

Analysis of Farmers' Information Needs on Fodder Production

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ABSTRACT Fodder situation in India is extremely precarious and gap between its demand and availability is very wide. However, fodder production is profitable to livestock farmers. A study was therefore conducted to know fodder shortage experienced by livestock farmers, farmer's information source consultancy pattern and analyse their information needs on fodder crops cultivation in Karnataka covering under 4 agro-climatic zones, 4 districts, 4 taluks, 12 villages and 120 farmers' selected using stratified random sampling. The mean green fodder deficiency was comparatively more in hilly zone followed by coastal zone, northern transition zone and northern dry zone. Progressive farmers/farmer's friends from own or neighbouring villages were consulted very often by the respondents to seek information. Information need on 'Green fodder production throughout the year' was ranked first by the farmers of all the zones. Extension functionaries of these zones should educate farmers on methods to produce green fodder throughout the year.

INTRODUCTION

Livestock plays multi-functional role to rural livelihoods. They provide milk, manure, fuel, employment and economic security to rural households. The market for livestock products, especially milk, is not volatile unlike for vegetables and other commercial crops despite being highly perishable commodity. The livestock rearing till today thus has remained as one of the most stable household enterprise of rural India. Nevertheless it faces many challenges too. Labour scarcity like other rural enterprises though affected it but only to the extent of reducing herd size and rearing better breeds to get more milk. Increased cost of feeding is another challenge faced by it. Cost of feeding accounts nearly seventy percent of the total cost of livestock rearing because of increased dependence on concentrate feeds. The full genetic potential of better breeds of livestock reared by farmers could not be realised in terms of higher milk yield mainly due to poor feeding. Seasonal native grasses, crop residues and concentrate feeds are fed to the livestock sufficient enough only to meet their

maintenance not the production requirement. This is true with all the livestock farmers of the country as it faces acute shortage of green fodder, dry fodder and concentrate feeds. There is a gap in the availability vs. requirement. As per estimates, the deficit of dry fodder, concentrate feeds and green fodder currently is ten, thirty-three and thirty-five percent respectively, which by 2020 is likely to be eleven percent, thirty-five percent, and forty-five percent. What is more concerning is the stagnation in the availability of green fodder and its increasing deficit over the years.

There are many improved high yielding fodder crops available for cultivation in the country. Farmers generally tend to show reluctance to part their fertile cultivable land for fodder production, the reason being these crops do not fetch direct returns. These crops cannot be necessarily cultivated in fertile lands. They are suitable for different situations. Field bunds, waterways, less fertile lands, backyards, inter-row spaces of fruit and plantation crops etc. can be used to grow these crops. Many fodder crops provide high green fodder beside containing soil erosion and adding organic matter to the soil. However, many farmers are not coming forward to take up these crops as they might not be aware

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about these crops. Creating awareness about these crops, hence, becomes very important by using different extension methods. To do so, scientifically designed training programs or awareness campaigns were essential which are to be based on the information needs of the farmers. 'Information need' refers to the knowledge farmers want to seek to improve their farm practices and livelihood. Understanding information needs of farmers would certainly help extension functionaries to convey the message to the farmers as per their need and expectations. Babu et al. (2012) argued that findings of studies on information need and information sources help to target specific group of farmers. The present study was thus contemplated with the objectives to assess the fodder shortage experienced by livestock farmers, to know the present information source consultancy pattern by them and to identify and prioritise information needs of these farmers on fodder crop cultivation.

METHODOLOGY

Study was conducted in northern Karnataka (2015-16). This part has 7 districts belonging to 4 agro-climatic zones. These zones are northern dry zone (zone 3), northern transition zone (zone 8), hill zone (zone 9) and coastal zone (zone-10). Stratified random sampling was used to select the villages. First stratum was those districts having highest livestock population in each zone. Dharwad (zone 8), Belgaum (zone 9), Bagalkote (zone 3) and Uttara Kannada (zone 10) districts were selected. Second stratum was one taluk (block) from each district again having highest livestock population. Chikkodi (zone-9), Khanapur (zone 8), Badami (zone 3) and Honnavar (zone 10) were the taluks selected. Third stratum was selection of 3 villages from each taluka having highest milk collection by the cooperative milk societies, the data for which were obtained by the respective milk unions of Karnataka Milk Federation. Kerur, Hirekodi, Examba from Chikkodi taluk; Itagi, Avarolli, Kodachwad from Khanapur taluk; Kendura, Mutakanakere, Muttalgeri from Badami taluk; and Gunavante, Kerekonan, Gunavante-B from Honnavar taluk, were the villages, together making 12, were sampled for the study. Fourth stratum was respondent's selection in villages based on landholding size. Two each farmers belonging to marginal (below

1 ha), small (1-2 ha), semi-medium (2-4 ha), medium (4-10 ha) and large (10ha and above) categories, total 10 farmers from every village were selected. The study thus made use of agro-climatic zone, livestock population, milk procurement and landholding size as the criteria for stratification of study area. It covered 4 agro-climatic zones, 4 districts, 4 taluks, 12 villages and 120 farmers.

Interview schedule was structured by incorporating questions related to different variables to be studied as per the objectives set for the study. This structured interview schedule was pre-tested in non-sample area to identify the ambiguities if any. The necessary corrections were incorporated based on the experiences of pre-testing and interview schedule was then finalised. This standardised interview schedule was used for final data collection which was done through personal interview technique. Collected data were tabulated and analysed zone wise using frequency, percentages and garret scores. The garret score to rank the information needs were assigned by using the formula below-

Garrett's formula for converting ranks into percent is $\text{Percentage} = \frac{100(R_{ij} - 0.5)}{N_j}$

Where, R_{ij} = Total Score of Weighted Average
 N_j = Total No of Respondents

The percent position of each rank was converted into scores referring to the table given by Garrett and Woodworth (1969). For each factor, scores of individual respondents was added together and divided by the total number of the respondents. These mean scores for all the information needs were arranged and ranked.

RESULTS AND DISCUSSION

Extent of Green Fodder Shortage Experienced by Livestock Farmers of Different Agro Climatic Zones

Extent of green fodder shortage was reported differently by the farmers of different zones (Table 1). Few farmers of zone 3 (16.67%) and zone 8 (6.67%) expressed that they didn't face green fodder shortage at all. One-fourth respondents of zone 3 (26.67%) and one-fifth respondents of zone-8 reported that they experienced ten percent of green fodder shortage while only 3.33 percent each of respondents of zone-9 and

Table 1: Green fodder shortage experienced by livestock farmers across different zones

Deficit percentage	Zone-3*		Zone-8*		Zone-9*		Zone-10*	
	F	%	F	%	F	%	F	%
0	5	16.67	2	6.67	0	0	0	0
10	8	26.67	6	20.00	1	3.33	1	3.33
20	7	23.33	7	23.33	5	16.67	3	10.00
30	3	10.00	1	3.33	3	10.00	8	26.67
40	1	3.33	3	10.00	1	3.33	12	40.00
50	5	16.67	8	26.67	13	43.33	2	6.67
>50	1	3.33	3	10.00	7	23.33	4	13.33
Mean		23.67		33.33		47.00		38.67
S.E		3.42		3.93		3.37		2.78

*Zone-3=Northern Dry Zone, Zone-8=Northern Transition Zone, Zone-9=Hill Zone, Zone-10=Coastal Zone. (F-Frequency)

zone-10 reported the same. Green fodder shortage to the extent of fifty percent was experienced by 16.67 percent (zone-3) and 26.67 percent (zone 8) of the respondents. In zone 9, nearly half of the respondents (43.33%) reported that they experienced fifty percent green fodder shortage and nearly one-fourth (23.33%) experienced it more than fifty percent. Forty percent respondents of zone 10 experienced green fodder shortage by forty percent and one-fourth (26.67%) by thirty percent.

Green fodder shortage was more in case of zone-9 as nearly sixty-seven percent reported that they experienced either fifty percent or more of it. Zone-9 is a hilly zone where in Uttar Kanna-da and Dakshina Kannada districts belong. Biradar and Kumar (2013) reported similar findings that these districts belong to severely fodder deficient category of Karnataka state. The mean green fodder deficiency was comparatively more in zone 9 (47 ± 3.37) followed by zone 10 (38.67 ± 2.78), zone 8 (33.33 ± 3.93) and zone 3

(23.67 ± 3.42). Biradar and Vinodkumar (2013) reported similar results that the mean dry matter availability, for the state was 56.46 percent indicating the deficiency to the extent of 43.54 percent.

As depicted in Table 2, extent of dry fodder shortage was more in Zone-10 as ninety percent of respondents mentioned that they experienced its shortage upto fifty percent (23.33%) and more than fifty percent (66.67%). Ten percent of them had reported that they experienced upto forty percent dry fodder shortage. In zone-9, one-third (33.33%) respondents each experienced dry fodder shortage upto ten percent and twenty percent, one-fifth experienced fifty percent and one-tenth above fifty percent. One-third respondents in zone 8 experienced dry fodder shortage above fifty percent, followed by 23.33 percent experienced upto ten percent, 13.33 percent each experienced upto twenty percent and fifty percent and only 3.33 percent experienced dry fodder shortage up to thirty percent. Even at national level the same picture remains. It has been re-

Table 2: Dry fodder shortage experienced by livestock farmers across different zones

Deficit percentage	Zone-3*		Zone-8*		Zone-9*		Zone-10*	
	F	%	F	%	F	%	F	%
0	6	20.00	4	13.33	0	0	0	0
10	7	23.33	7	23.33	10	33.33	0	0
20	7	23.33	4	13.33	10	33.33	0	0
30	1	3.33	1	3.33	0	0.00	0	0
40	1	3.33	0	0.00	1	3.33	3	10
50	4	13.33	4	13.33	6	20.00	7	23.33
>50	4	13.33	10	33.33	3	10.00	20	66.67
Mean		26.83		36.83		30.17		62.67
S.E		4.53		5.28		3.86		2.57

*Zone-3=Northern Dry Zone, Zone-8=Northern Transition Zone, Zone-9=Hill Zone, Zone-10=Coastal Zone. (F-Frequency)

ported that availability of fodder, both dry and green, has not been commensurate with the requirement. Whereas the project requirement has increased by more than fifty percent, the fodder availability is estimated to have increased by only 14.5 percent in the five years between 2001 and 2006. It has resulted in a projected shortage of more than sixty percent in green fodder and nearly twenty-three percent in dry fodder by 2020. Converted into absolute terms, this deficit works out to 728 million tons in respect of green fodder and 157 million tons in respect of dry fodder (Planning Commission 2011).

Need of Livestock Farmers to Know More about Cultivation of Fodder Crops

One-fifth of the respondents mentioned that they needed to know more about cultivation of annual and perennial fodder crops (Table 3). While 38.33 percent of them expressed that information on cultivation of annual fodder crops they needed to know and 35.38 percent on pe-

Table 3: Livestock farmers' need to know about cultivation of different fodder crops (n=120)

S. No	Types of fodder crops	Need	
		Numbers	Percentage
1	Annuals	46	38.33
2	Perennials	43	35.83
3	Both	25	20.83
4	No need	6	5.00

rennial fodder crops. Only five percent respondents expressed there is no requirement to know about these crops. Morton and Matthewman (1996) argued that livestock extension has been marginalised by major interest groups (crop-based extension and animal health services) and by a lack of a clear understanding of livestock farmers' needs. Crop production needs and animal health problems are more easily diagnosed and addressed than livestock production needs. Livestock farmers are frequently dispersed and are usually non-uniform in their needs (even within a particular community).

Information Source Consultancy Pattern of Livestock Farmers

Findings related to information source consultancy pattern of livestock farmers are presented in Table 4. Progressive farmer's/farmer's friends from own or neighbouring village were consulted very often (54.17%) and often (42.5%) by the respondents to seek information. Relatives were consulted very often by 40.83 percent and often by forty-five percent respondents. Similar results were reported by Partha and Biradar (2017) who reported that the farmers get benefited from the information they get from friends, relatives and other fodder growing farmers pertaining to technologies related to cultivation of perennial fodder crops. Front-line extension functionaries of line departments were consulted very often by only 16.67 percent, often by 53.33 percent respondents and rarely by 25.83

Table 4: Information source consultancy pattern of livestock farmers (n=120)

S.No.	Information source	Very often F (%)	Often F (%)	Rarely F (%)	Never F (%)
1	Progressive farmers/farmer friends/ friends' from different village	65 (54.17)	51 (42.5)	4 (3.33)	0 (0)
3	Agriculture officers in Raitha Sampark Kendra/ Veterinary doctors/Horticulture officers	49 (40.83)	54 (45)	16 (13.33)	1 (0.83)
4	Television	20 (16.67)	64 (53.33)	31 (25.83)	5 (4.17)
5	Radio	7 (5.83)	45 (37.5)	58 (48.33)	10 (8.33)
6	Newspapers	5 (4.17)	33 (27.5)	55 (45.83)	27 (22.5)
7	Krishi Vigyan Kendra	1 (0.83)	19 (15.83)	52 (43.33)	48 (40)
8	Krishimela	5 (4.17)	13 (10.83)	21 (17.5)	81 (67.5)
9	Messages in the mobile	20 (16.67)	24 (20)	16 (13.33)	60 (50)
10	Training programs/workshop	0 (0)	2 (1.67)	13 (10.83)	105 (87.5)
11	Study tours	3 (2.5)	6 (5)	44 (36.67)	67 (55.83)
12	Field days	1 (0.83)	11 (9.17)	44 (36.67)	64 (53.33)
13	Bank	0 (0)	6 (5)	36 (30)	78 (65)
14	Any other:- (Private company, Input dealers and Fertilizer shops)	4 (3.33)	31 (25.83)	57 (47.5)	28 (23.33)
		17 (14.17)	1 (0.83)	13 (10.83)	89 (74.17)

F-Frequency, %-Percentage

percent respondents. Television was consulted often by 37.5 percent and rarely by 48.33 percent respondents, while radio was consulted often by 27.5 percent, rarely by 45.83 percent and never by 22.5 percent respondents. Forty percent of respondents reported that they never consulted newspaper while 43.33 percent reported that they consult it rarely and 15.83 percent consult it often. Krishi Vigyan Kendra was consulted very often only by 4.17 percent, often by only 10.83 percent, rarely by 17.5 percent and never by 67.5 percent respondents. Krishimela was used as an information source very often by 16.67 percent, often by twenty percent, rarely by 13.33 percent and never by fifty percent of the respondents. Short messages in mobiles and attending training programs were never consulted by 87.5 percent and 55.83 percent of respondents, respectively. However latter was consulted rarely by 36.67 percent respondents. Similar results were observed for study tours which were consulted rarely by 36.67 percent and never by 53.33 percent respondents. Nearly, one-third of the respondents that is, thirty percent used field days to get information rarely and was never consulted by sixty-five percent respondents. Bank officials were consulted often by one-fourth (25.83%) of the respondents, rarely by 47.5 percent and never by 23.33 percent respondents. Similar results were reported by Pankaja et al. (2001) who reported that the extent of use of informal sources was more compared to mass media, formal and extension programmes. This might be due to the fact that the neighbours, friends and relatives are the most feasible and easily accessible sources and also the prevailing homophily might have compelled them to consult these sources. The selection of an information source depends on number of factors including level of income, farm size, age, geographical location and level of education. Riesenberga and Gor (1999), Ogboma (2010), Meitei and Devi (2009), and Mtega and Benard (2013) mentions some information sources used by farmers in accessing their agricultural information including; newspapers, journals, bulletins, community leaders, and farmer groups. Another study by Daudu et al. (2009), reported farmers to use agricultural extensions, posters, Televisions and Radio as their source of information.

Information Needs Analysis of Livestock Farmers in Different Zones

Information on 'Green fodder production throughout the year' was ranked first indicating

the most needed information by the farmers of all the zones. This reflects that farmers though are aware about the importance of feeding green fodder but were not aware about ensuring its production all through the year. Green fodder has many advantages - it improves the health and productivity of animal, it digests easily and acts as mild laxative to prevent constipation, natural source of nutrients besides leading to efficient utilisation of other nutrients. 'Cultivation of improved fodder crops in different situations' was the information need ranked second by the respondents of northern dry zone (zone 3) and coastal zone (zone 10). Fields affected with water logging, salinity could be utilised for fodder production which are otherwise left unutilised. Similarly fodder crops can be cultivated on bunds and in inter-row spaces of trees in orchards. In coastal zone, farm sizes are small and hence using lands with such situations (inter row spaces, bunds etc.) would help farmers to produce fodder. In northern dry zone, though fields are large but farmers of this zone are able to take only one crop a year owing to scanty rainfall. So farmers might not want to forgo it, hence producing fodder in other situations might have been ranked second as need for information. Same need was ranked third by farmers of hilly zone (zone 9) as they also have small land-holdings. It was ranked fifth by the farmers of northern transitional zone (zone 8). Reason could be that this particular zone has assured and well distributed rainfall because of which they take two crops a year and apportioning part of land for fodder production would not much affect cultivation of other crops. Need of information on cultivation of improved fodder crops both in irrigated and rain fed situations was ranked second by the farmers of hilly zone (zone-9). Crops cultivated in this zone are mainly fruit and plantation crops. The crop residues of some of these crops though partly fed are not the sole feed like sorghum stover. Hence, they might have expressed the need to have information on cultivation of these crops either in irrigated and/or rainfed situations. Information need on cultivation of fodder crops in rainfed situation was ranked fourth by the farmers of zone 3, zone 9 and zone 10 and fifth by the farmers of zone-8. While cultivation of fodder crops in irrigated situations was ranked fourth by the farmers of zone-8, but was ranked fifth by the farmers of other three zones (Table 5).

Table 5: Information needs analysis of livestock farmers across different zones (n=120)

Factors	Zone-3*			Zone-8*			Zone-9*			Zone-10*		
	Total score	Mean score	Rank	Total score	Mean score	Rank	Total score	Mean score	Rank	Total score	Mean score	Rank
A	913	30.43	5	1372	45.73	4	1281	42.70	5	990	33.00	5
B	1190	39.67	4	1588	52.93	2	1355	45.17	4	1271	42.37	4
C	2115	70.50	1	1719	57.30	1	1920	64.00	1	1880	62.67	1
D	1594	53.13	3	1523	50.77	3	1461	48.70	2	1480	49.33	3
E	1658	55.27	2	1238	41.27	5	1453	48.43	3	1849	61.63	2

*Zone-3=Northern Dry Zone, Zone-8=Northern Transition Zone, Zone-9=Hill Zone, Zone-10=Coastal Zone.

A-Cultivation of improved fodder crops in irrigated conditions

B-Cultivation of improved fodder crops in rain fed conditions

C-Green fodder production throughout the year

D-Cultivation of improved fodder crops both in irrigated and rain fed situations

E-Cultivation of improved fodder crops in different situations*

(* In water logged conditions, Salma Sorts, on bunds, inorchards etc.)

CONCLUSION

Technologies for green fodder production throughout the year by cultivating combinations of annual and perennial fodder crops and/or fodder trees and shrubs are available in the country. As this emerged as the most needed information by the farmers of all the zones, the extension missionaries working on livestock and fodder promotion should emphasise on this and promote related technologies. Informal sources of information are consulted most by the farmers to obtain information on fodder technologies. Hence, key farmers from different zones should be identified and enabled with such technologies and their services should be used for reaching out more farmers. Simultaneously to compliment with this effort, mass media and other formal sources should also be utilised to reduce the 'reach time' and augment its spread. Efforts in this direction would result in decreasing the fodder deficiency of the zone and improving livestock production.

RECOMMENDATIONS

Technology on green fodder production throughout the year is available with Indian Grassland Fodder Research institute. However this needs to be popularised as it was found the most important information need. Capacity building of identified key farmers of each zone and demonstrations on this technology should be done by partnering with Krishi Vigyan Kendras. This would help to reach the technology to farmers and enable horizontal farmer to farmer spread of technology.

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