade net is of 75% shade.

Planting
Cuttings are planted in propagators about 2-4cm depth and at spacing 4cm x4cm. Callus (healing of the cut edge of the cutting in rooting media) begins at 3 weeks after planting.
Root developments takes places within 8-10 weeks.

Potting
Rooted cuttings are transferred at 12-14weeks into black poly pots measuring 5x9 inches with 200 gauges.

Potting mixtures
Top soil, river sand and well rotted manure at ratio of 3:2:1 is filled in poly-pots.
The potted cuttings are returned into propagators for period of 1-2 months to develop leaves and lateral roots.

Coffee nursery management
- Water cuttings regularly.
- Put shade of 4ft (120cm) above the poly bed.
- Harden cuttings gradually reducing the shade when cuttings are 8-9 month before transplanting.
- Control weeds by hand weeding
- Control diseases (damping Brown leaf spot and leaf using Copper based fungicides

PROPAGATION OF ROBUST CLONAL MATERIALS

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