



When to ensile forages:

- King grass: 60-90 days of re-growth
- Forage corn: milky cobs
- Forage Sorghum: immature seed heads
- Hybrid forage sorghum: 45-60 days

Estimated Forage Yields

Tonnes of fresh material/hectares/cut

- King Grass: 30-40
- Forage corn: 30-70
- Forage Sorghum: 30-50
- Hybrid forage sorghum: 60-90



Nutritive Value Indicators

Parameters	Good Quality	Bad Quality
PH	4.0-4.8	5.0 & up
Lactic Acid	up to 13%	below 3%
Acetic Acid	1.5%	3.0%
Butyric Acid	0.5%	3.5%
Ammonia	below 3%	above 3.0%
Colour	golden brown	dark brown
Smell	sweet	sour/rancid
Texture	firm	slimy
Moisture	68%	over 71% / under 65%

Forage Conservation

Silage



What is Silage?

Key Stages in Silage Making

01. Chopping & Mixing in Additives

Chop forage into 2-5cm lengths.
It:

- Facilitates good consolidation
- Reduces nutrient loss
- Leave harvested material in the sun for 2-4 hours before chopping.

Use additives in each layer, i.e. **1kg/tonnes of chopped forage**, e.g.:

1. Molasses:

- Assists fermentation
- Increases lactic acid production
- Decreases percentage ammonia

2. Urea Solution:

- Increases nitrogen content of silage.

Add other components such as forage corn and poultry manure which increase protein and mineral in the ratio 75:25.

02. Compaction

- The step used to remove maximum amount of air
- Use heavy machinery, if possible, e.g., tractor
- Roll for up to 10 hours daily during ensiling
- Roll at the start of each day before adding more material
- Roll after addition of each layer of 30cm of chopped material

03. Cover

On completion ensure that the silo is well sealed and airtight.

- Cover entirely with plastic sheet(s)
- Avoid penetration of air, water and/or animals.
- Add weights to the surface to aid compaction (earth, tyres, wood, etc.)

NB: THIS PROCESS SHOULD BE COMPLETED WITHIN 5 DAYS FROM FORAGE HARVESTING.

The conservation of fresh grass by anaerobic fermentation. Fermentation occurs over 3-4 weeks where two chemical processes can take place: anaerobic (preferred) and aerobic fermentation.

Good Silage :

- High percentage of soluble carbohydrates (2.5-3%) which are used by bacteria in the fermentation process
- High forage yield/hectare
- 30-40% forage DM at cutting.

Calculate Silage Requirement

E.g. 30 cows eating 20kg/day for 90 days.

1. Daily intake = $30 \times 20\text{kg} = 600\text{kg}$
2. Three (3) month intake = $600 \times 90 = 54,000\text{kg} = 54\text{ tonnes}$

1m³ of silage weighs approximately 600kg

Therefore, the size of the stack silo should be:

- Width = 5m
- Height = 1m
- Length = 15m

5 X 1 X 15 = 90m³

