

Commercial Dairy Farmers Preference towards Livestock Extension Services in Karnataka

Sathisha M.C.¹, Rupasi Tiwari² and Rakesh Roy³

ABSTRACT

Karnataka has been purposively selected due to the leading producer of milk and commercial dairy farming is in developing stage as compared to other states of South India. Three districts namely Kolar, Chikkaballapura and Ramnagar were selected purposively due to its highest milk production. In all, 135 respondents form the total sample size for the study having equal representation of small (10-20 milch animals), medium (20-40 milch animals) and large (>40 milch animals) commercial dairy farmers. The study reveals that respondents mostly accessed breeding and livestock healthcare services from veterinarians followed by paravets and KMF doctors whereas feeding services from milk cooperatives followed by self-prepared and KMF doctors. The study also revealed that respondents mostly accessed marketing service from milk cooperatives followed by milk vendors and self-marketing. For acquiring information, respondents mostly accessed veterinarians followed by dairy cooperatives and paravets. Among personal cosmopolite sources dairy farmers mostly accessed television followed by internet and radio while among personal localite sources they mostly accessed neighbour followed by friend and progressive farmer. The study also reveals that respondents mostly accessed insurance services from government agencies followed by private agencies and veterinary and animal husbandry department. The study further shows that majority of the large commercial dairy farmers never insured their animal as they felt insurance as a financial burden for them.

Keywords: Commercial dairy farmer, extension service, healthcare service, insurance service, marketing service

INTRODUCTION

during 2015-16 but the productivity of milk is still very low. Low milk production in India is probably due to low genetic potential for milk production, poor nutrition, farm management, unfavorable agro climatic conditions, poor veterinary and extension services (Dhara *et al.*, 2006). Due to globalization and urbanization more number of farmers are now practicing commercial dairy farming to meet the demand of milk especially in urban areas. These farmers require timely information and inputs to obtain an optimum production at their farms. Acquiring knowledge from information and making decisions based on that knowledge is the most effective tool for the farmers (Armstrong *et al.*, 2011). Information gap has been recognized as one of the important constraints in overall agricultural development of the country. NSSO (2005) reported that nearly 60 percent did not access any information on modern technology from any source at all Indian level. Further only 5.1 per cent of the farmers households in India are able to access any information on animal husbandry against 40.4 per cent of

the Indian households accessing information on modern technology from crop farming. Therefore the present study was taken up to assess the extension information and other livestock services accessibility to the commercial dairy farmers of Karnataka state which is a leading producer of milk and commercial dairy farming is in developing stage as compared to other states of South India.

METHODOLOGY

The present study was carried out in three purposively selected districts namely Kolar, Chikkaballapura and Ramnagar of Karnataka owing to their highest milk production in the state. These three districts are having a total of 613700 bovine female population out of which 492000 are cows and rest of animal are buffaloes (NDDB, 2015). Total milk production from these three districts is 436000 tonnes/ annum out of which 298000 tonnes is from cross breed cows and rest is from indigenous cattle and buffaloes (NDDB, 2015). These three districts are having 1900 co-operative societies with member strength of 226000 (KMF, 2014). About 60 per

¹ Ex MVSc. Scholar, Division of Extension Education, ICAR-IVRI, Izatnagar, Bareilly-243122, UP, ² Principal Scientist & I/C ATIC, ICAR-IVRI, Izatnagar, Bareilly-243122, UP, ³ Subject Matter Specialist (Animal Science), Darjeeling KVK, UBKV, Kalimpong-734301, WB,

cent of milk is collected by milk co-operatives in this area (KMF, 2014). Out of these three districts, 45 commercial dairy farmers were selected randomly from each district, comprising of 15 respondents each from small (10-20 milch animals), medium (20-40 milch animals) and large (>40 milch animals) dairy farms. Thus, the total sample size was 135 commercial dairy farmers for the study. The respondents were asked regarding the extent of use of different extension information and service delivery (breeding services, feed and fodder services, healthcare services, marketing services and insurance services) agencies in a 3-point continuum *i.e.*, often=2, frequently=1 and never=0. Total Rank Order Score (TROS) was calculated by summing up total score for extent of use of the different sources. The higher was the TROS, the higher was the extent of access of that extension/input/service agency by the dairy farmers.

RESULTS AND DISCUSSION

Extension services

The major agencies dealing with livestock extension service in India are the State Department of Animal Husbandry, ICAR, State Agricultural and Veterinary Universities and Krishi Vigyan Kendras. In addition, national and regional level extension services are also provided by private agencies, dairy cooperatives and NGO (GOI, 2006). Various departments are now making use of mass media and ICT tools for providing extension services to the farmers. In the present study all of these extension services were grouped into personal localite sources, personal cosmopolite sources and mass media sources which are discussed below in detail.

Among personal cosmopolite sources respondents mostly accessed veterinarians (TROS= 209) followed by milk cooperatives (TROS= 180) and Paravets (TROS= 173). The reason for majority (63%) of respondents often using veterinarians as source of information might be their easy accessibility and credibility followed by dairy cooperatives (40.7%), Paravets (40%) and KVKs (23.7%). About 45-58% respondents frequently used KVKs, ATICs, NGOs and bank. (Table 1). The results are in line with the findings of Rathod *et al.* (2014) and Belakeri *et al.* (2016).

Among mass media sources television was the highest accessed source (TROS= 180) followed by internet (TROS= 121) and radio (TROS= 95). The pattern

of access of the various mass media sources reveals that majority (75.5%) of respondent often used television as their major source of information followed by Newspapers (62.2%) and farm publication (28.9%). Around 60% of respondents were found never using Internet as due to lack of internet availability in their area and unawareness regarding internet. About 49 per cent of respondents had never used mobile as source of information which seems quite ironical keeping in view the penetration of mobiles phones in the rural India. Among large farmers 42.2 per cent of respondents used mobile as their source of information since they were aware about these sources and they had knowledge regarding getting information. (Table 1). It is imperative that the farmers should connect to central network of information like KVKs, ATICs, NGOs, Kisan call centers and internet so that the dissemination of information become easier and saves time and cost (Rathod *et al.*, 2010).

Among personal localite sources most accessed information source was the neighbour (TROS= 190) followed by friend (TROS= 172) and progressive farmer (TROS= 133). The pattern of use of the information source reveals that majority (44.40%) of respondents often got information from neighbor followed by friends (34.8%) family members (28.1%). Progressive farmers in the local area were frequently approached for information by all types of farmers. Since these farmers were most active in getting information from local cooperatives, banks, SAUs, KVKs and NGOs and sharing among other farmers (Table 1). These findings are in line with Roy *et al.* (2014).

Input and service accessibility by the commercial dairy farmers

The delivery of livestock services is emerging as an important priority area for enhancing and optimizing livestock production and management of the livestock. Recent advances in animal husbandry sector have increased the demand for various livestock services like animal breeding, healthcare, feed and fodder production, marketing, livestock extension etc. which are provided by multifarious agencies in India (Rathod *et al.*, 2012). In this study the livestock services were divided into five major services and studied on a three point continuum based on the extent of access by the respondents *viz.*, often, frequently and never. The results are discussed below in detail.

Table 1 Distribution of respondents according to their preference to extension services*

Extension Services	Small Farmers (n=45)				Medium Farmers (n=45)				Large Farmers (n=45)				Pooled (N=135)			
	N	F	O	TROS	N	F	O	TROS	N	F	O	TROS	N	F	O	TROS
Personal Cosmopolite Sources																
Veterinarians	2 (4.44)	13 (28.89)	30 (66.67)	73	4 (8.89)	14 (31.11)	27 (60.00)	68	5 (11.11)	12 (26.67)	28 (62.22)	68	11 (8.15)	39 (28.89)	85 (62.96)	209
Scientist of SVUs/SAUs	27 (60.00)	17 (37.78)	1 (2.22)	19	15 (33.33)	27 (60.00)	3 (6.67)	33	14 (31.11)	25 (55.56)	6 (13.33)	37	56 (41.48)	69 (51.11)	10 (7.41)	89
Para vets	11 (24.44)	26 (57.78)	8 (17.78)	42	3 (6.67)	23 (51.11)	19 (42.22)	61	2 (4.44)	16 (35.56)	27 (60.00)	70	16 (11.85)	65 (48.15)	54 (40.00)	173
Milk Cooperatives	6 (13.33)	29 (64.44)	10 (22.22)	49	2 (4.44)	25 (55.56)	18 (40.00)	61	2 (4.44)	16 (35.56)	27 (60.00)	70	10 (7.41)	70 (51.85)	55 (40.74)	180
KVKs	24 (53.33)	15 (33.33)	6 (13.33)	27	8 (17.78)	28 (62.22)	9 (20.00)	46	9 (20.00)	19 (42.22)	17 (37.78)	53	41 (30.37)	62 (45.93)	32 (23.70)	126
ATICs	30 (66.67)	13 (28.89)	2 (4.44)	17	20 (44.44)	23 (51.11)	2 (4.44)	27	15 (33.33)	27 (60.00)	3 (6.67)	33	65 (48.15)	63 (46.67)	7 (5.19)	77
NGOs	23 (51.11)	17 (37.78)	5 (11.11)	27	17 (37.78)	25 (55.56)	3 (6.67)	31	13 (28.89)	27 (60.00)	5 (11.11)	37	53 (39.26)	69 (51.11)	13 (9.63)	95
Banks	18 (40.00)	22 (48.89)	5 (11.11)	32	14 (31.11)	26 (57.78)	5 (11.11)	36	11 (24.44)	30 (66.67)	4 (8.89)	38	43 (31.85)	78 (57.78)	14 (10.37)	106
Mass Media Sources																
Television	6 (13.33)	29 (64.44)	10 (22.22)	49	2 (4.44)	25 (55.56)	18 (40.00)	61	2 (4.44)	16 (35.56)	27 (60.00)	70	10 (7.41)	70 (51.85)	55 (40.74)	180
Radio	23 (51.11)	17 (37.78)	5 (11.11)	27	17 (37.78)	25 (55.56)	3 (6.67)	31	13 (28.89)	27 (60.00)	5 (11.11)	37	53 (39.26)	69 (51.11)	13 (9.63)	95
Mobile	33 (73.33)	4 (8.89)	8 (17.78)	20	29 (64.44)	3 (6.67)	13 (28.89)	29	28 (62.22)	0 (0.00)	17 (37.78)	34	90 (66.67)	7 (5.19)	38 (28.15)	83
Internet	14 (31.11)	18 (40.00)	13 (28.89)	44	10 (22.22)	19 (42.22)	16 (35.56)	51	24 (53.33)	16 (35.56)	5 (11.11)	26	48 (35.56)	53 (39.26)	34 (25.19)	121
Personal Localite Sources																
Family Member	25 (55.56)	11 (24.44)	9 (20.00)	29	18 (40.00)	14 (31.11)	13 (28.89)	40	19 (42.22)	10 (22.22)	16 (35.56)	42	62 (45.93)	35 (25.93)	38 (28.15)	111
Neighbour	3 (6.67)	23 (51.11)	19 (42.22)	61	1 (2.22)	24 (53.33)	20 (44.44)	64	1 (2.22)	23 (51.11)	21 (46.67)	65	5 (3.70)	70 (51.85)	60 (44.44)	190
Friends	5 (11.11)	30 (66.67)	10 (22.22)	50	2 (4.44)	27 (60.00)	16 (35.56)	59	3 (6.67)	21 (46.67)	21 (46.67)	63	10 (7.41)	78 (57.78)	47 (34.81)	172
Progressive farmer	13 (28.89)	30 (66.67)	2 (4.44)	34	8 (17.78)	31 (68.89)	6 (13.33)	43	4 (8.89)	26 (57.78)	15 (33.33)	56	25 (18.52)	87 (64.44)	23 (17.04)	133

*Data contains multiple responses; TROS= Total Rank Order Score, N=Never, F= Frequently, O=Often; Figures in parenthesis indicate percentage

Breeding services

Table 2 reveals that respondents mostly accessed breeding service from veterinarians (TROS= 214) followed by paravets (TROS= 93) and KMF doctors (TROS= 84). Further, the study also shows that majority (77.8%) of respondents often access breeding services from veterinarians of the local veterinary dispensary followed by the KMF doctors (24.4%). Around 10.4 per cent of respondents often access to natural services and

only 5.9 % of respondents access breeding services from private consultancy. Categorically, majority of small farmers (95.6%), medium farmers (91.1%) and large farmers (46.7%) often receive breeding services from veterinarians. The results are in concurrence with the findings of Rathod et al. (2012) who found that majority of dairy farmers often prefer veterinarian for breeding services and frequently prefer natural service.

Table 2: Distribution of respondents according to their preference to breeding service

Breeding service	Small Farmers (n=45)				Medium Farmers (n=45)				Large Farmers (n=45)				Pooled (N=135)			
	N	F	O	TROS	N	F	O	TROS	N	F	O	TROS	N	F	O	TROS
Veterinarians	0 (0.00)	2 (4.44)	43 (95.56)	88	3 (6.67)	1 (2.22)	41 (91.11)	83	23 (51.11)	1 (2.22)	21 (46.67)	43	26 (19.26)	4 (2.96)	105 (77.78)	214
Private consultancy	45 (100.00)	0 (0.00)	0 (0.00)	00	40 (88.89)	3 (6.67)	2 (4.44)	9	36 (80.00)	3 (6.67)	6 (13.33)	15	121 (89.63)	6 (4.44)	8 (5.93)	24
KMF doctors	26 (57.78)	7 (15.56)	12 (26.67)	31	27 (60.00)	6 (13.33)	12 (26.67)	30	31 (68.89)	5 (11.11)	9 (20.00)	23	84 (62.22)	18 (13.33)	33 (24.44)	84

Paravets	15 (33.33)	18 (40.00)	12 (26.67)	42 (44.44)	20 (37.78)	17 (17.78)	8 (17.78)	33 (66.67)	30 (26.67)	12 (6.67)	3 (6.67)	18 (48.15)	65 (34.81)	47 (17.04)	23 (17.04)	93
Natural service	31 (68.89)	11 (24.44)	3 (6.67)	17 (48.89)	22 (46.67)	21 (4.44)	2 (4.44)	25 (33.33)	15 (46.67)	21 (20.00)	9 (20.00)	39 (50.37)	68 (39.26)	53 (10.37)	14 (10.37)	81

*Data contains multiple responses; TROS= Total Rank Order Score, N=Never, F= Frequently, O=Often; Figures in parenthesis indicate percentage

Feed and fodder services

Table 3 reveals that respondents mostly accessed feeding services from milk cooperatives (TROS= 210) followed by self-preparation (TROS= 172) and KMF doctors (TROS= 78). The study further shows that majority (74.1%) of respondents were often using the milk cooperatives to buy feeds followed by use of feeds prepared by their own often (51.9%). Small dairy farmers (91.1%) mostly buy the feeds from milk cooperatives while the medium dairy farmers purchase the feeds from either milk cooperatives (86.70%) or prepare by themselves (57.8%). Large dairy farmers mostly used self-prepared feed (84.4%) for their dairy animals because they had knowledge regarding feeds preparation

and it is cost effective in farms where numbers of animals were more. The results are in concurrence with findings of Jadav et al. (2014) who studied about the animal husbandry services for dairy farmers in Gujarat and found that 72.35 % of respondents buy concentrates from dairy cooperatives.

Table 4 reveals that respondents mostly accessed fodder services from own farm (TROS= 241) followed by private farm (TROS= 54) and neighbour (TROS= 38). The study further shows that majority (83.7%) of respondents often grow fodder in their own field followed by private farm (5.9%) to grow their fodder.

Table 3: Distribution of respondents according to their preference to feeding service*

Feeding service	Small Farmers (n=45)				Medium Farmers (n=45)				Large Farmers (n=45)				Pooled (N=135)			
	N	F	O	TROS	N	F	O	TROS	N	F	O	TROS	N	F	O	TROS
Milk Cooperatives	1 (2.22)	3 (6.67)	41 (91.11)	85	2 (4.44)	4 (8.89)	39 (86.67)	82	22 (48.89)	3 (6.67)	20 (44.44)	43	25 (18.52)	10 (7.41)	100 (74.07)	210
Private Agency	30 (66.67)	13 (28.89)	2 (4.44)	19	33 (73.33)	11 (24.44)	1 (2.22)	13	18 (40.00)	8 (17.78)	19 (42.22)	46	81 (60.00)	32 (23.70)	22 (16.30)	78
Self-Preparation	25 (55.56)	14 (31.11)	6 (13.33)	26	6 (13.33)	13 (28.89)	26 (57.78)	65	2 (4.44)	5 (11.11)	38 (84.44)	81	33 (24.44)	32 (23.70)	70 (51.85)	172
Veterinarian	40 (88.89)	4 (8.89)	1 (2.22)	6	42 (93.33)	2 (4.44)	1 (2.22)	4	43 (95.56)	2 (4.44)	0 (0.00)	2	125 (92.59)	8 (5.93)	2 (1.48)	12

*Data contains multiple responses; TROS= Total Rank Order Score, N=Never, F= Frequently, O=Often; Figures in parenthesis indicate percentage

Table 4: Distribution of respondents according to their preference to fodder service*

Fodder service	Small Farmers (n=45)				Medium Farmers (n=45)				Large Farmers (n=45)				Pooled (n=135)			
	N	F	O	TROS	N	F	O	TROS	N	F	O	TROS	N	F	O	TROS
Own Farm	6 (13.33)	2 (4.44)	37 (82.22)	76	1 (2.22)	4 (8.89)	40 (88.89)	84	0 (0.00)	9 (20.00)	36 (80.00)	81	7 (5.19)	15 (11.11)	113 (83.70)	241
Neighbour Farm	37 (82.22)	7 (15.56)	1 (2.22)	9	28 (62.22)	16 (35.56)	1 (2.22)	18	34 (75.56)	11 (24.44)	0 (0.00)	11	99 (73.33)	34 (25.19)	2 (1.48)	38
Private Farm	34 (75.56)	7 (15.56)	4 (8.89)	15	23 (51.11)	18 (40.00)	4 (8.89)	26	32 (71.11)	13 (28.89)	0 (0.00)	13	89 (65.93)	38 (28.15)	5 (5.93)	54

*Data contains multiple responses; TROS= Total Rank Order Score, N=Never, F= Frequently, O=Often; Figures in parenthesis indicate percentage

Healthcare services

Table 5 reveals that respondents mostly accessed healthcare service from veterinarians (TROS= 170) followed by paravets (TROS= 121) and KMF doctors (TROS= 109). The study further shows that majority (77%) of respondents often got healthcare services from veterinarian in the local veterinary dispensary followed

by KMF doctors (28.9%) and paravets (25.2). About 39.3 % of respondent frequently got the healthcare services from paravets due to accessibility in emergency and unavailability of Veterinarians.

Table 5: Distribution of respondents according to their preference to healthcare service*

Healthcare Service	Small Farmers (n=45)				Medium Farmers (n=45)				Large Farmers (n=45)				Pooled (n=135)			
	N	F	O	TROS	N	F	O	TROS	N	F	O	TROS	N	F	O	TROS
Veterinarians	0 (0.00)	3 (6.67)	42 (93.33)	85	3 (6.67)	0 (0.00)	42 (93.33)	42	22 (48.89)	3 (6.67)	20 (44.44)	43	25 (18.52)	6 (4.44)	104 (77.04)	170
Private consultancy	37 (82.22)	7 (15.56)	1 (2.22)	9	25 (55.56)	16 (35.56)	4 (8.89)	24	26 (57.78)	0 (0.00)	19 (42.22)	38	88 (65.19)	23 (17.04)	24 (17.78)	71
KMF doctors	17 (37.78)	11 (24.44)	17 (37.78)	45	18 (40.00)	14 (31.11)	13 (28.89)	40	30 (66.67)	6 (13.33)	9 (20.00)	24	65 (48.15)	31 (22.96)	39 (28.89)	109
Para vets	14 (31.11)	18 (40.00)	13 (28.89)	44	10 (22.22)	19 (42.22)	16 (35.56)	51	24 (53.33)	16 (35.56)	5 (11.11)	26	48 (35.56)	53 (39.26)	34 (25.19)	121
Natural service	33 (73.33)	11 (24.44)	1 (2.22)	13	27 (60.00)	17 (37.78)	1 (2.22)	19	10 (22.22)	29 (64.44)	6 (13.33)	41	70 (51.85)	57 (42.22)	8 (5.93)	73

*Data contains multiple responses; TROS= Total Rank Order Score, N=Never, F= Frequently, O=Often; Figures in parenthesis indicate percentage

Marketing services

The marginal and small landholders account for about 69 per cent of the total milk production (Birthal, 2008). According to GOI estimates, nearly half of India's milk production is consumed by the household in which it is produced and is not marketed. The milk sold outside the household is marketed as either unprocessed fluid milk or processed products manufactured by small-scale, private vendors. These traditional milk supply chains are prevalent throughout rural and urban India, and typically involve a chain of intermediaries who collect milk from producers for retail distribution within a small area. It is estimated that only about 15 percent of the milk produced is marketed (Landes et al., 2017). Table 6 revealed that respondents mostly accessed marketing service from milk cooperatives (TROS= 207) followed by market vendors (TROS= 83) and self-marketing (TROS= 49). The study further shows that majority (71.1%) of respondents often

prefer milk cooperatives to market their milk followed by milk vendors (28.1%) and private retailers (24.4%). The results are in concurrence with the findings of Thirunavukkarasu and Kumar (2014) who had reported that majority of dairy farmers were marketing their milk through dairy cooperatives in their study in western Maharashtra. The dairy cooperative societies take the largest segment of marketed milk in Punjab (86.1%), while very small volumes of milk, 4.1 per cent and 2.7 per cent, go to the private traders and the formal private processors, respectively. Private informal traders turned out to be the biggest buyer of marketed milk (36.6%) in Bihar, closely followed by dairy cooperative societies (34.8%). Formal private processors account for 5.4 per cent of marketed milk in Bihar. About 21 per cent and 7 per cent of marketed milk was being sold directly to consumers in Bihar and Punjab, respectively (Kumar et al., 2011).

Table 6: Distribution of respondents according to their preference to marketing service*

Marketing Service	Small Farmers (n=45)				Medium Farmers (n=45)				Large Farmers (n=45)				Pooled (N=135)			
	N	F	O	TROS	N	F	O	TROS	N	F	O	TROS	N	F	O	TROS
Milk Cooperatives	3 (6.67)	2 (4.44)	40 (88.80)	84	5 (11.11)	4 (8.89)	36 (80.00)	76	18 (40.00)	7 (15.56)	20 (44.44)	47	26 (19.26)	13 (9.63)	96 (71.11)	207
Market Vendors	33 (73.33)	4 (8.89)	8 (17.78)	20	29 (64.44)	3 (6.67)	13 (28.89)	29	28 (62.22)	0 (0.00)	17 (37.78)	34	90 (66.67)	7 (5.19)	38 (28.15)	83
Private Retailer	21 (46.67)	4 (8.89)	3 (6.67)	10	32 (71.11)	4 (8.89)	9 (20.00)	22	21 (46.67)	3 (6.67)	21 (46.67)	45	91 (67.41)	11 (8.15)	33 (24.44)	45
Self-Marketing	35 (77.78)	5 (11.11)	5 (11.11)	15	34 (75.56)	4 (8.89)	7 (15.56)	18	36 (80.00)	2 (4.44)	7 (15.56)	16	105 (77.78)	11 (8.15)	19 (14.07)	49

*Data contains multiple responses; TROS= Total Rank Order Score, N=Never, F= Frequently, O=Often; Figures in parenthesis indicate percentage

Insurance services

The commercial dairy farmers mostly accessed insurance services from government agencies (TROS= 123) followed by private agencies (TROS= 55) and veterinary and animal husbandry department (VAHD) (TROS= 55). The pattern of access of insurance services from various agencies reveals that that majority (41.5%) of respondents often insured their animal through government agencies followed by private agencies

(16.3%). It might be due to the fact that government agencies and KMF offer insurance service for less premium and they are easily accessible to farmers with their regional officers in milk cooperatives and in Gram Panchayat. Small farmers (51.1%) and medium farmers (57.8%) often insured their animals through Government agencies. From the result it revealed that majority (82.2%) of respondents among large farmers never insured their animal (Table 7). It might be due to the fact

that paying premium for more number of animals and renewing it every year is an extra financial burden on them so they invest more in animal health and welfare to save their animals from uncertain crisis like diseases. The progress of livestock insurance schemes has not been

encouraging. Only about 6 per cent of the animal head are covered with insurance (GOI, 2012; Anonymous, 2015). The results are in line with the findings of Khan *et al.* (2013) and Njavro *et al.* (2007).

Table 7 Distribution of respondents according to their preference to insurance services*

Insurance Services	Small Farmers (n=45)				Medium Farmers (n=45)				Large Farmers (n=45)				Pooled (n=135)			
	N	F	O	TROS	N	F	O	TROS	N	F	O	TROS	N	F	O	TROS
Government agency	18 (40.00)	4 (8.89)	23 (51.11)	50	13 (28.89)	6 (13.33)	26 (57.78)	58	37 (82.22)	1 (2.22)	7 (15.56)	15	68 (50.37)	11 (8.15)	56 (41.48)	123
Private agency	37 (82.22)	2 (4.44)	6 (13.33)	14	33 (73.33)	6 (13.33)	6 (13.33)	18	32 (71.11)	3 (6.67)	10 (22.22)	23	102 (75.56)	11 (8.15)	22 (16.30)	55
VAHD	33 (73.33)	6 (13.33)	6 (13.33)	18	32 (71.11)	5 (11.11)	8 (17.78)	21	36 (80.00)	2 (4.44)	7 (15.56)	16	101 (74.81)	13 (9.63)	21 (15.56)	55
NGOs	25 (55.56)	10 (22.22)	10 (22.22)	30	35 (77.78)	7 (15.56)	3 (6.67)	13	39 (86.67)	2 (4.44)	4 (8.89)	10	99 (73.33)	19 (14.07)	17 (12.59)	53

*Data contains multiple responses; TROS= Total Rank Order Score, N=Never, F= Frequently, O=Often; Figures in parenthesis indicate percentage

CONCLUSION

Results have revealed that veterinarians are the most accessed source of information and services *viz.*, breeding services, health care for the commercial dairy farmers. While it has shown that the commercial dairy farmers depend upon milk cooperatives for the availability of feed and milk marketing service. Therefore to enhance the production potential of the commercial dairy farms the government needs to take urgent steps to strengthen the veterinary manpower and infrastructure to provide timely and effective services to the dairy farms. Further the network of the milk cooperatives also needs to be strengthened so as to enhance their reach to every dairy farmer, thereby providing them the opportunity to avail feed and fodder services effectively and market their milk easily.

Paper received on : December 26, 2017

Accepted on : January 05, 2018

REFERENCES

Anonymous 2015. Milch cattle and buffaloes to be covered. The Hindu, Published on August 03, 2015. Retrieved on October 16, 2017 from <http://www.thehindu.com/news/cities/bangalore/nod-for-livestock-insurance-scheme/article7493645.ece>

Armstrong, L. Diepeveen, D. and Gandhi, N. 2011. Effective ICTs in agricultural value chains to improve food security: An international perspective. World Congress on Information and Communication Technologies Conference (WICT), Issue Date: 11-14 Dec. on page(s):1217-1222 Print ISBN: 978-1-4673-0127-5 Digital Object Identifier: 10.1109/WICT.2011.

Belakeri, P. Satyanarayan, K. Jagadeeswary, V. Kumar, M. Yathiraj, S. Veeranna, K.C. and Rajeshwari, Y.B. 2016. Socio-economic characteristics and information seeking behavior of livestock farmers of Karnataka, India International Journal of Science, Environment and Technology, 5(6): 4320–4327

Birthal, P.S. Kumar, A. and Datta, T.N. 2008. Trading in livestock and livestock products. *Indian Journal of Agricultural Economics*, 63 (1): 58-63.

Dhara, K.C. Ray, N. and Sinha, R. 2006. Factors affecting production of F1crossbred dairy cattle in West Bengal. *Livestock Research for Rural Development. Volume 18, Article #51*. Retrieved January 16, 2017, from <http://www.lrrd.org/lrrd18/4/dhar18051.htm>

Government of India (GOI), 2012. Livestock census-2012, www.livestockcensus.goi.in/2012

Jadav, S.J. Rani, V.D. and Pandya, S.S. 2014. Animal husbandry practices and outline of rural livestock farmers. *Trends in Biosciences*, 7(23):3920-3924.

Karnataka Milk Federation (KMF) 2014. Karnataka Milk Federation achievements. <https://kmfnandini.coop>

Khan, M.A. Chander, M. and Bardhan, D. 2013. Willingness to pay for cattle and buffalo insurance: an analysis of dairy farmers in central India. *Tropical Animal Health and Production*, 45: 461–468.

Kumar, A. Staal, S.J. and Singh, D.K. 2011. Smallholder Dairy Farmers' Access to Modern Milk Marketing Chains in India. *Agricultural Economics Research Review*, 24: 243-253

Landes, M. Cessna, J. Kuberka, L. and Jones, K. 2017. India's Dairy Sector: Structure, Performance, and Prospects. LDPM-272-01 Economic Research Service/USDA. Retrieved on October 16, 2017 from <https://www.ers.usda.gov/webdocs/publications/82639/ldpm-272-01.pdf?v=42800>

National Dairy Development Board (NDDB). 2015. Annual report 2014-15. Increasing the production of milk in India. www.nddb.org.in

Njavro, M. Par, V. and Plesko, D. 2007. Livestock insurance as a risk management tool on dairy farms. Available from <https://www.researchgate.net/publication/27200612>

NSSO (National Sample Survey Organisation). 2005. Situation assessment survey of farmers: Access to modern technology for farming, 59th round (January–December 2003). Report No. 499(59/33/2). New Delhi: Ministry of Statistics and Programme Implementation.

Rathod, P.K. Nikam, T.R. Landge, S. and Hatey, A. 2012. Farmers' perception towards livestock extension service: A case study. *Age*, 22: 33.

Rathod, P.K. Nikam, T.R. Landge, S. Hatey, A. and Singh, B.P. 2014. Perception towards livestock breeding service delivery by dairy cooperatives. *Indian Res. J. Ext. Edu.*, 14(2):91-95

Roy, R. Tiwari, R. and Dutt, T. 2015. Extent and level of utilization of information sources among goat owners in India. *Indian J. Anim. Prod. Mgmt.*, 31(3-4): 62-67

Thirunavukkarasu and Kumar, S. 2014. Farmers' perception towards livestock healthcare service delivery by dairy cooperatives: A case study of Western Maharashtra. *Karnataka J. Agric. Sci.* 27(1): 95-96.