



For Professional Dairy Farmers

## Module 11

# PASTURE MANAGEMENT





This training module is part of 10 training modules:

1. Calf rearing
2. Nutrition and feeding
3. Hygienic milk production
4. Housing
5. Management of Napier
6. Health care
7. Fertility and reproduction
8. Herd Record keeping
9. Maize Management
10. Pasture Management

These modules have been developed through a collaboration between

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Foundation,  
Netherlands

ProDairy LTD

SNV Kenya  
Market-led Dairy  
Program

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## TABLE OF CONTENTS

### 10. PASTURE MANAGEMENT

10.1 Establishment of pastures

10.2 Grazing systems

10.3 Grass pasture species

10.4 Improving pastures for grazing

10.5 Grazing management

10.6 Weed control

10.7 Leguminous cover crops

## CHAPTER 1. ESTABLISHMENT OF PASTURES

### What is a pasture?

Mixture of natural or planted grasses and legumes and possibly other less beneficial plants

### What to do?

Choose suitable seeds and location

### Why?

To improve the quality and quantity of the pasture

### What do you need?

- Pasture seed or root splits
- Fertilizer SSP, TSP or DAP
- CAN fertilizer to top dress
- Farmyard manure
- Harrow, rake
- Panga or slasher
- Sickle
- Bucket for carrying manure
- Planting rope to plant in lines
- A measuring stick



### A. Preparing the shamba

- Clear bushes from the shamba
- Allow weeds to decompose
- Apply 1.5 ton/acre of farmyard manure mixed with soil
- Farmyard manure should be spread and harrowed in before
- Prepare well by means of ploughing or digging
- Start towards the rainy season at a depth of 8-10cm
- **The best time to plant pasture is when soil is moist and stays moist**
- Prepare a seedbed by harrowing and levelling the land
- Ensure "seed to soil" contact with most grass seeds



## D. Topdressing

- After every cut or 2 times grazing
- 1 bag CAN/acre or
- 3 tons farmyard manure per acre per year



## CHAPTER 2. GRAZING SYSTEMS

### What to do?

- Choose the feeding system that suits your farm
  - Rotational grazing (leader-follower)
  - Continuous grazing
  - Strip grazing (mob grazing)
  - Free range grazing
- Estimate how much fodder can be produced per year (carrying capacity) for the use of the herd
- if economically viable, supplement the pastures with other forage crops or concentrates

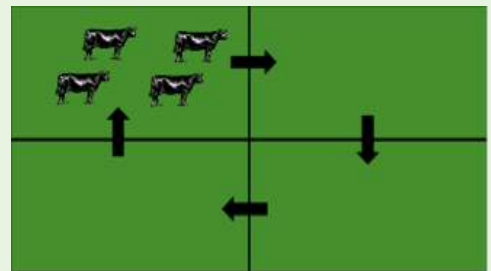
### What do you need?

- Fenced paddocks
- 0,4 – 0.6 adult cows/acre



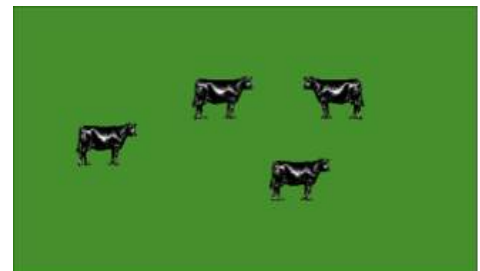
### A. Rotational grazing system

- Move cows from paddock to paddock
- Allow calves to graze first on the best pasture
- Lactating cows graze after calves
- Heifers follow lactating cows
- Dry cows graze last
- Cows change paddocks every 5-7 days



### B. Continuous grazing

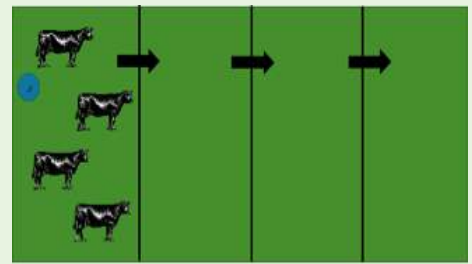
- Only one or two paddocks are used.
- 10-12 hours per day of grazing
- 1.5 cows/acre
- Graze at height of 10-14cm
- Cows graze selectively
- Use cool period(s) of the day
- Cheap feeding system
- Expect lower milk production
- Graze down to 4-6cm



## C. Strip grazing

### Not really suitable with tropical grasses

- Cows daily have access to a strip of fresh pasture
- Can increase milk production per cow
- Reduces losses, cows do not trample on fresh grass
- Electric wire in front of and behind the cows



## D. Free range

- Cows graze selectively
- Cows are offered overgrown pasture
- They need to walk longer distances
- More losses due to trampling of good nutritious grass
- No fences



## E. In all grazing systems be flexible

- Allow enough time for pasture plants to re-grow to gain strength
- This enables plant to store energy for re-growth
- This will give better yield
- Cutting/grazing interval depends on:
  - \* Season
  - \* Species
  - \* Water availability
  - \* Soil fertility
  - \* Temperature

## CHAPTER 3. PASTURE GRASSES

### What to do?

- Is your soil suitable for good pasture?
- Which fertilizer does the soil need?
- How much fertilizer does the soil need?
- Take a soil sample
- Choose the most suitable grass

### Why?

- Some grasses and legumes are more adapted to the location of your farm than others.
- Water needs of the pasture and
- How efficient water is used by pasture plants differs

### What do you need?

- Buy certified seeds
- Collect seeds if certified seeds are not available
- Cuttings or root splitting if seeds are not available
- Fertilizer for planting (SSP/TSP/DAP)
- Fertilizer for topdressing (CAN /Urea)
- Farmyard manure
- Fine and levelled seedbed

### A. Rules of thumb for newly sown pastures

- Use preferably certified seeds (best germination and clean)
- Allow pasture to grow up to 30cm before first cut
- Graze the paddock only after the first cut
- Do not overstock or overgraze

### B. Establishing Kikuyu grass

- Plant cuttings/root splits or sow seeds
- Seed rate of 0.8 – 2kg per acre
- Cuttings of 10-15cm with at least 3 nodes
- Make furrows in rows 15 cm apart
- Plant cuttings in furrows 15 cm apart at 2-3cm depth
- Sow seeds at the surface of the seedbed
- Soil is moist and remains moist after sprouting/germination



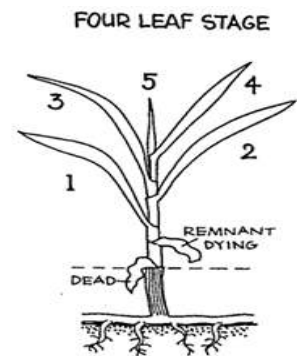
## C. Grazing Kikuyu grass

- 1 cow/acre
- Graze when 5 leaves appear (15-20cm height), leaf stage
- Graze down to 5 – 8cm by lactating cow
- Let dry cows or heifers graze on remaining stems
- Let regrow for 12-14 days



## D. Fertilizing Kikuyu grass

- Maintain soil fertility
- Replace soil nutrients
- After sowing, the first year:
  - 160 – 240kg SSP/acre at the start of the rains
  - Fertilize after every 2 cycles of grazing or 1 cut
  - 60kg CAN/acre



## E. Establishing Rhodes Grass

- Seed rate of 1– 2 kg/acre
- Sow on top of the surface of the seedbed
- Broadcast or sow 15cm apart
- After sowing don't let cows graze for 4-6 months
- Cut at 30cm manually or with a mower
- Apply SSP at 60kg/acre at sowing,
- 20kg/acre DAP or
- 2 tons/acre farmyard manure



## F. Weed Control

- Rhodes grass will grow very poorly if weeds grow faster than the grass
- Weeding in between the rows of 15 cm
- Cut/Mow pasture when weeds overtake the grass (broadcasting)
- Spray pasture using a back spray with herbicide (broadcasting)
- Repeat weeding after every cut until a dense sward is established



## G. Grazing Rhodes Grass

- Rotational grazing
- First cut 60-70 days after sowing and make silage or hay
- Graze to prevent flowering
- Stocking rate of 1 – 1.5 cows/acre
- Graze at leafy stage, 15-17 cm
- Leave a stubble of 6-10cm
- Regrowth of 4-6 weeks



## CHAPTER 4. IMPROVING PASTURES FOR GRAZING

### What to do?

Choose suitable (level) land for paddocking and grazing

### What do you need?

- Wooden poles
- Barbed wire
- Tarimbo
- Hammer
- U nails

### A. Fencing and paddocking

- Perimeter fence
- Divide land in smaller fenced paddocks
- Adjust to the number of cows
- Good fence keeps the cows in the paddock
- Long lasting



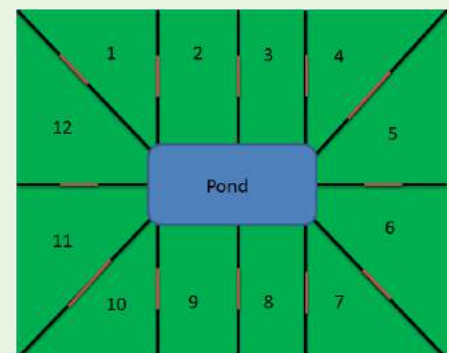
### B. Bush and weed control

- Uproot shrubs and poisonous plants
- Prevent overgrowing of weeds
- Slash/mow weeds
- Avoid competition between grass and weeds
- Remove poisonous weeds



### C. Water points in the paddocks

- Water sources are underground (well water) and surface (ponds, dam, lake, rivers)
- Clean water is always and easily available for good health and good milk production
- Watering point is available in every paddock
- Location of water point influences where cows graze and their manure and urine are deposited



## D. Over sowing

- Cut the pasture very short
- Over sow by broadcasting/targeted empty spots
- Soil is moist
- Rake (loosen) the soil in the empty spots
- Mix pasture seed with sand / sawdust
- Fertilize the spots with farmyard manure
- Ensure good "seed-soil contact"
- Use tree branches to cover the seeds with a little bit of soil

## Sow leguminous seeds in strips of 15 cm apart in well-established pasture

## E. Manure

- Do not leave piles of manure in the pasture
- Spread or scatter the manure regularly
- Spread manure manually or use a set of old tyre
- Spreading during the growing season will make grass less palatable
- Spread all the manure before the rains start
- Piles of manure kill the grass underneath and attract termites



## CHAPTER 5. GRAZING MANAGEMENT

### What to do?

- Manage number of cows (stocking rate) to sustain good grasses
- Regular weeding
- Regular supply of fertilizer
- Frequent scattering of manure
- Alternate grazing and cutting
- Maintenance of the pasture to favour good grasses is important

### A. Supplementation with concentrates during grazing

#### Rules of thumb

- Milk production up to 7 litres, no concentrate
- For Every 1.5Kg extra above 7 litres milk, feed 1kg concentrate
- E.g. 10 litres of milk per day means 2kg concentrates per cow per day

### B. Benefits of good grazing management

- Better utilization of pastures and stored fodder
- Higher yield
- More animals per acre
- Higher milk production
- Higher daily live weight gain
- Pasture is stronger (root system) and lasts longer
- Less weeds
- Manure is spread better



### C. Different grasses and grass mixtures

- Use different grasses and/or pasture mixtures to
- Maximize pasture production and
- Minimize the need for stored fodder

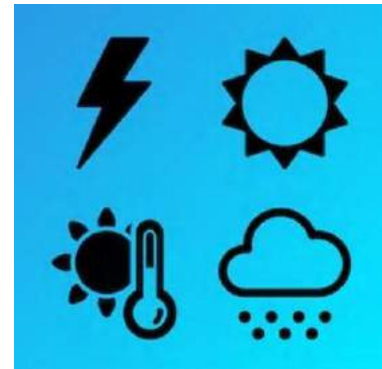
## CHAPTER 6. HARVESTING

### What to do?

Harvest grass for silage or hay and follow weather forecast

### Why?

To supplement (dry season) when grass is not growing



### A. Hay making

- Check weather forecast
- Cut grass when weather forecast is sunny
- Cut grass at boot stage ( 25 - 30cm high)
- Leave a stubble length of 5 cm above the ground
- Spread the grass evenly to wilt (3- 5 days)
- Turn regularly for even drying (once a day)
- With unfavorable weather conditions;
- stack grass in heaps or rows every evening
- Spread the grass again the next day
- When grass is dry, collect and bale
- Transport to the farm
- Stack a well ventilated but dry store



### B. Silage Making

- Check weather forecast
- Cut grass when weather forecast is sunny
- Cut grass around 25cm
- Leave a stubble length of 5 cm above the ground
- Spread grass evenly to wilt for 1 day
- Turn once or twice for even drying
- Collect the grass the next day
- Start filling the silage pit in equal and regular layers
- Add molasses/ lactic acid bacteria if needed
- Dilute one litre of molasses with three litres of water
- Sprinkle the molasses solution /mixture on every layer
- Compact/ press each layer until the pit is filled
- A drum full of water can be used
- Force out as much air as possible
- This will prevent the grass silage from spoilage
- Cover with a polythene
- Add soil (15cm) to keep the grass compacted



## CHAPTER 7. MIXED GRASS LEGUME PASTURES

### What to do?

- Buy legume seed to mix with the pasture grasses
- Most legumes can be planted in combination with grass
- "Strip-plant" legumes in established pastures
- Manage the mixed pasture intensively
- Maintain grass legume ration in the pasture

### What do you need?

- Seeds of legumes suitable in mixed pastures

#### A. Benefits of mixed pastures

- Legumes can fix nitrogen available in the air,
- Less synthetic fertilizer is needed
- Nitrogen fixed by legumes is available for the grasses
- Improves feed quality and quantity
- Mixed pastures are more palatable
- Increases milk production

#### B. Prevention of bloat

- Start grazing pasture with legumes (esp. clover and lucerne) gradually
- Increase grazing period over several days
- Feed cows hay, silage or pasture before letting them graze on mixed pastures
- Do not graze feed deprived cows on mixed pastures
- Do not graze cows on mixed pasture with a lot of Clover



#### C. Desmodium

- Seed rate of 2kg/acre, 1-2 cm deep
- Make furrows 15- 30cm apart
- Mix seeds with sand/ sawdust
- Sprinkle the seeds in a row
- Sow in strips in the pasture
- Allow desmodium to establish before grazing

- When harvesting leave a stubble of 10cm
- Once established graze or cut every 12 weeks
- Apply 1 bag of fertilizer (SSP,TSP or DAP) per acre per year
- Will not cause bloat

## D. Centrosema

- Sow 1.6 kg/acre at depth of 1-2 cm
- Establishment 60kg SSP/acre
- Maintenance: 40kg SSP/acre/year
- Can be sown with Kikuyu and Rhodes grass

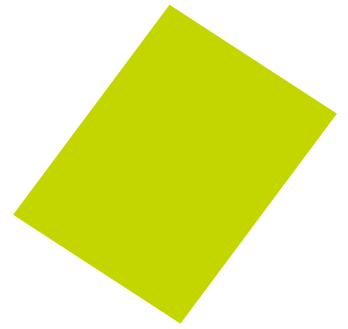
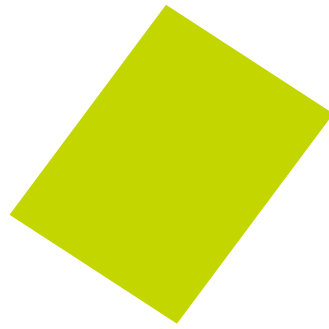
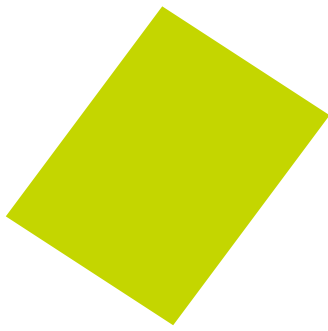
## C. Siratro

- Seed rate 0.4 – 1.6kg/acre
- Establishment: 8 – 12kg P/acre
- Maintenance: 4 – 8kg P/acre
- Spacing 15cm between the rows
- Graze down to not less than 10cm
- Cannot stand heavy grazing
- Regrowth takes 6 weeks
- Plant in strips in established pasture
- Fast establishment if soil is moist

## D. Stylo

- Seed rate 0.4-0.8 kg/acre.
- Sow in rows 30 - 50cm apart
- Establishment: 8 – 12kg P/acre
- Maintenance: 4 – 8kg P/acre
- Spacing 15cm between the rows
- Graze down to not less than 10cm
- Cannot stand heavy grazing
- Regrowth takes 6 weeks
- Plant in strips in established pasture
- Fast establishment if soil is moist





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