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ADVANCES IN FEEDING MANAGEMENT OF SMALL RUMINANTS

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Cost of feeding forms the major expenditure in sheep and goat farming. Here we have discussed the recent advances being done by CIRG-Makhdoom and CSWRI-Avikanagar to reduce and economize the scientific feeding of small ruminants. Researches have been done on feeding of Azolla and hydroponics, strategic supplementation of concentrate mixture, anti-methanogenic feed resources, higher bio-mass producing fodder system which would economize the small ruminants feeding. Not only this but modern appliances for goat feeding are also made to reduce feed wastage. CSWRI-Avikanagar have also evaluated the feeding of sheep with nutrigenomics in physical and chemical nutrition, rumen bio-films and its role in therapeutic nutrition have also been studied.

Cost of feeding forms the major expenditure in sheep and goat farming. Since they are pastoral in nature and so the expenditure on feeding the stock will be lower as compare to other livestock species as most of the nutrient demand is being fulfilled by the grazing only but they need supplementation when grazing resource is poor. Here we will discuss the recent advances being done for the small ruminants to increase the productive life of them without compromising the economy of the farmer as goats forms the second largest population of livestock and 3% of total milk yield in India.

Feeding habits of goat is that they are browsers and are more selective while sheep are grazers and less selective in nature. It is advisable to feed goats in hay-racks or hang the feed in bundles from a peg in a wall or from a branch of a tree. Double-sided portable hay-racks are the most suitable and convenient for stall feeding. They prefer mostly leguminous fodder and dislikes maize, sorghum, silage or straw, hay prepared from forest grasses. Common fodders available for goats includes tree leaves (gular, pakar, pipal, mango, neem, ashok etc),

shrubs, herbs & climbers (ber, jharbari, karonda, hibiscus, rose etc), vegetable wastes like carrot, raddish, cabbage leaves, spinach etc, cultivated fodders foreg: lucerne, berseem, cowpea, mustard etc

Recent Advances

- ✓ CIRG, Makhdoom: Researches are ongoing for the strategic supplementation of concentrate mixture @ 1.2 % of the body weight for better growth and meat quality of Barbari goats. Identification of anti-methanogenic feed resources for goat production system. They developed higher bio-mass producing fodder system (Guar+ Lobia + Sunhamp) for goats under rain fed conditions and *Morus alba* based cost-effective agro-forestry system for sustainable goat husbandry in semi-arid and rain-fed areas. Modern goat appliances are being made to reduce feed and water wastage. Area specific mineral mixture and cost-effective milk replacers for kids are given. They developed a suitable milk replacer for pre weaning kids. They developed complete pelleted feed, feed blocks and designing of low cost pelleting machine that is being adopted by commercial goat farmers for intensive goat rearing.
- ✓ **Hydroponic maize & barley fodder** : Gebremedhin.W.K., 2015 have found that there is increase in body weight gain, feed conversion efficiency and overall profit of the goat farm by feeding hydroponic maize and barley fodder to small ruminants. inferior quality roughages are being supplemented along with green hydroponic fodder. S.P. Dhawale (2017). found that 25 percent replacement of concentrate mixture with hydroponically grown maize fodder is economical for rearing of growing goats.
- ✓ **Azolla feeding**: Chandra *et al.*, 2018 found that the Inclusion of 25% azolla in ration of goats proved better as it increased return per day and increase milk production per litre. Azolla contains 25-35% protein, 10-15% minerals, 7-10% aa, bio-active substances & bio-polymers , low in fats & carbohydrates. It Can be easily harvested with a scoop net, or grown in enclosed, floating rings which can be pulled to the edge for easy harvest
- ✓ **CSWRI, Avikanagar**: Use of nutrigenomics in physical and chemical nutrition, rumen bio-films and its role in therapeutic nutrition had been studied by the scientist of CSWRI, Avikanager. Probiotic microorganisms from different wild and domestic

animals and birds and rumen microorganisms and biomarkers for micronutrient status in animals will be identified, isolated and characterized. These studies are ongoing to supplement the sheep along with the poor quality roughage.

Conclusion

Use of modern techniques and through strategic feeding supplementation cost of the feeding of ruminants could be economized and may lead to higher output with low input.

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