

Silage making

economical and balanced feed for commercial dairy

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The latest training, new techniques and research work help in making dairy farming occupation work better. The present number of cattle in Punjab is about 81.2 lakh, which has 62.4 lakh lactating dairy animal. There is a need for substantial increase in the current yield of green fodder to provide complete and good quality feed to animals. One animal gets 30.65 kg of fodder per day, which is very low. If 40 kg of green fodder is found in a large livestock daily, then there is an annual requirement of 911 million tonnes of green fodder. The profitable dairy farming at the farmer's field can be achieved by reducing the input cost. The maximum expenditure (65-70%) among the inputs cost go to single item i.e. feeding cost. Among the different ingredients included in the feeding the cheapest source is green fodder. In our condition the production as well as area under different fodder crops is not sufficient to meet out the green fodder requirements. The best way to cope up this deficiency we must increase area under fodder or preserve the green fodder when the requirement is abundant (as silage).

Key words: Dairy animal, Fodder, Livestock, Silage

Silage making is the routine phenomenon of dairy farming in which our farmer preserve the succulent non-leguminous crop, when the availability is in abundant for the use as nutritious product for lean period. Silages made only in non-leguminous with minimum losses of nutrients in the silo pit. The prepared silage after the preservation of 45 days period can be utilized in the lactating stock. In commercial dairy farming the silage making is very important because it reduces the labour cost, daily working hours in the field and ensure round the clock fodder availability at door step.

Fodder preservation as silage can be utilize for the lean periods of November-December and May-June in which there is less availability of green fodder in the field. Silage improves the nutrient utilization and increase the milk production in lactating cow. The window period between two major crops can be utilized for the production of green fodder because this fodder can be preserved in silo pits for long period.

Produced silage in the pits can be utilized in the month or so after the opening of silo pit.

Silage feeding improves the milk production per cow throughout the year. Thus silage making gives producers a feed inventory that can be used to plan a detailed feeding program for the herd. Silage also fit in TMR (Total Mixed Ration) programme which is today's need.

Dairy farming is one of the oldest and well established subsidiary occupation and most widely adopted by all over farming community of Punjab. An adequate supply of quality fodders during the lean periods of November-December and May-June can be ensured by preserving the green fodder as silage. Non-legume crops such as maize, sorghum (jowar), *bajra*, napier-*bajra* and Guinea grass which are rich in sugar and carbohydrates and low in protein possess excellent qualities for conserving as silage.

Benefits of making silage

- Used as feed/fodder when there is scarcity of green fodder.

- Costly grains and feed will be saved.
- Fodder crops are harvested at maximum nutrients stage, which are efficiently used by dairy animals.
- Silage is produced in both cold and cloudy weather.
- The fermentation in silage reduces harmful nitrates accumulated in plants during droughts and in over-fertilized crops.
- Daily the cost of wages on cutting/chopping of green fodder and time will be saved.

Optimum time to cut fodder for making silage

Harvest the fodder crop to make silage when the crop is at their full nutrient stage with high dry matter. The amount of dry matter in the fodder should be 30-35%. For preparation of silage, the appropriate time of harvesting various crops is given in Table 1.

The moisture content in fodder should be 65-70% for silage. If the moisture content is high, then dry the fodder for one day after cutting. Crop harvested at the above given

Table 1. The right time to cutting for making silage

Fooder crop	Cutting stage	Sowing to cutting time (days after sowing)
Maize	Flowering to milking stage	55–65
Sorghum	Booting to milking stage	65–85
<i>Bajra</i>	Booting stage	50–55
Oat	Booting to milking stage	110–120
Napier <i>bajra</i> and Guinea grass	One metre tall	After 60

stages usually have the desired dry matter content. However, napier-*bajra* hybrid and guinea grass need one or two days for drying in the field before chaffing to reduce the moisture. We can see the quantity of moisture in the fodder by twisting the chops in the hands. If the hand does not feel lean, the fodder has enough amount of dry matter.

Appropriate place for silo-trench

To make silage, the silo-trench should be built in a high and sloping area near animal shed, place where there is no water stagnation, otherwise the fear of spoiling the silage with water is maximum. The air as well as water both is dangerous for silage making process. So silo pit must be air tight as well as high altitude, free from water.

Planning of the silo-trench to prepare for silage making

There are many types of silo-trenchs, such as the trench-silo, tower silo, powerhouse-silo and silopit. The size of silo-trench depends upon availability of green fodder, number of animals, quantity and period for which it is to be fed to animals. Generally, in one cubic metre space, 5-6 quintals of chaffed green fodder can be packed. In 10 metre long, 3 metre wide and 2 metre deep silo-trench about 325 to 360 quintals chopped green fodder can be packed, which is enough to feed 10 dairy animals for four months at 20-30 kg/head/day during the lean period. Length and width of the silo-trench can vary with the number of animals and their fodder requirement, but depth should always be kept at 1.5 to 2 metres. The trench should be made on a high level spot near the animal shed. The depth of the silo-trench should always be 1.5-2.0 metres. It should be made *pucca* and plastered with cement from inner side.

Method of silage making

- Chop the harvested fodder crop to the length of 5 to 8 cm and fill it in the silo-trench.
- The silo-trench should be filled in the shortest time (maximum 2 days). Silage should always be made in dry days.
- Press the chopped fodder in the trench thoroughly with a tractor or bullock and and raise it to one metre above the ground level, to create proper anaerobic condition to make quality silage. Every half metre thick layer of chaffed fodder should be regularly pressed.
- Cover the fodder with 10-15 cm thick of straw/residues. Then put soil on it and finally mud-plaster. Silo-trench should be completely air-tight.
- Cover the silo-trench well with polythene seats. After finishing the above, put 2-3 inch layer of thick soil. The edges of the silo-trench can also be closed with dung soil.
- Keep an occasional watch and if there is any crack or hole, plug it immediately. Silage will be ready in 45 days.

Economis of silage preparation

Pit size	= 6000 ft ³ (40'×30'×5)
Total cost	= ₹ 125,000
Total subsidy	= ₹ 70,000
Net cost	= ₹ 55,000
Amount of silage	= 1,000 quintals for 20 animals @ 30-40 kg/animal/day
Silage availability	= 5-6 months

Table 2. Amount of silage for animals

Cattle	Amount of silage (kg)
Calve	10-12
Milch cow	20-25
Milch buffalo	25-30
Pregnant dairy animal	15-20
Bull	20-25

Identification of accurate silage

- The best silage colour will be bright yellow. If any kind of negligence occur, results in the change of color to brown. From the best silage comes the aroma of vinegar.
- Well prepared silage has pH (acidity) of 4.5 and is low in losses of nitrogen. Good quality silage retains the nutritional value of original crop and has a high lactic acid and low butyric acid content.

Method of opening the silo-trench

- When using silage, open the silo-trench from the width side that air seems to be the least.
- Take out the daily requirement of the feed and covered the remaining silage. This way the silage stay good till used.

Use of silage in animal feed

- Animals do not like silage for the first few days. For this, first 5-6 days, add 5-10 kg of silage green fodder to the animals. Later silage can be fed to every animal at 20-30 kg/day mixing with other green fodders.
- Do not fed up the silage during milking, otherwise the fragrance will come in milk.
- Silage must be fed after or before 5-6 hours milking.

SUMMARY

Silage making in the commercial dairy unit is helpful to reduce the daily feeding expenditure and produces good quality milk with minimum input cost. The balanced and economical ration formulation can only be possible if we introduce cheap available resources (silage) in the diet. Income of dairy unit increased with the decrease in cost of production of milk. Silage also utilized abundant fodder produced in the farmer's field. The dengerous lean period can be eliminated by utilizing the silage in the lactating dairy cow. The digestibility of silage as well as rich nutriounts source improves the production and reproduction of dairy cattle.

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