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Identification of dissemination pathways followed by perennial fodder crop growing farmers of sugarcane belt of Karnataka

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Abstract

A study to identify dissemination pathways followed by the perennial fodder crops growing farmers of sugarcane belt of Karnataka was conducted. One hundred and twenty perennial fodder crops growing farmers of 2 districts of Karnataka identified through snow ball technique were interviewed using standardised interview schedule. Nine dissemination pathways though emerged from the study; none emerged as the highly followed pathway by large majority of respondents. Multiple pathways thus operated and in the process there might have been distortion of messages. Veterinary officers, State agricultural universities and relatives and friends formed the elements of diffusion pathways for information and seed material sources to farmers. There was a significant difference between the year of getting information and year of obtaining seed of perennial fodder crops in case of small, medium and affluent farmers.

Keywords: Information source, Perennial fodder crop area, Seed source

Introduction

There is a growing demand for meat, milk and other animal products in India. The shortage of feed in dry season is the major factor limiting livestock productivity in the country. Animals go through cycles of weight-gain in monsoon and weight loss in the dry season (Elliot and Folkerstsen, 1961; Minson, 1981; Clatworthy, 1998). Change in cropping pattern from traditional crops (bajra, sorghum, horsegram etc) to the cash crops (cotton, chilli, maize, sugar cane, hybrid sorghum etc.) decreased the availability of crop residues to the livestock. The alarmingly shrinking of community grasslands has further worsened the situation. The dependence on concentrate feeds burden the livestock farmers making animal husbandry more a liability. There is growing realization among the farming community to cultivate improved forage crops in part of their farm to ensure constant supply of forage to their livestock.

Feeding of forage to dairy animals is essential for economic and sustainable milk production and reports indicate that 4 to 5 kg per day milk yield can be sustained on all forage rations. Forage crops provide nutritional and palatable green forage all the year round. Maximization of forage in the diet of dairy animal makes their ration much cheaper as compared to concentrated based ration (Gaikwad and Gampower, 1995). Improved grasses are generally bulky and high yielding crops. They have high residual fertility utilization capacity and provide quick soil cover to land, minimizing soil erosion (Scoones, 1992). Some are resistant to nematodes and ideal for use in crop rotations (York and Nyamadzawo, 1990). Thus, improved grasses play a major role in sustaining and improving livestock production level in the country. The role of forage crops in improving the productivity of smallholders farming systems and breaking the cycle of poverty and resource degradation is well documented by Peters (2001). The importance of growing perennial forage crops in cultivated lands is a recent phenomenon in India. Though traditionally farmers cultivated annual forage crops like jowar, maize, cowpea etc but perennial forage crops are gaining importance of late.

Agricultural extension services have developed around crop production and remain tied largely to the seasonal nature of cropping. Such system is less useful for livestock production, with a longer time-scale and a lack of synchronization of different animals and herds. This system however makes it very interesting to understand the diffusion pathways of perennial forage crops, being used for adoption by the farmers. Keeping this in view a study was undertaken to identify the dissemination pathways followed and diffusion of perennial forage among farmers.

Materials and Methods

Initial consultations with the scientists working on forage crops indicated that perennial forage crops are being cultivated by Sugarcane farmers of command areas. Hence

the secondary data on district wise area under sugarcane crop of north Karnataka for the year 2010 was collected. Bagalkote and Belgaum districts had highest area under sugarcane crop. Hence these two districts were selected for the study. Mudhol and Jamakhandi taluks from Bagalkot and Gokak and Athani taluks from Belgaum districts were selected based on highest area under sugarcane. Four villages from each taluk were selected randomly. In all, study covered 16 villages. List of farmers cultivating perennial forage crops was not available with state Department of Animal Husbandry and Veterinary Services (AHVS). So, the Veterinary Officers of AHVS department of selected taluks were consulted to get few names of farmers cultivating perennial forage crops in the villages. These farmers were contacted initially to collect the data and through them, by employing snow ball technique other perennial forage crops growing farmers were contacted and data was collected. In all, 75 farmers from Bagalkote and 75 farmers from Belgaum districts were contacted, thus forming the sample size of 150 farmers.

Dissemination pathway is operationally defined as the route by which the information and seed/planting material of forage crops reached the farmers. The source of information consulted by the farmers to learn about the forage crops and the year in which they obtained the information was collected. Similarly the source from which planting material and/or seed of forage crops collected and the year of obtaining them by farmers was also collected. Based on the information collected, the dissemination pathway followed by the respondents was ascertained. A structured interview schedule was prepared inclusive of all questions to address the objectives of the study. This schedule was pre-tested in a non-sample area in two stages to locate ambiguity in the questions included. Based on the nature of the responses, necessary corrections were made at different stages so as to standardize the interview schedule. This pre-tested and standardized schedule was used to collect the data in the study area. Data was collected by personal interview technique in the year 2012-13. The appropriate statistical procedures such as frequency, percentage, mean, standard deviation and t-test were employed to analyse the data.

Results and Discussion

Situations encountered to begin cultivation of fodder crops: Large majority of farmers (93.33%) felt the need to grow forage crops and hence approached information sources voluntarily. Over the years, there is an increase in area under hybrids and commercial crops. Cultivation of traditional cultivars and varieties, which are known to yield good quality and quantity of crop residues, had decreased. This certainly resulted in shortage of forage to the livestock creating felt need for fodder among farmers. Besides, the study area is sugarcane growing area having canal irrigation facility. Sugarcane is the almost single crop cultivated largely affecting crop diversity. Crop residue from Sugarcane cannot be used throughout the year unlike of sorghum, bajra or pulses, making sugarcane farmers to look for alternate sources. Sugarcane farmers keep livestock for obtaining manure which is crucial to sustain the fertility of the soil and productivity of the crop. Almost mono-cropping pattern and the necessity to rear livestock might have alerted the respondent to approach information source voluntarily.

Forty two per cent farmers also mentioned that they happen to see the crop in othersô field and collected the information about cultivation aspects. When there is need, then individual makes effort to collect information from the available sources. However, 38.67 per cent respondents mentioned that though crops were enforced upon them by the extension functionaries, they retained these perennial forage crops as they were convinced about the benefits (Table 1).

***Dissemination pathways for cultivation perennial forage crops*:** Nine dissemination pathways though emerged from the study for diffusion of perennial forage crops, none emerged as the highly followed pathway by large majority of respondents. Multiple pathways thus operated and in the process there might be distortion of messages. Veterinary officers, State agricultural universities and relatives and friends formed the elements of diffusion pathways for information and seed material sources to farmers.

Veterinary office as a source of information and seed/planting material of forage crop was the path utilized by 28 per cent of the respondents (Table 2). Livestock farmers are closely

Table 1. Situations encountered to begin cultivation of fodder crops by respondents

Situations	Frequency	Percentage
Learning the need to grow fodder crops to meet fodder requirement, I approached to get information	140	93.33
Incidentally I saw the crop in othersô field and collected information	63	42.00
Enforced upon me by the extension functionaries and realizing the benefits I continued to grow the crop	58	38.67

Table 2. Dissemination pathways followed by the respondents for cultivation perennial fodder crops

Source of information	Source of Seed / planting material	Respondents	
		F	%
Veterinary office →	Veterinary office →	28.00	42
Relatives / Friends →	Relatives / Friends →	25.33	38
Relatives / Friends →	SAU →	14.00	21
Relatives / Friends →	Veterinary office →	10.66	16
SAU →	Veterinary office →	7.33	11
SAU →	Relatives / Friends →	4.66	7
Veterinary offic →	Relatives / Friends →	4.00	6
Veterinary offic →	SAU →	3.33	5
SAU →	SAU →	2.66	4

associated with veterinary offices for availing benefits for health related issues of their livestock. Veterinary offices are more accessible to farmers as compared to research stations of the State Agricultural Universities (SAU). They are also entrusted the job of dissemination of forage crops through minikit programs in the state. Better accessibility coupled with the responsibility to disseminate forage technologies could be the reasons for the present finding. The second most followed pathway was relatives/friends for both the information and source as one fourth of the respondents followed it. Probable reasons are that, friends/ relatives form the most immediate source for any new information. Most of the perennial forage crops are varieties/ selections (not hybrids) and hence they can be propagated from the same seeds/planting material. Third in the line was relatives/friends for information source and SAU for obtaining seed/planting material. This path was followed by 14 per cent of the respondents. The reason could be once they learnt about the forage crops they might have planned to cultivate these crops by obtaining seeds/planting material from the SAU as it is a more reliable seed source. Another reason could be non availability of adequate quantity of seed/ planting material from friends/relatives.

One in ten respondents (10.66%) consulted relatives/friends for information but consulted veterinary office for the seeds/ planting material. The reason could be better accessibility of veterinary office, as compared SAU, to the farmers as they can facilitate in getting the required type and quantity of planting material. Contrary to the above findings, SAU also acted as a source of information to 7.33 per cent farmers but they obtained seeds/planting material from Veterinary offices. Besides, 4.66 per cent of respondents mentioned that though they consulted SAU for information but obtained seeds/planting material from relatives/friends. Many of the perennial forage crops are propagated vegetative and transporting vegetative material is a costly affair. Farmers might have felt it is convenient to obtain whatever available quantity from friends/relatives and later they might have multiplied to cover the area they desired to. Similarly 4 per cent of the respondents consulted veterinary office for information but obtained propagation material from relatives/ friends. The reason mentioned before holds good for this result also.

Less than five per cent of the respondents followed the path of veterinary office and SAU (3.33%) and SAU and SAU (2.66%) for information and seeds/planting material, respectively. The non availability of propagation material with the information source might have forced the respondents to approach other source for obtaining them. Orodho (1983), reported that, the dissemination and utilisation of appropriate technology depend on interdisciplinary team approach, organised into an interacting and cohesive group involving researchers, extension workers and farmers. Franzel and Wambugu (2007) highlighted 5 key dissemination pathways that have facilitated widespread adoption. Place *et al.* (2009) mentioned that the methods and approaches in dissemination of forage shrubs have been widely adopted in East Africa.

***Spread of area under perennial fodder crops*:** Nearly 95 per cent of the respondents increased the area under fodder crops from the starting year of their cultivation to the year of study (2012) as they felt the need to increase the forage availability to meet their livestock requirement. Almost equal per cent of them (93.33%) also mentioned that feeding the forage from these improved crops enhanced the milk production as well as it helps to take up multiple cuttings from a single crop. Availability of green forage near to their doorstep was the reason mentioned by 88 per cent of the respondents. No need of many labours and less cost of forage was the reason mentioned by 78.66 per cent respondents (Table 3a).

Table 3a. Reasons for increasing area under fodder crops by the respondents

Reasons for increasing area	Respondents	
	Number	%
There is need of fodder for livestock	142	94.66
More cuttings from a single crop	140	93.33
Enhances milk production	140	93.33
Green fodder for the livestock near door steps	132	88.00
No need of many labours and less cost	118	78.66

Table 3b. Spread of area under perennial fodder crops as per the dissemination pathways

Source	Seed material	Average area (in gunta*)	
		Initial avg. area	Present avg. area
Veterinary office	Relatives & friends (6)	9.5	13.72
N = 53(35.09%)	Veterinary office (42)	11.44	18.64
	SAU (5)	7.32	8.60
Total		28.26	40.96
Relatives & friends	Veterinary office(16)	9.5	13.72
N = 75(49.67%)	SAU (21)	8.33	12.66
	Relatives & friends (38)	6.21	14.38
Total		24.04	40.76
SAU	SAU (4)	5.33	8.66
N = 22(14.57%)	Relatives & friends (7)	7.84	13.16
	Veterinary office (11)	8.14	12.82
Total		21.31	34.64

*1 acre equals to 40 guntas

Area under perennial fodder crops increased irrespective of the dissemination pathways followed by the respondents from the start of cultivation of forage crops to the year of study. The initial area cultivated by the respondent for whom the source of information was nearest veterinary office increased from 9.5 gunta (1 acre = 40 gunta) to 13.72 gunta (relatives and friends), 11.44 gunta to 18.64 gunta (veterinary office), 7.32 gunta to 8.60 gunta (UAS). The average total area increased was from 28.26 gunta to 40.96 gunta in case of veterinary office. In case of relatives and friends as source of information on forage crops, the respondents increased the area from 9.5 gunta to 13.72 gunta (veterinary office), 8.33 gunta to 12.66 gunta (UAS) and relatives and friends from 6.21 gunta to 14.38 gunta. The average total area however increased from 24.04 gunta to 40.76 gunta. In case of UAS as a source of information on forage crops, the respondents increased the area from 5.33 gunta to 8.66 gunta (UAS), 7.84 gunta to 13.16 gunta (relatives and friends), 8.14 gunta to 12.82 gunta (veterinary office) (Table 3b). This is an encouraging trend as in previous years farmers were reluctant to spare even one gunta land for the forage crops and now the study indicated that even upto half an acre farmers are sparing the land for forage crops. The similar findings were reported by Garforth (1998).

Test of significance: There was significant difference between the year of getting information and year of obtaining seed material in case of small, medium and affluent farmers. However, significant difference was not observed for big and very big farmers (Table 4). Small and medium farmers in particular, due to limited resources might have waited to confirm the information before they put their scarce land for forage production. Another reason could be lack of money to arrange for purchase of seed material/purchase and transportation of planting material. In case of affluent farmers the reasons could be lack of time and/or labour to take up forage cultivation.

Table 4. Test of significance between year of learning and year of obtaining seed material of Perennial fodder crops

Categories of farmer	t-value
Small (Upto 2 hectares)	3.24**
Medium (2-4 hectares)	4.46**
Big (4-6 hectares)	1.85 ^{NS}
Very big (6-8 hectares)	1.94 ^{NS}
Affluent (> 8 hectares)	2.35**

Conclusion

No single pathway emerged as the highly followed pathway indicating that farmers would be not sure where to contact for information and seed source. There are many reasons for this situation. Hence, innovative farmers who are already cultivating perennial fodder crops should be involved in the pathway through capacity building. The policy makers should

hence encourage active participation of farmers for faster dissemination of information and to increase producers of forage seeds. Study found that there was a significant difference between the year of getting information source and year of obtaining seed material. This time lapse should be reduced considerably by improving the accessibility for information and seed material of forage crops.

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