IMPACT OF KRISHI VIGYAN KENDRA ON LIVESTOCK MANAGEMENT PRACTICES IN AJMER DISTRICT OF RAJASTHAN

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ABSTRACT

A study was conducted to determine the impact of improved livestock management practices on knowledge and adoption in five adopted and five non-adopted villages of KVK, Ajmer. A sample of two hundred livestock keepers were randomly selected for study purpose, comprising 100 livestock keepers from adopted villages and 100 livestock keepers from non-adopted villages. Data was collected through a structured interview schedule. It was observed that the majority of respondents of adopted villages (92 per cent) had high to medium knowledge level regarding improved livestock management practices while only 44% of respondents for non-adopted villages. Both categories of respondents had excellent knowledge and adoption of manger and clean drinking water. It was discouraging to note that both the categories of respondents have a lack of knowledge and adoption towards animal insurance schemes, artificial insemination, treatment of fodder to improve its quality etc. Further, the study also found that respondents of adopted villages had more knowledge index and higher adoption index than respondents of non-adopted villages regarding all the major livestock management practices. This might be due to frequent trainings, demonstrations, on farm trials and other activities in adopted villages organized by Krishi Vigyan Kendra.

Key words: Artificial insemination, improved livestock management practices, krishi vigyan kendra and transfer of technology

Introduction

Animal husbandry plays an important role in rural people's livelihood security and economic sustenance by providing consistent employment and income generation throughout the year, as well as security against agricultural risk. It is estimated that more than 80% of rural families keep livestock in their households in Rajasthan. The contribution of the animal husbandry sector to the GDP of the State has been estimated to be around 10.21per cent. About 35 per cent of the income of small and marginal farmers comes from dairy and animal husbandry. In arid areas, the contribution may be as high as 50 per cent (Anonymous, 2019). The sector has the potential to create employment in rural areas with less investment as compared to other sectors. Since the last 25 years, KVK, Ajmer has been working for the welfare and sustaining livelihood of the animal husbandry sector through on-campus and off-campus trainings, demonstrations, Kisan Goshties, Farmers-scientist interaction, and on-farm trials in light of the potential, contribution, and role of the Animal Husbandry sector in the State.

The knowledge level of livestock owners refers to the information they possess in respect of improved livestock management practices. Knowledge of improved livestock management practices would lead to adoption or rejection. Once acquired and accumulated, knowledge produces change in the thinking process. The result of this is seen in the behavioural change of farmers. *i.e*. adoption of improved livestock management practices. In this context, a study was conducted to find out the impact of KVK activities in terms of knowledge and adoption of improved livestock management practices among the livestock keepers of Ajmer district of Rajasthan.

Materials and Methods

The present study was carried out in five adopted villages of Krishi Vigyan Kendra, Ajmer, Rajasthan. A list of livestock keepers was prepared from these adopted villages in which the KVK, Ajmer has been working in the form of imparting training, demonstrations and on-farm trials. 20 livestock keepers were randomly selected from each of the adopted villages. By this procedure, a total of 100 livestock keepers were selected from these adopted villages. In order to make it a comparative study, an equal number of livestock keepers from adjacent five villages were selected by following the same criteria. Thus, a total of 200 respondents were included in the study sample.

The response of respondents regarding knowledge and adoption of livestock management practices was ascertained by collecting their responses on a three point continuum, namely, high, medium and low knowledge and adoption with numerical scores of 3, 2 and 1, respectively. The total knowledge and adoption scores of a respondent were obtained by summating the scores for all practice. The knowledge and adoption level of livestock keepers was classified into three categories based on their knowledge and adoption score: low (score between 0 and 33 per cent), medium (score between 34 and 66 per cent), and high (score between 67 and 100 per cent). The total scores of a particular practice were obtained by summating the scores of all the respondents for a given particular practice. Respondents' knowledge index for each recommended practice was calculated separately by employing the following formulae as given by Sarker (2016):

$$\text{Knowledge Index (KI)} = \frac{\text{Sum of knowledge scores obtained on a given recommended practice}}{\text{Maximum obtainable knowledge scores on a given recommended practice}} \times 100$$

Respondents' adoption index for each recommended practice

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was calculated separately by employing the following formulae as given by Singhal and Vatta (2017):

$$\text{Adoption Index (AI)} = \frac{\text{Sum of adoption score obtained on a given recommended practice}}{\text{Maximum obtainable adoption score on a given recommended practice}} \times 100$$

The data were collected with the help of pre-tested structured schedule and analyzed with the help of frequencies and percentage.

Results and Discussion

Knowledge level of livestock keepers about improved livestock management practices

The data presented in Table 1 revealed that 92 per cent of respondents of adopted villages had a high to medium level of knowledge. Only eight per cent of the respondents possessed a low level of knowledge about improved livestock management practices. In the case of respondents from non-adopted villages, the majority (55%) had a low level of knowledge about improved livestock management practices, while the percentages of respondents with medium and high knowledge were low, at 14 and 30%, respectively. Respondents of non-adopted villages seem to have the least level of knowledge, as is evident from the lowest number of respondents having high knowledge and a high number in the category of low knowledge level. Based on the data presented above, it was concluded that respondents from adopted villages had a higher level of knowledge about improved livestock management practices than respondents from non-adopted villages. The findings of the study are supported by the finding of Sharma *et al.* (2013) who reported that the majority of benefited livestock keepers possessed medium to high level of knowledge about improved animal husbandry practices.

Adoption level of livestock keepers about improved livestock management Practices

The data presented in Table 2 revealed that 89 per cent of respondents of adopted villages had a high to medium level of adoption. Only eleven per cent of the respondents possessed a low level of adoption of improved livestock management practices. In the case of respondents from non-adopted villages, the majority (52%) had a low level of adoption of improved livestock management practices, while the percentages of respondents with medium and high adoption were low, at 32 and 16 percent, respectively. Respondents of non-adopted villages seem to have the least adoption, as is evident from the lowest number of respondents having high adoption and a high number in the category of low adoption level. Based on the data presented above, it was concluded that respondents from adopted villages had a higher level of adoption of improved livestock management practices than respondents from non-adopted villages. Results arrived because of the fact that the vocational training, front line demonstrations and on-farm testing, conducted by the scientists of Krishi Vigyan Kendra, motivated the farmers to adopt improved livestock management practices. Supporting these results, Chauhan (2012) stated that the adoption level of the tribal farmers was amplified after imparting training and conducting frontline demonstrations by Krishi Vigyan Kendra. Behera *et al.* (2014) stated that KVK plays a vital role in disseminating the improved crop production technology and helps in increasing the crop yield.

Table 1: Distribution of respondents on the basis of existing knowledge about improved livestock management practices (N = 200 livestock keepers)

S. No.	Knowledge category	Livestock keepers of adopted villages(N=100)			Livestock keepers of non-adopted villages(N=100)		
		Frequency	Percentage	Rank	Frequency	Percentage	Rank
1.	Low knowledge (0-33%)	8	8	III	55	55	I
2.	Medium knowledge (34 to 66%)	25	25	II	30	30	II
3.	High knowledge (67-100%)	67	67	I	14	14	III

Table 2: Distribution of respondents on the basis of adoption score about improved livestock management Practices

S. No.	Knowledge category	Livestock keepers of adopted villages (N=100)			Livestock keepers of non-adopted villages (N=100)		
		Frequency	Percentage	Rank	Frequency	Percentage	Rank
1.	Low adoption (0-33%)	11	11	III	52	52	I
2.	Medium adoption (34 to 66%)	32	32	II	32	32	II
3.	High adoption (67-100%)	57	57	I	16	16	III

Knowledge of livestock keepers regarding different aspects of improved livestock management practices

According to the data in Table 3, 100 per cent (KI=100) of respondents from adopted villages and non-adopted villages are aware of the use of mangers and clean drinking water. The knowledge index of respondents from adopted villages also revealed that all respondents knew about feeding colostrum to newly born calves and cleaning animals' udders, hands, and vessels (KI=100).The knowledge index of respondents of adopted villages also showed that the knowledge about improved livestock management practices, *viz.* green fodder production, chaffing of fodder & azolla feeding were 96.66, 96.66 and 93.33 , respectively. The knowledge index of respondents from adopted villages was good, with scores of 83.33, 83.33, 78.33, 75.00, 73.33, 73.33, and 70.00 for improved breed, care of calf, feeding additional concentrate to animals during pregnancy, artificial insemination, enrichment of dry roughages, use of balanced ration (Mineral mixture/feed supplement), and animal health care (Vaccination, Deworming).The knowledge index of respondents of adopted villages was 93.33 for azolla feeding because KVK Ajmer is a pioneer in Azolla production technology in the district and, besides providing good quality material for multiplication of azolla, disseminates this technology among livestock keepers through FLDs, OFTs and training on azolla production technology. The knowledge index of respondents of adopted villages was very low, *i.e.* 33.33 for animal insurance. Kumar *et al.* (2017) also stated that such insurance schemes, though

Table 3: Difference in knowledge about improved livestock management practices by livestock keepers of adopted and non-adopted villages

S. No.	Improved livestock management practices	Knowledge of livestock keepers of adopted villages(N=100)			Knowledge of livestock keepers of non-adopted villages(N=100)		
		Total score	Mean score	Knowledge Index	Total score	Mean score	Knowledge Index
1	Improved Breeds	250	2.50	83.33	170	1.70	56.66
2	Artificial Insemination	225	2.25	75.00	135	1.35	45
3	Use of balanced ration (Mineral mixture/feed supplement)	220	2.20	73.33	156	1.56	52
4	Use of manger	300	3.00	100	300	3.00	100
5	Green Fodder Production	290	2.90	96.66	195	1.95	65
6	Chaffing of green fodder	290	2.90	96.66	190	1.90	63.33
7	Azolla feeding	280	2.80	93.33	50	0.50	16.66
8	Clean drinking water	300	3.00	100	300	3.00	100
9	Enrichment of dry roughages	220	2.20	73.33	99	0.99	33
10	Care of Calf	250	2.50	83.33	170	1.70	56.66
11	Feeding of colostrums to newly born calf	300	3.00	100	250	2.50	83.33
12	Feeding additional concentrate to animals during pregnancy	235	2.35	78.33	175	1.75	58.33
13	Health care of animals (Vaccination, Deworming)	210	2.10	70	105	1.05	35
14	Cleaning (animals udder, hand & vessels)	300	3.00	100	280	2.80	93.33
15	Animal Insurance	100	1.00	33.33	45	0.45	15
	Overall average	251.33	2.51	83.77	174.66	1.74	58.22

Table 4: Difference in adoption of improved livestock management practices by livestock keepers of adopted and non-adopted villages

S. No	Improved livestock management practices	Adoption of livestock keepers of adopted village(N=100)			Adoption of livestock keepers of non-adopted village(N=100)		
		Total score	Mean score	Adoption Index	Total score	Mean score	Adoption index
1	Improved Breeds	200	2.00	66.66	120	1.20	40.00
2	Artificial Insemination	152	1.52	50.66	60	0.60	20.00
3	Use of balanced ration (Mineral mixture / feed supplement)	195	1.95	65.00	90	0.90	30.00
4	Use of manger	300	3.00	100.00	280	2.80	93.33
5	Green Fodder Production	295	2.95	98.33	250	2.50	83.33
6	Chaffing of green fodder	270	2.70	90.00	200	2.00	66.66
7	Azolla feeding	105	1.05	35.00	30	0.30	10.00
8	Clean drinking water	270	2.70	90.00	250	2.50	83.33
9	Enrichment of dry roughages	105	1.05	35.00	40	0.40	13.33
10	Care of Calf	150	1.50	50.00	75	0.75	25.00
11	Feeding of colostrums to newly born calf	260	2.60	86.66	200	2.00	66.66
12	Feeding additional concentrate to animals during pregnancy	210	2.10	70.00	120	1.20	40.00
13	Health care of animals (Vaccination, Deworming)	182	1.82	60.66	75	0.75	25.00
14	Cleaning of animals udder, hand & vessels during milking	270	2.70	90.00	250	2.50	83.33
15	Animal Insurance	15	0.15	5.00	6	0.06	2.00
	Overall average	198.6	1.986	66.198	136.4	1.364	45.464

have laudable objectives, are not implemented effectively mainly due to lack of awareness among the beneficiaries. It is important that farmers are made aware of the benefits of such insurance schemes so that the owners will be inclined to pay the required premium to insure their animals.

The knowledge index of respondents from non-adopted villages for cleaning (animals udder, hand, and vessels), feeding colostrum to newly born calf, green fodder production, chaffing of fodder, feeding additional concentrate to animals during pregnancy, calf care, and improved breed was 93.33, 83.33, 65.00, 63.33, 58.33, 56.66, and 56.66, respectively, which was comparatively low in comparison to respondents of non-adopted villages. The knowledge index of respondents from non-adopted villages was very low, with 45, 35, 33, 16.66, and 15 for artificial insemination, animal health care (Vaccination, Deworming), dry roughage enrichment, azolla feeding, and animal insurance. The extension agencies in the study area need to take immediate initiatives to take up extension programs to enhance the farmers' awareness or knowledge level about these practices. Sharma and Singh (2011) and Sachan *et al.* (2016) reported similar findings.

The overall mean score and knowledge index of respondents of adopted villages and respondents of non-adopted villages were 2.51, 83.77, 1.74 and. 58.22, respectively. Based on this, it could be inferred that the knowledge levels of two categories of farmers differed significantly as per their

knowledge score. On the basis of these observations, it can be said that the knowledge level of the respondents of adopted villages was higher than the respondents of non-adopted villages. It might be due to differences in the availability of sources of information as scientists were always available to the farmers of adopted villages.

Adoption of livestock keepers about different aspects of improved livestock management practices

A review of the data in Table 4 revealed that the respondents of adopted villages had completely adopted the use of manger (A.I.=100), followed by green fodder production (A.I.=98.33), chaffing of fodder (A.I.=90), clean drinking water (A.I.=90), and cleaning of animals' udder, hand, and vessels during milking (A.I.=90).The adoption index of respondents from non-adopted villages, on the other hand, was 93.33, 83.33, 83.33, and 83.33, respectively, for manger use, green fodder production, clean drinking water, and cleaning of animals' udder, hand, and vessels during milking. It's possible that this is because animal husbandry is the primary secondary occupation of the farming community in this area, and as a result, the farmers were extremely cautious about these issues. The other probable reason is negligible expenditure on these practices and the availability of irrigation facilities for the livestock keepers. The adoption index of the respondents of adopted villages for feeding of colostrum to newly born calf, feeding additional concentrate to animals during pregnancy, improved breeds, use of balanced ration (Mineral mixture/feed supplement) and health care of animals (Vaccination, Deworming) were 86.66,70,66.66, 65 and 60.66, respectively. The adoption index of the respondents of non-adopted villages for feeding of colostrum to newly born calf, chaffing of fodder, feeding additional concentrate to animals during pregnancy, improved breeds, use of balanced ration (Mineral mixture/feed supplement) and health care of animals (Vaccination, Deworming) were 66.66, 66.66, 40, 40, 30 and 25, respectively. Mostly, livestock keepers feed concentrates to animals when animals are in milk and they stop the feeding of concentrate when the animal becomes dry. However, because of regular contact with scientists of KVK, they have adopted the practice of feeding the recommended amount of concentrate even to dry animals. The reason behind the low adoption index for health care of animals was that vaccination facilities were not available regularly. Further, the poor adoption may be attributed to psychological fear that the vaccination may reduce milk production. Animal production totally depends on the health of animals, so there is a need to improve the diffusion of health care practices among farmers to optimize their production and enhance overall farm income. Chander *et al.,* (2015) concluded that there was lack of awareness about deworming, whereas, Sachan *et al.* (2016) and Rohila *et al*. (2018) reported that the majority of the farmers had medium adoption level of health care practices.

It was also discouraging to see in Tables 3 and 4 that the knowledge index of respondents in adopted and non-adopted villages about improved breeds was 83.33 and 56.66, respectively, but the adoption index was lower in both categories. This finding was in consonance with the finding of Gurjar *et al*. (2017) who reported that the majority of respondents are conscious and have knowledge of breeds. The existing situation could be attributed to the fact that the basic cost of improved breed of dairy animals is very high and is beyond the reach of a common livestock owner. Besides that, farmers are not aware of the procedures and methodology whereby they can improve the breed status of their animals by adopting scientific breed improvement programmes. The adoption index of respondents from adopted villages for artificial insemination, calf care, dry roughage enrichment, azolla feeding, and animal insurance was extremely low, at 50.66, 50, 35, 35, 20. While respondents from non-adopted villages had very low adoption index values for artificial insemination, enrichment of dry roughages, azolla feeding, and animal insurance, namely 20, 13.33, 10 and 8.33, respectively. Poor conception rate and longer distance of A.I. centres are the main reasons for the lack of adoption of A.I.by both the categories of respondents. It was discouraging to note from Table 2 and 3 that the knowledge index was very low about the animal insurance schemes and least adopted practice by both the categories of farmers. This may be due to the animal insurance scheme being optional and that is the foremost reason for its failure. Banks are not involved in livestock insurance and, due to a lack of awareness and the procedure required to purchase insurance, few livestock keepers bother to insure their animals. There is a scope for extension workers to popularise animal insurance schemes so that livestock keepers may become aware and adopt them. Various extension methods should be used to increase awareness and knowledge of livestock keepers about animal insurance schemes. Alternate players in livestock should be encouraged to participate so that the maximum number of animals comes under cover of insurance. As per Census 2012, there were 122.9 million cows and 92.5 million female buffaloes in the country. As per the reply given in Lok Sabha on March 13, 2018, only 07.44 lakh animals were insured in India and only 26,074 in Rajasthan in 2016-17 (Anonymous, 2018). Since the last two years, animals in Rajasthan have been uninsured due to the government's lack of a tie-up with any insurance company. Based on the findings of Chand *et al.* (2016), it is suggested that government and other stakeholders' efforts need to be directed towards policies and programmes to create more awareness, assess the real demand of attributes preferred by farmers in the livestock insurance products and constant engagement with all stakeholders for designing and launching any livestock insurance product.

It was also surprising that respondents from adopted villages had a knowledge index of 73.33 about dry roughage enrichment but an adoption index of only 35. About one-third of respondents in non-adopted villages are aware of dry roughage enrichment, despite the fact that the adoption index for this management practice is only 13.33. At the time of the interview, livestock keepers explained that chemically treated dry roughages could not be stored for an extended period of time. Similar findings were also reported by Sreedhar *et. al.* (2018) who concluded that the practice of urea treatment of paddy straw ranked ninth with an adoption index of 5.83 and a mean score of 0.12, respectively. The overall adoption index of respondents of adopted and non-adopted villages was observed to be 66.19 and 45.64, respectively. A remarkable difference was seen in the mean score of respondents of adopted and non-adopted villages about improved animal

husbandry practices.

Conclusion

It can be concluded that respondents from adopted villages had a higher adoption index and a higher knowledge index than respondents from non-adopted villages regarding all major livestock management practices as a result of training programs, animal treatment camps, demonstrations, Kisan Goshties, and animal fairs organized by the Krishi Vigyan Kendra in collaboration with State Animal Husbandry Department. Respondents of adopted villages also had regular contact with KVK scientists, resulting in higher knowledge and adoption of various practices of livestock management. The study also draws attention that there is an urgent need to carry out extension activities in the field of transfer of technology (TOT) for animals in other villages also. Intensive efforts should be made to demonstrate health-improvement technologies, promote animal insurance schemes, and increase livestock production potential.

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