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Technologies and Practices for Improving Livestock Feeding in India

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Abstract

Marginal farmers constitute the core of the livestock production sector and own over 80 percent of all livestock in India. Ruminant production is based on grazing and crop residues. Small ruminants subsist entirely on open grazing/browsing. Fodder scientists have developed many superior fodder crops like hybrid Napier varieties yielding over 300–400 tonnes of green fodder per hectare annually and giving net income of Rupees 250 000 per hectare. In some villages there are several few 'land surplus' farmers with fully-irrigated land to spare for high-yielding fodder crops. The milk collection centres, dairy and farmer cooperative societies in the village can identify 'land surplus' farmers and enter into mutually-benefiting annual contracts with them for cultivation and daily supply of cut-green fodder. Rotary chaff cutters in farmer households can maximise fodder utilisation. In straw-rich states millions of tonnes of straws are burnt as a means of disposal. This straw could be used for making pellets. Enriched straw pellets from Punjab state could take care of the total needs of ruminant feeds/fodder in the adjoining deficit states. The technology for pulverising, chopping and pelletising straw will have industrial-scale application in all regions.

Keywords: Enriched straw pellets; Fodder on contract; Land surplus farmers.

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Introduction

Marginal farmers constitute the core of the livestock production sector in India. Nearly 80 percent of all large ruminants, including the high-yielding crossbred cows, and over 85 percent of all other livestock are owned by marginal farmers. Ruminant production in India is predominantly based on grazing highly-overgrazed common grazing lands and on crop residues like straws and stovers. Concentrate feeds are used to supplement the dry fodder diets in the case of producing/working large ruminants while small ruminants subsist entirely on open grazing or browsing. Supplementing the dry fodder diets with some green fodder considerably enhances the efficiency of the production system including reducing the emission of greenhouse gases and reducing the dependence on expensive concentrate feeds and lowering production costs. As far as promotion of green fodder production is concerned, India has been trying to persuade the marginal farmers to grow green fodder, but with very limited success.

Application of technology and practice by farmers

Fodder on contract by 'land surplus' farmers

Access to fodder in every village with a milk collection centre (MCC), dairy cooperative society (DCS) or farmer cooperative (FC), would greatly enhance animal production. There are over 100 000 villages in India with some type of organised milk marketing infrastructure (MCC/DCS/FC). Without such access to quality fodder, livestock production in India will not be in a position to meet its burgeoning demand for livestock products. Research efforts of fodder scientists in the country have resulted in the development of high-yielding fodder varieties of grasses and legumes. A number of high-yielding perennial (replanting in 5–6 years) tropical grasses like hybrid Napier varieties yield over 300–400 tonnes of greens per hectare annually. Selling green fodder at Rupee 1 per kg, the fodder-producing farmer would receive daily cash income round the year, totaling up to Rupees 300 000 per hectare annully and net income of Rupees 250 000. One hectare of such fodder crops could sustain the fodder requirements of at least 30 cows or buffalo round the year (@ 20 kg/animal daily) or over 300 small ruminants @ 4 kg per head daily. There are farmers that have surplus, fully-irrigated land to spare for high-yielding, high income cash crops, in almost every village. Such farmers are keen to obtain a higher income from their irrigated land than that obtained from the cultivation of conventional crops. The MCC/DCS/FC could identify the 'land surplus' farmers in the village with irrigated land to spare for cash crops and enter into mutually-benefiting annual contracts with them to cultivate and supply cut-green fodder daily to collection centres for sale to milk suppliers or other small ruminant-farmers. Milk collection centres and dairy cooperative societies sell branded, balanced cattle-feed daily to milk producer members. Similarly the MCC/DCS/FC in each village can sell the cut-green fodder daily in the collection centre, making marketing of green fodders easier. Fodder on contract by 'land surplus' farmers in every village needs only promotional efforts and organised marketing by the MCC/DCS/FC, and requires no cash inputs by the Governments or the Cooperatives. This is eminently practical and demand-driven, and can be universally applied in any village in the country where organised milk marketing exists.

Promotion of rotary chaff cutters (manual or electric powered) in farmer households can help chop the green fodder into small bits and avoid wastage. Reasonably-priced manual or power-driven rotary chaff cutters are readily available in the market.

Enriched Straw Pellets

India produces some 300 to 400 million tonnes of straws/stovers annually. Farmers all over the country use home-grown dry fodder as the staple diet for their animals. There are straw surplus states that burn millions of tonnes of straws as a means of disposal. Salvaging the straws for animal feed would go

a long way in increasing the availability of ruminant feeds. A survey on the end-use of rice and wheat straws in the state of Punjab showed that less than 10 percent of rice straw and 40 percent of wheat straw produced annually is used as animal feed. The farmers in the states of Haryana, Punjab and Western Uttar Pradesh have largely replaced rice and wheat straws from the diets of dairy animals with high yielding and high quality fodder crops. In Punjab alone nearly 8 million tonnes of rice straw and around 9 million tonnes of wheat straw are burnt annually *in situ* as a means of disposal Millions of tonnes of wheat straw in Gujarat and rice straw in Madhya Pradesh are also burnt annually as farmers do not feed them to their dairy or work animals. Tamil Nadu is a straw surplus state even though rice straw is the staple diet of dairy cows and work animals in the state. Wheat and rice straws left behind by harvesters can be pulverised or chopped and pelletised in feed mills, with or without enrichment (urea, molasses, other supplements), which enhances their utility as ruminant feeds, as they can then be easily stored, transported and utilised as feeds in far-away fibre-deficit areas.

The technology for pulverising, chopping and pelleting straw will have industrial-scale application in all regions of the country where straw is burned for disposal thus making available millions of tonnes of enriched straw pellets as ruminant feed.

There are over 800 animal-feed milling plants of assorted sizes distributed all over Punjab. These minimise the transport of straw across the state for processing. Enriched rice or wheat straw pellets from Punjab can take care of the total needs of ruminant fodder and feed in the drought-ravaged and fibre-deficit state of Rajasthan. Punjab can also market enriched straw pellets to cattle-feed manufacturing plants in North India, as a low-cost ingredient for balanced cattle-feed. Small straw-pelletising plants, if established in the straw-producing areas in Madhya Pradesh or Gujarat can supplement ruminant feeding in straw-deficit

Table 1: Land and Livestock Holding in India in 2003

Category	RHH (Million)	RHH %	AFCB Cattle %	AF Indigenous cattle %	AF Buffalo %	Sheep & Goat %	Pig %	Poult %
Landless	46.09	31.18	0	0	0	0.21	0.15	1.03
Marginal (0.002-1h)	70.89	47.89	78.47	77.40	71.86	85.34	94.79	85.07
Semi medium (2-4 ha)	09.21	06.23	07.09	08.04	09.34	04.04	01.63	03.68
Medium (4-10 ha)	04.33	02.93	08.77	07.42	10.69	04.45	01.04	04.79
Large (=10 ha)	00.81	00.55	00.81	01.75	02.12	02.50	00.48	00.63
Total(Ha)	**147.84**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

RHH- Rural house Holding

AF-Adult Female

AFCB-Adult female Cross Bred

Table 2: Rice and wheat straw production and end - use in Punjab State

Straw type	Quantity			End use & Total		
	(000 tonnes)	Fodder	Manure	Burnt	Sold	Miscelaneous
Rice straw	09.852	06.5	00.9	81.4	04.8	05.8
Wheat straw	18.972	42.6	00.2	48.2	08.1	01.0

areas of Andhra Pradesh and Orissa; and in Tamil Nadu for use in Kerala.

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