

## Theme 1: Forage production and pasture management

# GROWING MAIZE FOR FODDER

## Level 2

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



# Growing Maize for Fodder (Level 2)

## Learning Activities – You will learn about:

- ❑ How to grow maize as fodder - for making Silage
  - Land preparation for growing maize for fodder
  - Seedbed and Seed selection
  - Planting
  - Fertilizer application (Farm Yard manure & Inorganic fertilizers)
  - Soil Improvements
  - Weeding (Manual & Chemical)
  - Top dressing
  - Pests and Diseases in a maize field
  - Harvesting

# Growing Maize for Fodder (Level 2)

## Background

- Forage maize for animals is becoming very popular in dairy farms in Uganda
- It is therefore important to know the key guidelines to growing maize for fodder (and for making silage).



# Growing Maize for Fodder (Level 2)

## Land Preparation

- Good land preparation increases the yield and reduces cost of production of maize for fodder as well as helping retain moisture in the soil
- Mechanical land preparation is a fast, effective and efficient method but take care not to damage the soil structure or reduce soil fertility



# Growing Maize for Fodder (Level 2)

## Land/Soil tillage

- Prepare the land well using machinery or by hand
- Mix crop residues with soil to avoid fungal infections
- If available, mix manure/compost with the soil
- Remove weeds before they flower to prevent them (weeds) from spreading new seeds
- Practice minimum tillage
- Keep the seedbed not deeper than the planting depth of maize (2-4 cm)



**Tip:** 2.5kgs – Good and fertile seedbed can be obtained by correct tillage



# Growing Maize for Fodder (Level 2)

## Seed Selection

- Use certified hybrid seeds from a reliable and verified seed company. They are treated against diseases, have good germination rates and are high yielding.
- Seeds reused/farm retained maize seeds are more sensitive to diseases and pests and have a low yield per acre



# Growing Maize for Fodder (Level 2)



- Buy a good hybrid variety with good forage potential, low fibre content and high in starch
- Select a variety with good cob to stem ratio
- Stem should be low in fibre, should not be too long or too thick.



# Growing Maize for Fodder (Level 2)

## Planting

- Maize seeds should be planted on or just before the onset of long rains
- Distance in the row 18-20 cm. Then make furrows or holes in rows, 75 cm apart. Target target is to have 70,000 plants per ha (equals 7 plants per square meter)
- Planting depth should be is between 2-4 cm deep. For dry planting (when the soil is dry) the depth is 6cm
- Apply phosphatic fertilizer such as DAP or SSP or NPK during planting to stimulate uniform germination and growth in the early stage



Maize seed

Distance in the row  
(between seeds)

Maize seed



# Growing Maize for Fodder (Level 2)

## Fertilizer/Manure Application

### Total amount of fertilizer to apply

- Nitrogen (N), Phosphorus (P) and Potassium (K) are contained in manure, compost and/or inorganic fertilizers
- Use fertilizers/manures to ensure there are enough nutrients available in the soil to grow a healthy crop
- Fertilize the soil before planting and after harvesting.



# Growing Maize for Fodder (Level 2)

## i. Farmyard Manure (FYM)

- Farmyard manure is fertilizer from farm animals. Cow manure contains 4% N, 0.7-1.5% P and 2.6-5.8% K in dry matter. N and P are essential for good germination of the maize plant
- Apply decomposed FYM directly before or after planting maize (into furrows)



- Make furrows no deeper than 10 cm next to the row of maize seeds.
- Pour farmyard manure in the furrows.
- Cover the furrow with soil immediately to avoid Nitrogen losses through the air

*Furrow for FYM*

# Growing Maize for Fodder (Level 2)

## ii. Inorganic fertilizer

- Its advisable have soil analyzed first to make the right choice of fertilizer
- During planting, use DAP or NPK (23:23:0)
- Do not apply fertilizer directly on the maize seed. Make a separate furrow
- During top-dressing Use CAN (26:0:0) or Urea (46:0:0)
- Rate of application 50-75 kg per acre.



# Growing Maize for Fodder (Level 2)

## Soil improvement – from Soil analysis

- Depending on the soil analysis report the pH (acidity) of the soil may need to be corrected. This can be done through liming which increases the pH of the soil
- Liming increases nutrient availability for optimum plant growth.



# Growing Maize for Fodder (Level 2)

## Weeding

- Weeding is important to control and avoid weeds competing with maize plants for nutrients

### i. Manual weeding

- Can be done when maize is 5cm high
- First weeding is done between 20-30 days after planting
- Second weeding is done when the fourth leaf appears and/or the plant height is 12.5-15 cm
- Last weeding is done when the maize plants reach a height of 50-75 cm.



# Growing Maize for Fodder (Level 2)



## ii. Chemical weeding – use of herbicides

- Herbicides can be used pre /before the maize germinates (we call this pre-emergence) instead of manual weeding
- Herbicides used post /after the maize has germinated are referred to as suitable to use for post emergence application

# Growing Maize for Fodder (Level 2)

## Fertilizer: Top Dressing (after weeding)

- Top dress using CAN (calcium ammonium nitrate) or Urea
- Apply small amounts close to each plant. Rate of application is 50 kg/acre (equals to  $50 * 27\% = 13.5$  kg pure N)
- Application is done when maize plants are at knee height (45-60cm) and soil is moist enough to dissolve the fertilizer - preferably after some rain
- Top dressing stimulates tussling of maize plants and formation of cobs.



# Growing Maize for Fodder (Level 2)

## Pests in maize field

- Common pests in a maize field include:



Cut worm



Stem and stalk borer



Fall Army Worm

Control: Always monitor your field and apply pesticides





# Growing Maize for Fodder (Level 2)

## Diseases in a maize field



*Maize Lethal Necrosis*



*Ear Rot*

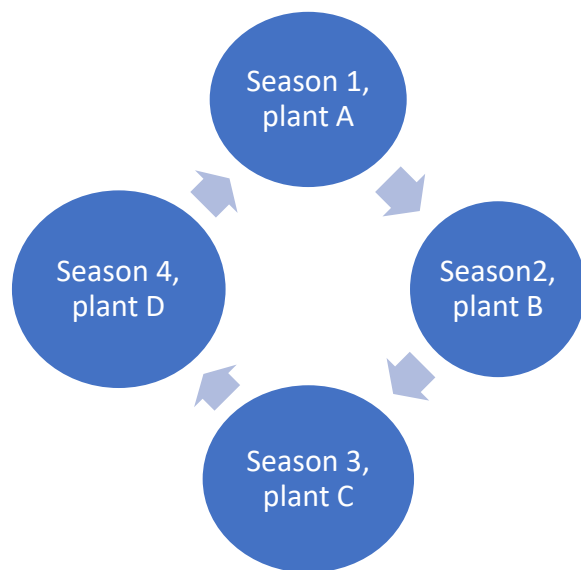


*Head Smut*

# Growing Maize for Fodder (Level 2)

## Pest and disease control

- To prevent or control pests and diseases in a maize field:
  - Always use certified seeds
  - Check frequently (every week) for damage or insects
  - Practice crop rotation
  - Mix crop residues with soil to encourage decomposition



# Growing Maize for Fodder (Level 2)

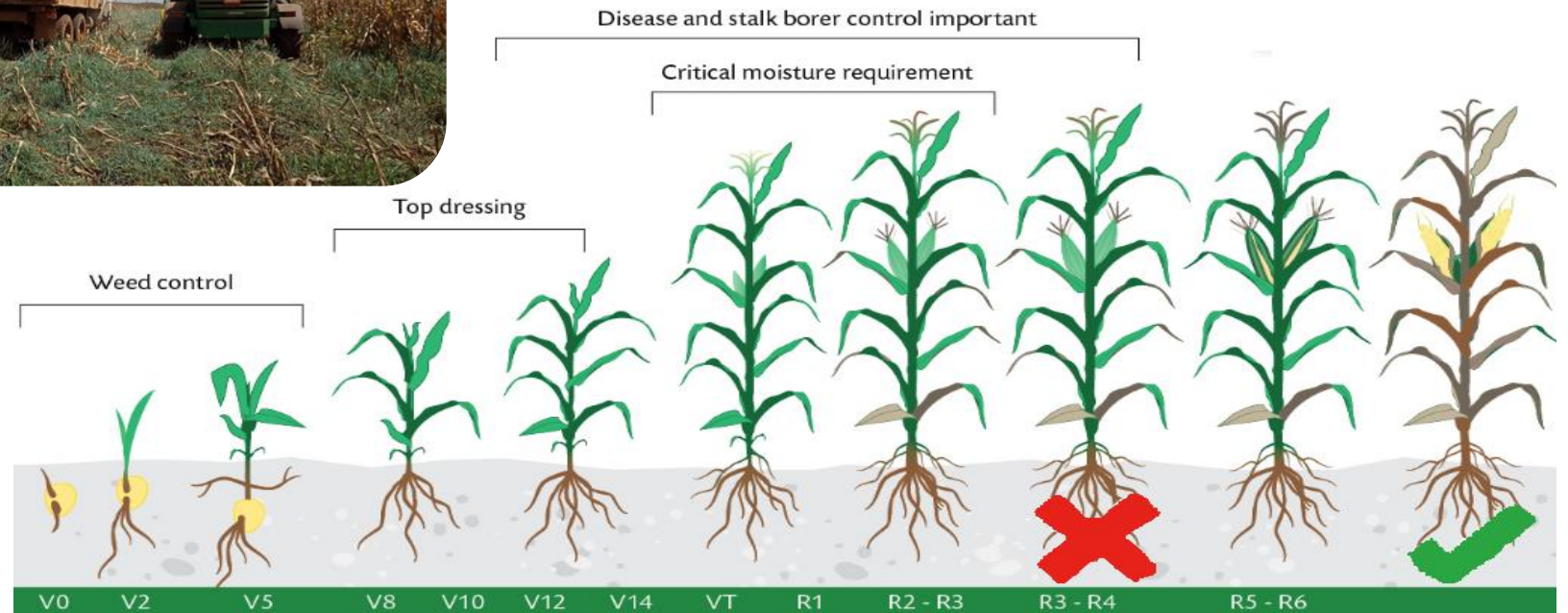
## Harvesting

- Maize is ready for harvesting for ensiling (silage making) at dough ripe stage
- Stage R3-R4 is milk stage - not for harvesting since the kernel is not hard enough

- Harvesting is done using a harvester



*Corn kernels*



# Growing Maize for Fodder (Level 2)

## Take Home Messages



1. Prepare well the land for growing maize for fodder and use certified seeds when planting
2. It is advisable have soil analyzed first to make the right choice of fertilizer
3. Always monitor your field for any pests or disease attacks
4. Maize is ready for harvesting for ensiling (silage making) at dough ripe stage