Quantity of Silage to Feed to Various Classes of Stock

Stock	Quantity of Silage on daily basis (kg)
Milk Dairy Cow	12 -20
Dry Cows	10 - 16
Dairy Heifers	5 - 8
Beef Breeding Cows	12 - 20
Fattening two year old steers	10 - 12 (then decrease to 4-6)
Fattening calves	4 - 8 (then decrease to 3-4)
Breeding Ewes	0.8 per 40 Kg liveweight
Fattening lambs	0.6 - 1.2

Advantages of Using Silage

1. Use of silage makes it generally possible to keep more stock on a certain area of land.

2. Silage furnishes high quality succulent feed for any season of the year at low expense.

3. Crops may be ensiled when the weather does not permit their use into hay or fodder.

4. Silage even from plants with coarse stalks such as corn and sorghum is eaten practically without waste. But eaten dry or fresh there is usually wastage.

5. Weedy crops which make poor hay, may produce satisfactory silage and the ensiling process kills many kinds of weed seeds.

6. The crop from a given area can be stored in less space as silage than as dry storage.

7. When corn or sorghum is ensiled the forage is removed from the land early so that it may be prepared for another crop.

8. In areas where there is considerable corn borer, cutting the stalks close to the ground and ensiling the crop is one of the best methods of controlling the pest.

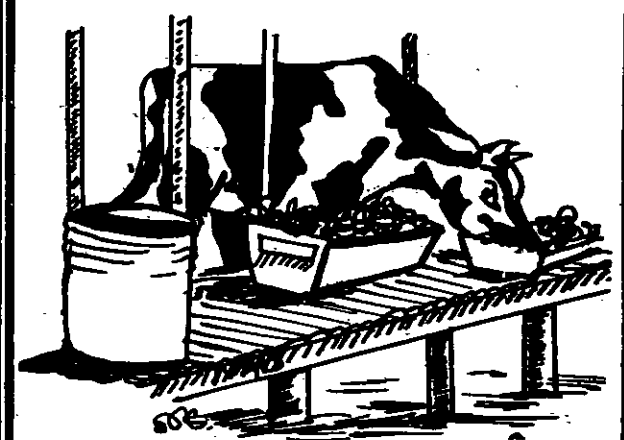
9. Good silage is highly palatable. Voluntary intake of hay or roughage is increased when offered in a mixture with silage. Increased intake leads to higher production and reduces considerably the concentrates offered to the stock.

10. The considerable amount of silage acids produced and consumed by the animals do not produce any injury to the animals because the organic acids in the silage are similar to those normally produced in the digestive tracts of the ruminants.

To avoid spoiling the flavour of milk, silage should be fed after milking and should not be left in the stable. As much silage should be supplied which the animals can eat and the remainder cleaned up. All waste should be removed because it gets spoiled on exposure to air. Spoiled mouldy silage should be discarded.

THE REPUBLIC OF UGANDA

GUIDELINES ON MAKING SILAGE



NATIONAL AGRICULTURAL RESEARCH ORGANISATION

1997

Introduction

Conservation is a process by which a material is prepared so that it can keep for future use. Man has for long been conserving food to use in times of great scarcity. Excess food which cannot be consumed immediately when fresh like beans, millet, maize etc are sun dried and stored. Cassava and sweet potato are cut into slices and sundried. In animal production when crop herbage is in excess of what can be fed to the animals, the excess feed is made into silage or hay to conserve it.

What is Silage?

Silage is a material produced by the controlled fermentation of a crop of high moisture content. Ensiling is the name given to the process of silage making. The container in use is called a silo. The fermentation of the silage is controlled either by encouraging the growth of lactic acid bacteria which are present on the fresh herbage or by pre-wilting the crop, or by using chemical additives. In order to obtain successful preservation it is necessary to achieve and maintain anaerobic conditions. This is done in practice by:

(i) Chopping the crop during harvesting
(ii) Rapid filling of the trench or pit.
(iii) Adequate consolidation and sealing.

Crops for Ensiling

Almost any forage crop can be ensiled. However, as a guideline for selection, green forage crop must have certain qualities to make it suitable for silage making.

(i) It must be neither too dry nor too high in water content. If it is too dry it will not pack well and will have enough air to make a mould develop. If the forage is too high in water, the silage is apt to be very sour or it may even spoil.

(ii) It is essential that there must be enough acid in the silage crop to prevent the growth of undesirable bacteria that cause rotting.

(iii) Forage crops should have solid stems to allow a small amount to remain in the mass after it has settled. Hollow stems should be tramped to force air out.

(iv) Corn and sorghum are ideal silage crops. At the proper silage stage they contain enough sugar so that sufficient acid is produced during the fermentation to make silage of high quality. With these crops there is no need whatsoever of adding preservatives such as molasses, mineral acid or maize bran.

(v) Watery forage crops should be wilted for about 2 to 3 hours on a dry sunny day before ensiling. If wilting is not done, there is apt to be much leakage of juice from the polythene bags. These waste nutrients and the juice are apt to be fond-smelling on decay.

Farmers should use the squeeze test method to determine moisture suitability for ensiling. The forage is given a good hand squeeze with both hands. If moisture appears between the fingers or if the material stays in a compact ball when pressure is released, then it is too wet to ensile without a preservative. If it expands gradually the dry matter content is probably about right. On the other hand if it crumbles and fall apart it is too dry.

Changes which Occur During Ensiling.

In fresh herbage; aerobic bacteria and fungi are dominant. Gradually as anaerobic conditions develop in the trench or pit these aerobic bacteria and fungi are replaced by the bacteria able to grow in the absence of atmospheric oxygen. These bacteria produce lactic acid in the silage by fermenting sugars present in the fresh herbage, there by reducing the pH. The acid produced inhibits the growth of other bacteria. At about pH 3.8 to 4.0 microbial activity virtually ceases and the material remains stable for as long as anaerobic conditions are maintained. If the anaerobic conditions are not maintained, the growth of other undesirable bacteria come in thus increasing the pH and leading to spoilage of the silage.

Addition of Molasses, whole Maize or Maize Bran

The addition of either molasses, whole maize or maize bran is to act as preservative. Lactic acid bacteria ferment the sugars to lactic acid. The following are the quantities to be used to every 1000 Kg of the green forage.

Forage	Molasses in Kg	Whole Maize in Kg	Maize Bran in Kg
1. Legumes e.g Lablab	36 - 40	85	114
2. Grass crop	18 - 20	30	42
3. Mixed Legumes and	25 - 30	40 - 55	55 - 70