

Silage based feeding system for goats

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Due to decline of grazing pasture, the goat farmers are shifting to stall feeding of goat with concentrate mixture, straw and green fodder particularly in peri urban locality. Green fodders are not available round the year like in summer season. So fodder like maize can be preserved as silage and fed to goats when green fodder or grazing pasture is not available. Goats can be well reared with silage and concentrate feeding. Experiments were conducted at ICAR-Central Institute for Research on Goats and it was reported that both growing and lactating goats can be reared with concentrate and silage feeding under stall feeding condition. If pasture in grazing area is not proper, silage can be a good alternative for goats especially in production situation that require good nutrient support.

Keywords: Feeding, Goats, Milk, Silage

GOAT farming in India and other tropical regions has been pastures based since ages, but in the recent years, grazing resources are diminishing due to land reclamation for conventional crop production or non-agricultural uses. Due to decline in the quality and quantity of the common property resources (CPRs), income generating ability of the rural population is affected. Goat feed resource base needs to be widened through conversion of fallow and under-utilized land resources into multi-tier pasture and utilizing the produce in an effective manner. Due to the increased importance of goats, particularly in rainfed ecosystems, goat keepers are going in for intensive production, and there is a need to look into their nutrient availability and requirement of the species. Goat population in India increased from 135.17 million (2012) to 148.88 million (2019) representing 10.14% increase in population. Total goat population in rural area has increased by 10.35% whereas in urban area, the population of goat has increased by 5.78% (20th Livestock Census Report, 2019)

Feeding systems for goat have been developed on the basis of climatic conditions, agriculture patterns, region, utility and economic conditions of the farmer. Three types of system for goats are generally practiced in the India, viz. extensive (free range), semi-intensive (grazing and supplementation) and intensive (stall feeding). Tethering is used when farmers are having less number (less than 5) of goats.

The intensive system of goat production includes browsing on developed pastures and /or feeding completely in stalls on cultivated fresh or conserved forages, crop residues and concentrates. This system has been developed for getting maximum weights of kids at an early age with higher feed efficiency. It is highly labour and capital-intensive system and constitutes less than 5% of the small ruminant production in the country. This system is mostly coming up in peri-urban areas driven by better market access to cater the growing demand for meat. Production and consumption of balanced feed mixtures as pellets or blocks based

on maximum use of by products is beneficial. Feeding system based on complete pellet feed is quite helpful in present scenario, where community grazing land is under threat. Complete pellet feed is a technique providing synchronized nutrient availability in the rumen of ruminant animals with higher nutrient use efficiency for production functions. Technique disallowing the selective ingestion habits of the goat, providing the ease in using unconventional feeds, fortifying several limiting dietary components facilitates balanced nutrient delivery for fermentation. Complete pellet feed can be prepared by mixing the roughage and concentrate and processing it through the pellet making machine. Pelleting improves overall nutrient use and production efficiency by 15-25%. The intake of this pellet varies from 4-6% of body weight of goats depending upon physiological status. This complete feed will provide all the nutrients required by the goats to meet their physiological and production demand. A number of complete pellet feed having different feed



Cutting of maize into small pieces using chaff cutter



Filling of chaffed maize into bags



Packing of bags for anaerobic fermentation



Silage feeding in goats



Opening of silage bags after 60-75 days

Silage preparation procedure

resources has been formulated and evaluated for the feeding of goats under different agro-climatic and environmental condition at ICAR-Central Institute for Research on Goats, Makhdoom, Farah. Depending upon the resources available to farmers, the farmers can opt for system of feeding practice to get the maximum benefits.

Silage based feeding

Silage is defined by the USDA as "any crop that is harvested and preserved in a succulent condition by partial fermentation in a more-or-less airtight container such as a silo" (USDA National Agricultural Library). Silage is prepared mostly from non-leguminous fodder like maize, bajra having a good quantity of fermentable sugar. These crops are fermented anaerobically in a closed container silo bag/ silo pit. The process of making silage is called ensiling. Silage preparation is very common form of fodder preservation and mostly used for large ruminants like cattle, buffalo and sheep. In peri urban area where grazing land is not available and cultivation of fodder crop is

difficult, silage can be procured from, different silage selling ventures. The animals can be reared on concentrate and silage feeding to meet their nutrient requirements and optimize the productivity. At ICAR-Central Institute for Research on Goats, Farah, Makhdoom, Mathura preparation and feeding of silage was conducted in growing and lactating goats. Maize silage was prepared by anaerobic fermentation of chaffed maize fodder in silage bags (50 kg). Silage bags are better for goats as silage prepared in big silage bunker get spoiled after 2-3 weeks if proper care is not taken. Evaluation of silage was done in growing Jhakhra goats (3-4months age, avg BW 8.77 kg). Animals were fed with concentrate pellet and silage. Experimental feeding duration was 90 days and body weight was recorded fortnightly. Initial body weight (kg) of goats was 8.72 which changed to 12.90 after 90 days of experimental feeding. Total body weight gain (kg) 4.18 and average daily gain (ADG) 46.48 g was reported on concentrate pellet and maize silage ration. The results indicated that growing goats can

be reared by feeding on concentrate and silage under stall fed condition. Barbari lactating goats (avg. body wt 27.2 kg) was fed with concentrate pellet and maize silage. The milk production reported was 700-850 gram/day in Barbari goats. There was no significant change in milk production and milk constituents on feeding of silage based ration in lactating goats. This feeding trial reflects that goats both growing as well as lactating can be reared under stall feeding condition on concentrate and silage based ration.

Goats are generally reared on grazing on natural pasture. They are browser in nature and are very selective in feeding habit. The nutritive values of pasture are quite variable depending upon season, fertilization etc. If pasture in grazing area is not proper, silage can be a good alternative for goats especially in production situation that require good nutrient support.

Feeding of silage in goats is generally safe but involves certain risk if ensiling is not proper and poor quality silage is prepared. Silage preparation is a good way to preserve green fodder, that can be

used for feeding of animals during lean period but improper ensiling and possible mishandling after ensiling can result in a dangerous product that can have bad effect on goats. Feed consumption in goats is less as compared to cattle and buffalo so use of silage bags for silage preparation is more convenient. About 50-100 kg silage in silage bag is sufficient for feeding of 5-7 goats for one week time. This can reduce

the chance of spoilage of silage after opening of silage bags.

SUMMARY

In peri urban area, goats are generally reared under stall fed condition. They are fed with concentrate mixture, straw and greens. These ingredients are generally purchased from markets. Trials were conducted on growing and lactating goats at Central

Institute for Research on Goats. The feeding trial indicated that the goats can be reared on silage feeding under intensive system of management. So the goat farmers can prepare silage and can manage their goat flock with silage feeding during lean period as well as in stall feeding condition.

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TECHNICAL SPECIFICATIONS

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