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Improve the livelihood of farmers of Northern Hilly areas of Chhattisgarh via annual fodder production

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Abstract

Livestock rearing plays a significant role in the economy of India. Globalization has increase demand for milk and other dairy products worldwide. The Indian dairy sector is characterized by an inadequate supply of fodder and lack of knowledge on feeding. The fodder scarcity affects most of the farmers especially small and landless livestock keepers. It is documented that crop residues especially rice and wheat are the main fodder that constitutes about 44 % feed requirements of cattle in India ^[1]. Thus it calls to understand the problems in fodder production, traditional utilization pattern and knowledge about quality for fodder. A general agreement is that there is a shortage of 40.4% dry fodder and 24.7% green fodder against the requirement of 650.7 and 761.5 million tones (Mt) for dry and green fodder respectively ^[2]. In India, there is a deficit of green fodder, particularly during the summer season. In India, only 4.4% of the cultivated area is under fodder crops with annual total forage production of 846 Mt. Male populations from rural areas in India is migrating to cities for their livelihood leaving their family behind. This advocates proper training and policy support to women for maximization of quality fodder production and employment generation at household level. This would help in improved nutrition status and economic upliftment of rural population.

Keywords: Women and livestock rearing, Intensive fodder production

Introduction

Awareness and adoption of improved fodder production and conservation technologies among farmers will increase the production and availability of green fodder in term of quality and quantity significantly. Feed and fodder production for livestock feeding is an important aspect for the sustainability of the system because agriculture and animal husbandry are complementary and not competitive to each other. The feed resources are by and large the crop residues, fodder, agro by-products and some indigenous feeds. The farmers feed their livestock with available feed resources, which are not balanced in terms of protein and energy to meet the nutrient requirement leading to poor performance. Therefore, it is felt as need of the hour to explore the possibility of improved fodder production for feeding to livestock in better way. The agriculture and livestock sector still provides employment to 52 % of the work force ^[3]. Animal husbandry promotes gender equity. More than three-fourth of the labour demand in livestock production is met by women. The share of women employment in livestock sector is around 90 % in Punjab and Haryana where dairying is a prominent activity and animals are stall fed. Further, women are the producers and managers of household food arrangement and nutritional security.

In India over 75% farmers are small and marginal holders, livestock is the main source of livelihood for a majority of the rural population. The contribution of livestock to the National GDP is about 9% and 25% to agricultural GDP. Livestock have been contributing about 15-20% to the household income of farmers ^[4]. Which has been steadily increasing during recent years. Among different products, milk is the major output contributing to the GDP as well as to food security. In fact, the contribution of milk to GDP (5.86%) is more than the contribution of rice (5.77%). The demand for milk will further increase by 80% by the year 2022 ^[5]. Demand for meat is also likely to increase by several folds. Efficient feeding and marketing will help in increasing the profitability. However, the profitability is directly dependent on the sources of feed and fodder, as about 65-70% of the total cost of livestock farming is attributed to feeding. Any saving in feed and fodder cost would directly contribute to increase in profitability. The economics of milk production is heavily dependent on the quantity of nutritious forage fed to milch animals. Nutritive values of forage based ration and intake in large animals.

With feeding of good quality forage, particularly leguminous fodder, feeding of concentrate can be reduced significantly. Animals yielding up to 5-8 kg milk per day can be maintained exclusively on 48-55 kg lucerne or berseem greens, as a substitute for 4.5 to 5.0 kg concentrate^[6]. While improving the forage resources, it is necessary to address the opportunities related to production and efficient use crop residues, increasing the fodder yield of cultivated fodder crops on agricultural lands as well as on wastelands and community pastures. The strategy should cover selection and breeding of high yielding and stress tolerant fodder crops and varieties, improving the yields through sustainable production practices, efficient conservation and strengthening the value chain of dairy and meat producers to provide various critical services required to optimize the income.

Material and Methods

This paper was prepared on the basis of review of the research on round the year fodder production. For estimating the effect of fodder on household income, the present study was carried out in Baikunthpur at Bhaadi Village of the District on the door of tribal farmers by Krishi Vigyan Kendra, Korea, Chattisgarh, India. To understand production and feeding strategy among different class of farmers especially small and marginal livestock keepers there are 5 families involve particularly farmer women. In kharif & Rabi season fodder production annual cereal and legume fodder were grown in 3.5ha land for round the year production. Multi cut Sudan as cereal and Bajra, Stylo grass were grown during rainy season and Oat, Barseem were grown during winter season. Cereal fodder was grown under 85% areas whereas, legumes under 15% areas only since most of the area are under low-land. The cereal fodder oat under 60% areas and legume fodder Berseem 40% under areas were grown on same land during rainy and winter season. Fodder yields of different crops during various seasons are given by^[7] and shown in Table 1. With present annual fodder production; total 120 tons green fodder can be produced from 1ha land in one year which will

be sufficient to meet fodder requirements of 15 crossbred cows round the year. Nutritive values of forage based ration and intake is given by^[7] and shown in Table 2^[7] and nutritive requirement of dairy cow is given in Table 3^[7].

Participation of Women in Fodder Production

Women are the custodian of household food security. They are often the producers of agricultural products and translate these products for the food and nutrition security of their households^[8]. When women have income sources they spend most of it on the education and nutrition of their children. Fueled by a growing population, rising income and rapid urbanization, the demand for livestock products is rising. Women possess detailed knowledge of agriculture and use of plant and plant products for food, medicine and animal feed besides precisely knowing the process of their cultivation, processing and utilization due to their active participation in different agricultural activities^[9] and with increasing globalization of agri-food markets, livestock producers are now exposed to global competition. The agricultural sector engages about 57% of the total working population and about 73% of the rural labour force. Livestock employed 8.8% of the agricultural work force albeit varying widely from 3% in North-Eastern states to 40-48% in Punjab and Haryana. Most of the animal farming activities such as fodder collection, feeding, watering and health care management, milking and household-level processing, value addition and marketing are performed by women. Women possess detailed knowledge of agriculture and use of plant and plant products for food, medicine and animal feed^[9].

Apart from this, Scenario of daily fodder Market in Baikunthpur, District korea (C.G.) by which farmers sell wheat straw 3-4 Rs/ kg in Summer season, in rainy season 5-7Rs/ kg. In winter season 8-11Rs/ kg, Green fodder (grasses) 2 Rs/kg at Rainy season, 5-7 Rs /kg in winter season. In summer season 8-10Rs/ kg. Other expenses of farmers i.e. Market space 30-50Rs/day for selling of fodder.





Table 1: Nutritive values of forage based ration and intake in large ruminants.

Particulars	Volume intake % of body weight	Approx. Nutritive value (%)		Remarks
		DCP	TDN	
Green cereal + legume forages	2.5	10-15	55-65	Maintenance + 5-6kg milk
Green cereal forages	2.0	3-6	50-55	Maintenance + 5-2kg milk
Cereal hay	1.5	1-3	40-50	Sub-maintenance
Straw	>1.5	0.5-1.0	>40	Sub-maintenance

(J.J. Gupta 2014)

Table 2: Nutrient requirement of dairy cow

Nutrients	Nutrient requirement for maintenance of 450 kg body weight cow	Additional nutrient requirement per kg milk with 4% fat
DCP	275g/day	45g
TDN	3.33kg/day	315g

(J.J. Gupta 2014)

Table 3: Season-wise production potential of various fodders

Particulars	Total fodder yield (t/ha)	Av. DM (%)	Av. CP (g/100g DM)
Rainy Season			
Sudan in 3 cuts at 65, 110& 155 d	74.78±2.92	14.48	8.72
Bajra at 90d	29.06±4.06	12.77	15.18
Stylo at 90d	35.67±1.52	17.19	15.30
Winter season			
Berseem in 4 cuts at 60, 95, 125 & 155d	67.84±1.22	11.65	15.83
Oat in 3 cuts at 50,75 & 125d	28.23±0.64	14.18	11.14

Maximum yield is reported in Sudan, grass at rainy season. The gross income was found to be maximum in Berseem in winter season. The crop wise benefit - cost analysis indicated that the net earnings per hectare was highest from Sudan, grass and Berseem grass production is also a good option from economics point of view.

Conclusion

It is evident from the above discussion that, constrained by non-availability of quality fodder resources to feed the

livestock. But, it is also a fact that enormous potential are available in these eco-system to produce quality fodder, which can be utilized for feeding the livestock to decrease dependence on external inputs. Pasture based ruminant production in cut and carry method of feeding can be encouraged for the sustainability of the system. For fulfilling the demand of year round green fodder it is important to trained farmers, especially women in advance practices of production. Fodder based enterprises could be a sustainable

option for income generation for women. Although much of work of livestock farming is carried out by women, they have very limited awareness about new technologies which can enhance their knowledge, skills, practices and productivity. The results of the study revealed that fodder cultivation may play a significant role for more income generation for livelihood activity of women's farmers in the studied areas.

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