Silage Making

Green crop ready for ensiling

Chopping of green fodder

Manual filling and pressing of fodder

Silo sealing

Silage sample

Silage feeding

An effective way to conserving green fodder

National Dairy Development Board
Anand

Introduction

In view of constant increase in the cost of concentrate feed ingredients and their limited availability, green fodder is considered an economical source of nutrients for the dairy animals. While increase in green fodder production per hectare of land has been emphasised, it is equally important to conserve green fodder to ensure regular supply for feeding animals, especially during the lean periods. Conserving green fodder in the form of silage is one of the best options available to ensure regular supply of quality fodder through different seasons of the year.

What is Silage?

Silage is the conserved green fodder having moisture content in the range of 65 to 70 per cent. Fodder crops rich in soluble carbohydrates are incubated after chaffing for 45-50 days under anaerobic conditions. Sugars present in the fodder are converted to lactic acid, which acts as a preservative and a good source of readily fermentable sugars for the rumen microbes. Under proper storage condition, silage can be stored even up to two years. Good quality silage should not have any butyric acid, which gives off flavour to silage. If proper anaerobic conditions are not maintained, silage produced would have butyric acid content in it.

Crops suitable for silage making

The fodder crops, such as maize, sorghum, oats, pearl millet, and hybrid napier rich in soluble carbohydrates are most suitable for fodder ensiling. Quality of silage can be improved with the use of suitable additives such as molasses, urea, salt, formic acid etc.

Infrastructure required

1. Silo – Surface or trench.
2. Farm machinery like tractor, trailer, fodder harvester & power chaff cutter.

To construct surface silo for large farmers/community silage making, estimated investment would be about ₹ 12.00 lakh to preserve about 100 MT of green fodder. The cost of fodder harvester/ chopper would be ₹ 1.50 lakh approximately.

For medium class farmers 5-7 MT surface silos (manually pressed) would cost around ₹ 25000 and another ₹ 25000 for the chaff cutter.

Procedure of silage making

- Construct a surface/trench silo (silage storage structure). One cubic meter space / silo can store 500-600 kg of green fodder.
- Harvest the crop at 30-35 per cent dry matter (DM) stage.
- Wilt the harvested fodder to bring down DM to 30-35 per cent, if required.
- Chop the fodder into small pieces of 2-3 cm size.
- Fill the chopped fodder into the silo.
- Press the chopped fodder in the silo layer by layer of 30-45 cm.
- Filling and pressing should be completed as fast as possible.
- Use additives during filling of fodder in the silo, if required.
- After filling and pressing, seal the silo with thick polyethylene sheet.

- Put weight through mud layer/ sand bags/ tyres on the sheet to prevent air flow beneath the sheet.
- Open the silo for feeding, minimum after 45 days, as per need.

Feeding of silage

- Silo can be opened from one side as per need after 45 days and closed properly after taking out the silage.
- Silage can be taken out as per requirement. Initially, silage can be fed @ 5 kg/animal to adjust the animals on silage feeding.
- Silage is a substitute of green fodder and can be fed like green fodder.

Characteristics of good quality silage

- Bright, light green yellow or green brown in colour.
- Lactic acid odour with no butyric acid and ammonia odour.
- Firm texture with softer material.
- Moisture should be in range of 65-70 per cent.
- Lactic acid 3-14 per cent.
- Butyric acid less than 0.2 per cent.
- pH in the range of 4.0-4.2.

Critical factors effecting production of good quality silage

1. **Type of Silo** – Surface silo are best due to ease of ensiling.
2. **Dry Matter of fodder** – Ideal 30-35 per cent.
3. **Chop length of fodder** – Ideal 2-3 cms, easy to get compacted.
4. **Pressing/compaction of fodder** – As quick as possible to minimise aerobic fermentation.
5. **Sealing of silo** – To check inflow of air and water into silo.

Surface silo

Mechanical harvesting

Mechanical pressing

Sealed silo

Silage making at a large farm

Advantages of silage making

- Ensures regular supply of fodder to the dairy animals.
- Ensures uniform quality fodder to animals during different seasons.
- Silage can be made under almost all weather conditions.
- Surplus green fodder can be conserved, minimising wastage.
- Feeding silage is an effective tool for the control of parasitic diseases, as the parasites present in different stages in green fodder are destroyed during ensiling.
- Enhances green fodder productivity by improving harvesting intensity.
- Enhances livestock productivity by ensuring fodder supply, especially during the lean period.

Silage cutter