

Theme 1: Forage production and pasture management

SOIL FERTILITY MANAGEMENT

Level 1 – Part II

Topic	Training & information Content
1.1	Planning of fodder/feed requirements for the dry season
1.2.1	Integrated soil fertility management I
1.2.2	Integrated soil fertility management II
1.3	Use of natural resources, compost making, farmyard manure, manure storage and use
1.4	Growing maize and sorghum for fodder and estimating time of harvest and yield
1.5	Brachiaria, Panicum, & Napier (cut and carry) grass management
1.6	Growing fodder trees and use of feed
1.7	Estimating of dry matter content, feeding value and yield of various fodder crops
1.8	Guidelines for Tropical pasture management and grazing management
1.9	Scaled mechanization of forage production and pasture management (harvesting practices)
1.10	Operating farm equipment and self-propelled tractors
1.11	Mechanization of feeding management
1.12	Economics of forage and pasture production



Soil Fertility Management (Level 1 – Part II)

Learning Activities - You will learn about:

- Soil fertility management:
 - Agronomic practices for good Soil fertility management
 - Fertilizer application to plants/crops

Soil Fertility Management (Level 1 – Part II)

Soil Fertility Management

- Soil fertility management is about what you do to have a rich, stable and living soil



Soil Fertility Management (Level 1 – Part II)

Causes of poor soil fertility (dying soils):

- Overgrazing
- Erosion
- Frequent watering causing salinity
- Deforestation
- Monocropping
- Burning of crop residues



*Healthy/Living
soil*



*Poor/dead
soil*



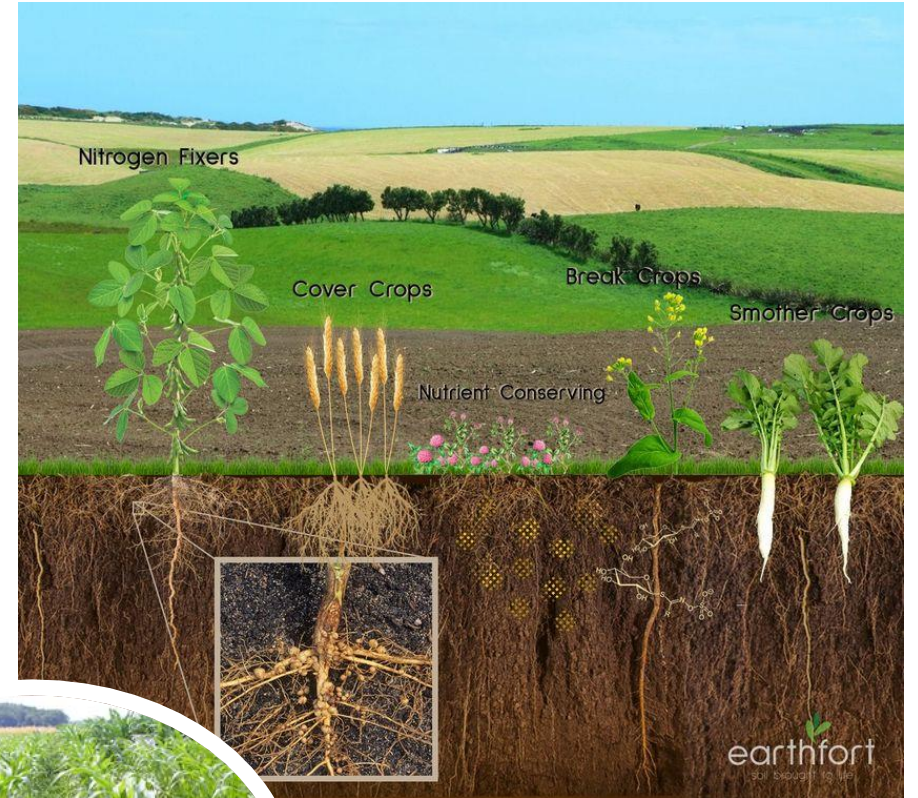
Soil Fertility Management (Level 1 – Part II)

Good Agronomic methods for Improving and efficiently managing soil fertility

1. Planting cover crops



Note: Always keep the soil covered as much as possible

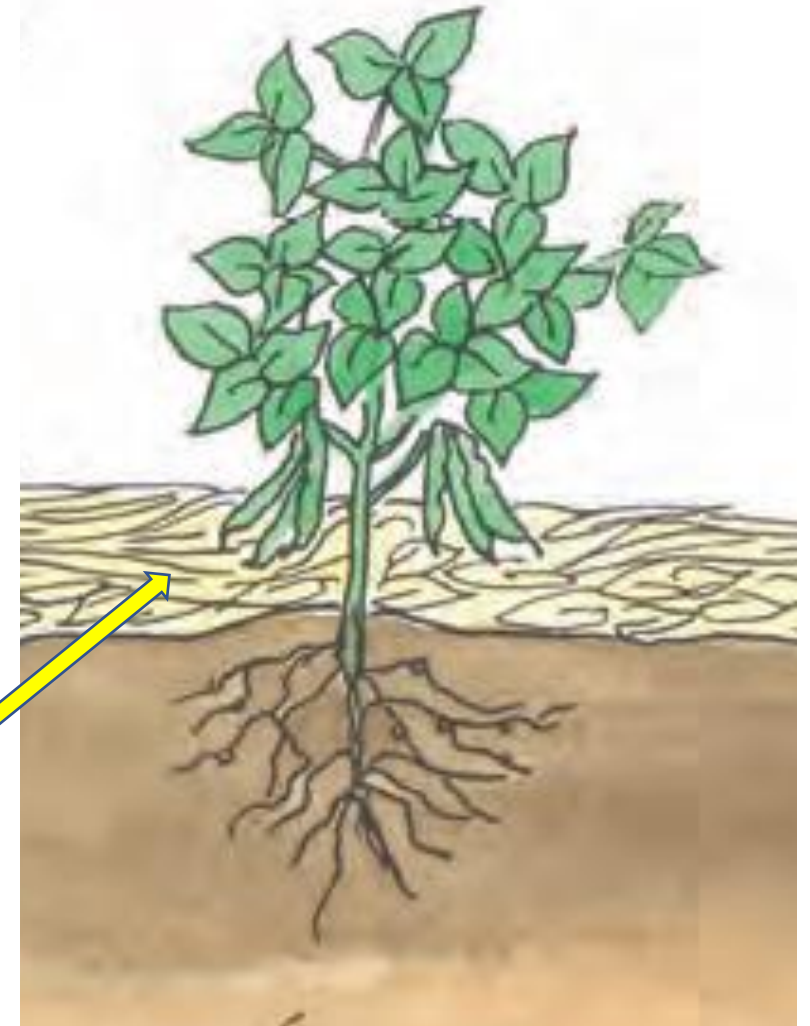


Cover crops

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2. Mulching

- Involves use of plant materials such as pruned material from trees, cuttings from hedges, weeds, crop residues to cover the soil



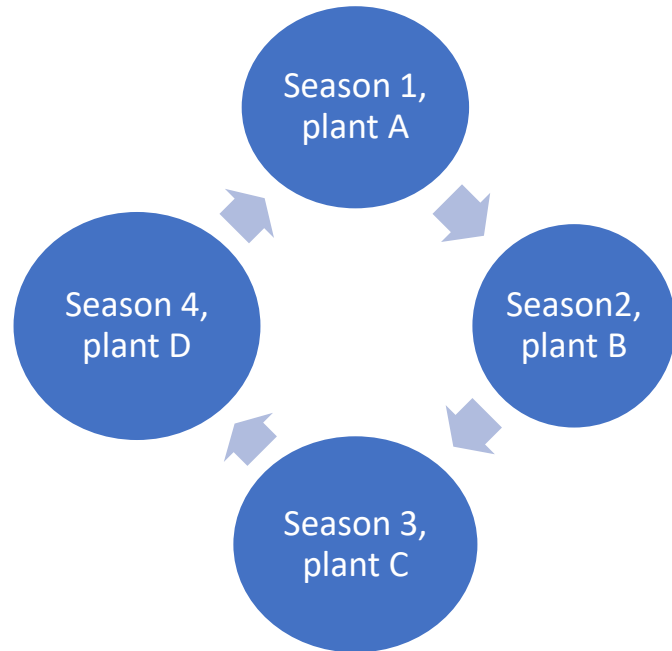
Mulch

Source: https://concept-stories.s3.ap-south-1.amazonaws.com/test/Stories%20-%20Images_story_118606/image_2020-08-11%2007%3A42%3A12.233988%2B00%3A00

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3. Crop rotation

- Involves planting of different crops on the same piece of land in a sequence.



Note: Crop rotation keeps the soil fertile and rich of nutrients

4. Avoid excessive tillage

- This helps conserve soils as well as water in the soils



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5. *Planting crop as green manure*

- For example: A leguminous crop ploughed into the soil to provide nutrients to the soil



6. *Leave the Land fallow*

- Involves leaving soil to rest without cultivating any crop for long period



Soil Fertility Management (Level 1 – Part II)

7. Application of Fertilizers

- Fertilizers can be used on land to supply nutrients to the soil.



Soil Fertility Management (Level 1 – Part II)

Sources of Plant/soil Nutrients: Fertilizers can be:

i. Organic fertilizers

- Are from natural sources
 - Examples: Green manure, farm animal droppings, compost, treated human excrete



ii. Inorganic fertilizers

- These are nutrients synthesized artificially in the factory using chemical substances.



Soil Fertility Management (Level 1 – Part II)

Nutrients in fertilizers/manures

- Examples of fertilizers:
 - DAP is Di-Ammonium Phosphate 18% N and 48% P
 - CAN is Calcium Ammonium Nitrate 26% or 27% N
 - SSP is Single Super Phosphate 7-9% P and 18-21% Ca and 11-12% S
 - Lime is Calcium Carbonate CaCO_3
 - Rock phosphate 30% P and 38% CaO



- Cow manure contains 12.7% Dry matter (as % of Dry matter) 3.9% N and 0.7% P and 2.6% K

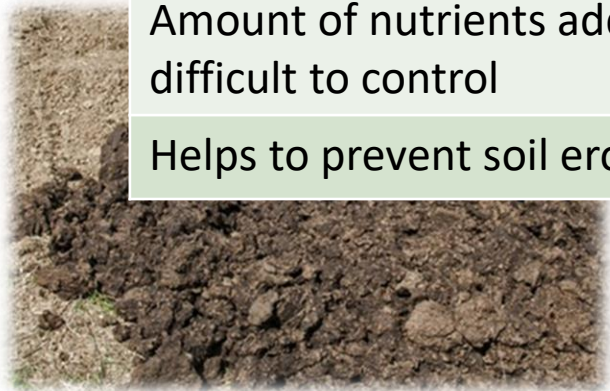
N=Nitrogen; P=Phosphorus; K=Potassium; Ca=Calcium; S=Sulphur

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Some differences between organic and inorganic fertilizers



Organic fertilizers	Inorganic fertilizers
Cheap	Expensive
Improves soil structure and texture	Does not improve soil, only provides plant nutrients
Absorbs and holds water	Does not absorb or hold water
Amount of nutrients added to the soil difficult to control	Amount of nutrients added to the soil easy to control
Helps to prevent soil erosion	Does not help against soil erosion



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Methods of applying fertilizers

- Broadcasting: applying fertilizers uniformly over a piece of land by hand or machine
- Drilling: applying fertilizers into holes close to seeds
- Ringing: fertilizers are placed in a circular way around a plant so that it is equidistant from the plant
- Spraying: applying fertilizers in which liquid fertilizers are dispersed on the leaves of crops using a sprayer fertilizer



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- Side dressing

Applying manure/fertilizer after planting



Note: One bag (50 kg) DAP is enough for 1 acre

Fertilizer applied into a furrow along the growing grass/crop

- Tumbukiza

- Plant high value food crops within the bottom a heavy dose of farm yard manure.



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Fertilisation

- Use a phosphorus dominated fertilizer such as DAP during planting
- Subsequent applications use nitrogenous fertilizer e.g. calcium ammonium nitrate (CAN)



Fertilizer applied
on a wet soil



Soil Fertility Management (Level 1 – Part II)

Watch this video

<https://www.youtube.com/watch?v=MmJUj4Aa2kM>



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