Theme 1: Forage production and pasture management

GROWING FODDER TREES AND USE AS FEED (Level 1)

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 harvesting (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

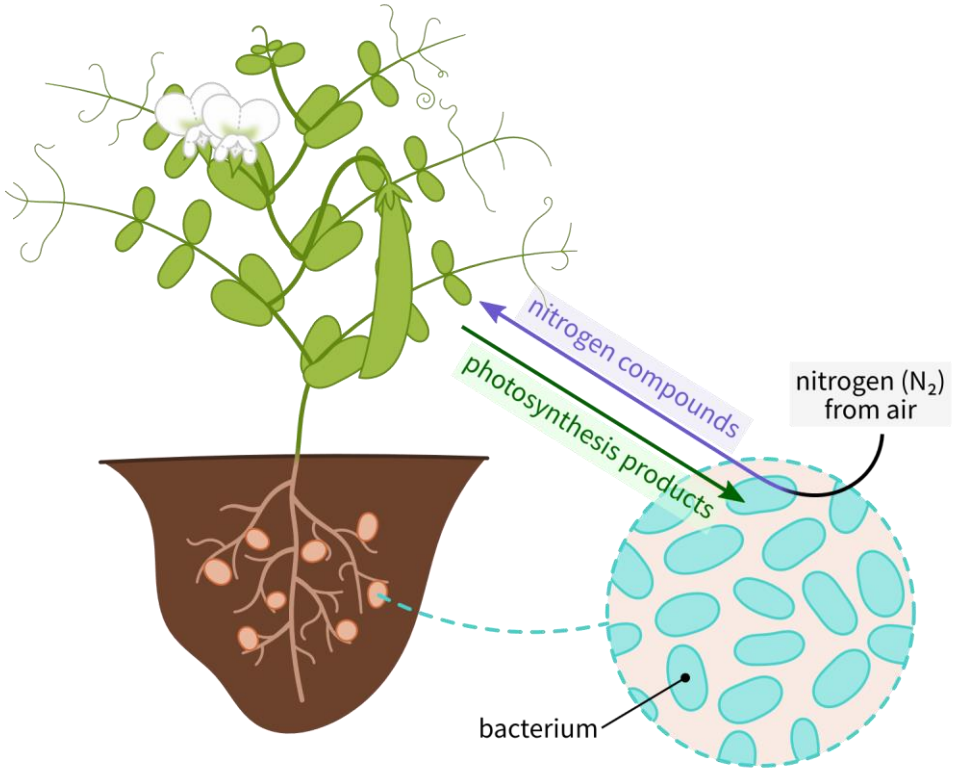
1. You will learn about (learning objectives):

- ❑ Importance of fodder trees in farming systems
- ❑ Significance of fodder trees as a supplementary feed to the diet

Desmanthus pernambucanus

2. Benefits of (agro)fodder trees

- High quality supplement to animal diets especially in dry seasons
- Source of food to cattle and households e.g. pigeon peas
- Controlling soil erosion
- Improve fertility
- Income from sale of seedlings
- Wind breakers and shelter belts around farms
- Used as a fence for homesteads
- Provide construction materials and firewood
- Encourages farmers to adopt to climate smart farming practices.



3. Characteristics of fodder trees

- Are deep rooted hence tolerate drought
- Provide feed over short periods upto five times a year under proper management
- Good feed to livestock
- Require minimal management
- Have good growth (survival) rate
- Have long production life
- Little to no competition with food crops
- Have the ability to produce seeds and some are viable for vegetative propagation.

Tree Lucerne (*Chamaecytisus proliferus*)

4. Examples of fodder shrubs and trees

- Calliandra (*Calliandra calothyrsus*)
- Leucaena (*Leucaena leucocephala)*
- Sesbania (*Sesbania sesban)*
- Gliricidia (*Gliricidia sepium)*
- Pigeon pea (*Cajanus cajan)*
- Moringa (*Moringa aleifera*)
- Mulberry tree *(Morus alba)*
- Tree Lucerne (*Chamaecytisus proliferus*)

Calliandra
(*Calliandra calothyrsus*)

Mulberry tree
(Morus alba)

Gliricidia
(*Gliricidia sepium)*

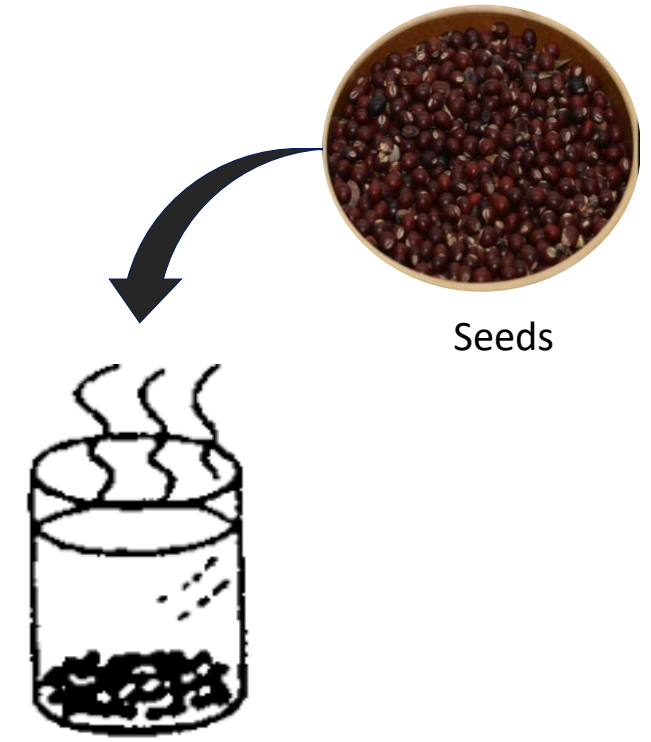
5. Growing fodder trees

Steps in sowing fodder trees (legume trees)

- Land preparation
- Seed treatment
- Rhizobium inoculation (for legume tree species)
- Establishing fodder trees
    - Sowing seeds in nursery
    - Vegetative propagation
    - Direct field planting

6. Seed treatment

i. Cold water treatment
ii. Mechanical scarification/Nicking
iii. Chemical seed coat degradation
iv. Hot water treatment



7. Rhizobium inoculation

- Inoculation increases legume nodulation for the process of nitrogen fixation
- The process involves treatment of rhizobium inoculum on seed before sowing or after seed treatment

8. Establishing fodder trees

- This can be done through the following:

i. Sowing fodder tree seeds in a nursery

ii. Vegetative propagation

iii. Direct field planting

9. Fodder trees as animal diet supplements

- Fodder tree leaves can be used as supplements in diets of dairy cows.
- They are used to mostly supplement dairy meal or other protein rich forages.
- This can be done by considering;
    - the weight of the animal
    - the recommended amount of a particular fodder tree a dairy cow can consume per day

Leucaena

10. Management of fodder trees

- Good soil fertility e.g. through fertilization
- Timing of pruning (harvesting) affects quantity of fodder produced
- Do not cut trees at a height that is too low close to the ground
- Extreme climatic conditions affects fodder growth.

11. Calliandra (*Calliandra calothyrsus*)

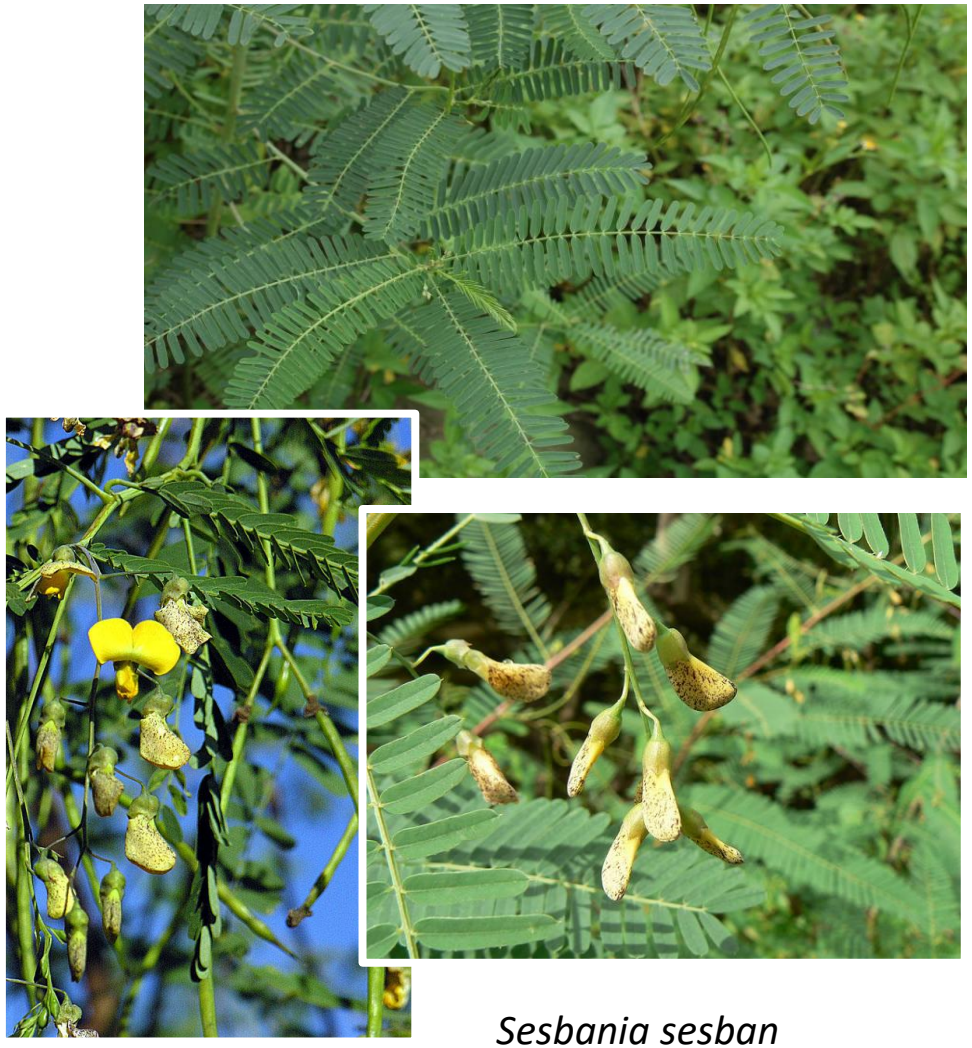
- Calliandra is common Uganda including in agroforestry systems
- Can be established from seeds or stem cuttings
- Seeds are planted in nurseries and later transplanted For easier germination, scarification is required
- First cut can be done after 8-12 months after planting, at 1m above the ground.
- Harvest between 2-4 months

12. Leucaena (*Leucaena leucocephala)*

- Leucaena provides fuel wood, green manure, improves degraded lands and can be used as a cover crop
- It is resistant to drought and a good feed source for cattle
- Does best in well drained soils, does not like soils that retain too much water.
- Seeds may need to be treated; sowing rate per hectare is 1-2kgs.
- First grazing can be done when plant height is 1.5 m.
- Harvesting after re-growth done at a height of 50-60cm.

13. Sesbania (*Sesbania sesban, S. grandiflora*)

- Dry matter digestibility of Sesbania species is greater than that of other tree legumes
- The plant grows in wide variety of soils
- Sesbania only withstands waterlogging in the late stages of seed growth
- It can be intercropped
- Harvested (cut and carry) when at 1-2 m high.
- Sesbania can undergo 3-5 cuts a year.



Sesbania sesban

14. Gliricidia *(Gliricidia sepium)*

- Gliricidia has high nutritive value and composition with crude protein (20- 25%)
- It is not greatly affected by pests attacks
- Tolerant to waterlogging and wide range of poorly fertile soils
- It exhibits fast growth and has deep rooting system
- Exhibits fast growth and has deep rooting system making them a good windbreaker.
- Harvesting can be after 7 months, at a height of 1-2 m

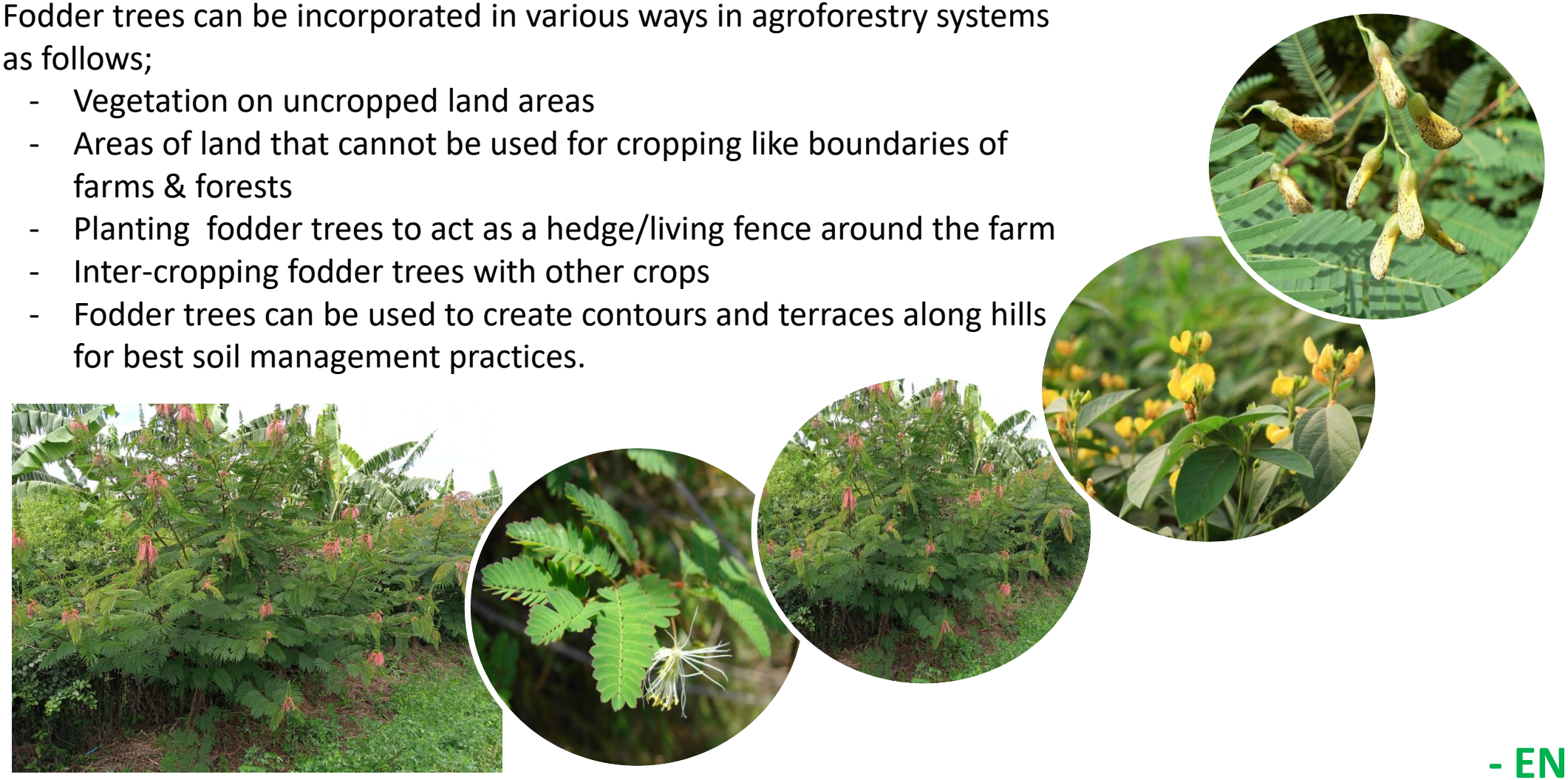
Gliricidia sepium

15. Pigeon pea (*Cajanus cajan)*

- Pigeon pea is a multipurpose legume crop; pods are food for human consumption and leaves are feed to livestock.
- Is a perennial crop that can be re-planted after 2-3 years
- Suited to wide range of soils
- Sow seeds directly to a depth of 2-4cm, at the rate of 20-25kgs/ha
- Fresh pigeon pea leaves and hay have dry matter content of 50-60%
- Yield is from 20-40 tonnes dry matter per hectare per year.

16. Fodder trees in farming systems

- Fodder trees can be incorporated in various ways in agroforestry systems as follows;
  - Vegetation on uncropped land areas
  - Areas of land that cannot be used for cropping like boundaries of farms & forests
  - Planting fodder trees to act as a hedge/living fence around the farm
  - Inter-cropping fodder trees with other crops
  - Fodder trees can be used to create contours and terraces along hills for best soil management practices.



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