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Impact of training on Sheep and Goat production among the farm women of Sundarban of West Bengal

[1]B. Santra, [2]K. C. Dhara , [3]S. Ghosh, [4]S. Bhattacharjee, [5]P. Dasputa, [6]A. K. Giri, [7]B Sarkar, [8]S. Roy, [9]S. Bose, [10]K. Poddar, [11]A Dey and [12]A Goswami

[2,3,4,5,6,7,8,9,10,11]*DBT Mission mode programme on Establishment of Biotech-KISAN Hub at WBUAFS, Kolkata Directorate of Research, Extension & Farms West Bengal University of Animal & Fishery Sciences*
[1]*M V Sc. Scholar, Deptt. of VAHEE, WBUAFS*
[12]*Professor and Head Deptt. of VAHEE, WBUAFS*

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***Corresponding Author**
Email: adfwbuafs[at]gmail.com

ABSTRACT

A study was conducted among the 777 nos. of women farmer of Sundarban participated in the 20 nos. of Farmers' training on sheep and goat production from September 2018 to March 2020 organized under DBT mission mode programme on Establishment of Biotech-KISAN Hub at WBUAFS, Kolkata for assessment of effective capacity building of these farmers for their better livelihood on the basis of the survey though suitable questionnaires The impact of training programme has been found a tremendous effect among the farmers on adoption of scientific method of Sheep and Goat rearing practices. The majority of the these farm women were within the age group of 30- 45 and they were mostly the landless (23.17%), small (41.06%) and marginal farmers (29.99%) in this remote island.. The goat farmers were mixed in caste and most of them were Hindu by religion (70.01%) and caste is SC (44.02%), followed by General (40.03 %), OBC (9.52%) and ST (6.44%). Education status of the farm women are either primary (15.57%), secondary (11.58%) and higher secondary (29.99%). Impact of training in relation knowledge gain has been assessed found that overall knowledge gain about 76.19% and all factors have a significant gain in knowledge level among these farmers after exposure to the training. The gain in mean knowledge score pertaining to various aspects of sheep and goat rearing practices. Highest knowledge gain has been found in General care & management (87.14%) followed by Health care management (78.89%), feeding practices (78.56%) housing management (73.90%), Breeds & breeding practices (70.30%) and fodder production (68.36%) were observed in decreasing order among the farm women with significant effect. Among different parameters housing had highest level of adoption percentage (72.97%) Breed (64.48%), Vaccination (PPR, FMD) (62.42%), Deworming (59.46%) and least adoption percentage in azolla feeding practices (16.47%) was observed. It has also observed that, the farm women according to their knowledge level at pre and post training programme clearly indicated that more number of trainees shifted over to high level knowledge category from low knowledge level. As a whole, , the training program had a significant positive impact in terms of knowledge gain and adaption on scientific practices of sheep and goat rearing which will help in better livelihood.

1. Introduction

Animal husbandry has always been an indispensable part of rural India, which accounts for the livelihood of a sizable section of the population. Estimates of 42 percent of the poor worldwide are dependent on livestock as part of their livelihood (Thornton *et al.*, 2002). Due to unforeseen consequences of nature on agriculture, animal husbandry remained as the source of cash income for the subsistence of farmers as such livestock plays an integral part of Indian agriculture. In this context, small ruminants especially goat has a tremendous potential to be projected as 'future animal' for both rural and urban India (CIRG, 2011). Sheep and Goats play an important role in the food and nutritional security of the rural poor especially in the rainfed regions where crop production is uncertain, and rearing large ruminants is restricted by acute scarcity of feed and fodder. Sheep and Goat rearing has distinct economic and managerial advantages over other livestock because of its less initial investment, low input requirement, higher prolificacy, early sexual maturity, and ease in marketing. Goats can efficiently survive on available shrubs and trees in unfavorable environments. (Kumar *et. al*, 2010) Since time goat is being considered as 'poor man's cow', 'mobile bank', 'walking refrigerator', as goat husbandry simultaneously sheep husbandry is the need of era. But, goat production in India has low productivity per se which may be attributed to various factors like shortage of feed and fodder, lack of scientific knowledge, rearing non-descript breeds, low fertility etc. which are also considered to be the major constraints of goat farming. Imparting quality Training among stake holders are to be focused for effective livelihood development. As the state of West Bengal possesses a valuable genetic resource of sheep and goat known as "Black Bengal Goat" and "Garole Sheep" which contribute a vital role in the economy of rural, small and marginal landholders by their contribution towards marketable commodities such as meat, milk, fibre and skin (Dhara *et al*, 2016) and the training on

scientific sheep and goat husbandry practices will help in better productivity contribute a considerable income to the rural compared to other livestock farming. Since sheep and goat are smaller in size, maintenance by the women can be done very easily; emphasis has been given on women farmers ultimately contribute meaningfully to the cash needs for the family members (Tudu and Roy 2015). In view of the above, efforts is being taken to safe guard the interest of these islanders by understanding their problems and to provide a suitable alternative solution for their better livelihood effective capacity building of these farmers has been through a need based suitable curriculum. A total 777 nos. of women farmer have been trained with hands on training about management practices, vaccination, first aid treatment, preparation of value aided meat products were provided to them to cope up the difficulties faced by the farmers of these remote area of the goat and sheep farmers of Sundarban area of West Bengal.

2. Materials and Methods

The present study was done among the 777 farm women of Sundarban of the state of West Bengal during (September 2018 to March 2020).The area of study was selected purposively which is under coastal zone of Sundarban area mainly in Gosaba, Basanti (South 24 pgs), Hingalgunj and Sandeshkhali (North 24 pgs) Block of West Bengal. The farmers are selected based on socioeconomic status of 5998 farmers of these Islands (Dhara *et. al* 2019). All the farmers were imparted five days training with suitable course curriculum on sheep and goat farming through lectures, presentations, demonstrations and visits at WBUAFS, Kolkata and re-assessed their knowledge after completion of training. A pretested interview schedule has been used for survey work. The data has been collected through face to face interview and by direct observation for procuring various information related to their socio-economic status like (caste, religion, educational status, animal husbandry knowledge, family size, occupation, annual income from goat rearing) and other sources etc and impact of the training like course content, methodology etc. Gain in knowledge among these farmers has been assessed through standard practice (Goswami, 2010). The data were analyzed by few statistical methods i.e. percentage analysis, chi-square test, t test (Snedecor and Cochran 1994).

3. Results and Discussion

The data under the present study have been analyzed to find out the socio-economic condition of the 777 farm women and impact of the training and average knowledge gain due to this capacity building. The socio demographic parameters are presented in Table- 1, the farmers' Knowledge scores at pre and post training programme is depicted in table 2 and adoption of different technologies is represented in Table-3. In general, it was also observed that most of the farmers were fully satisfied with major instructors (75.9%), relevance to the trainee's need (72.40%), programme in general (70.1%). It was also found that some of the trainees were not at all satisfied with lodging facilities (46.91%), availability of reading materials (39.4%), physical facilities in classroom (25.3%) and programme content (21.26%). The study also revealed that 82.2% of the respondents had medium to high favorable opinion regarding the training. Major suggestion given by trainees includes provision of more off-campus training preferably in their villages during summer season in the afternoon.

Socio Demographic parameters

Analysis of the socio demographic parameters of these 777 nos. of farm women (Table 1) are engaged in either goat or sheep rearing which indicate the need of better scientific sheep a goat husbandry practice. The majority of the farmers were within the age group of 30- 60 (67.18%) and they were mostly marginal farmers, followed by 0-30 years constitutes 26%, and 60 years and above age groups represents 6.82%.This finding is almost in accordance to the observation of Dhara *et al.* (2019), Dhara *et al.* (2016) and Tudu *et al.* (2015) but varied from Sultana *et al.* (2014) which may be due to different state of their study. The age group is considered to be an important tool to motivate them towards involvement in goat husbandry. Since the most active group is predominant the present study, there is ample scope of improvement in the socio-economic condition these farmers of these farm women through a suitable sheep and goat farming practice. Most of these farmers are Hindu in religion (70.01%) and 29.99% are belong to Muslim community. This observation is in agreement with the result of Dhara *et al.* (2019) in Sundarban but different with Dhara *et al.* (2016) and Goswami (2014) as the study made by them in different location where presence of such type of religion is not pertinent. Majority of these farm women are married (87.52%). The present finding is in corroborated with the observation made by Dhara *et al.* (2019) in Sundarban but not in agreement with Dhara *et al.* (2016) and Goswami (2014) which may be due to difference in location of study or impact of purposive selection of the farmers in their study. Since it had been observed that the majority of goat farmers under present study are above 30 years of age, thus the present result of marital status is a natural phenomenon. Analysis of the data revealed that the sheep and goat rearing is much popular amongst the SC (44.02%), followed by General (40.03 %). The farm women belong to OBC (9.52%) and ST (6.44%) are not fond of sheep and goat farming. The result of the present study is in the tune with the findings of Dhara *et al.* (2019) and Goswami (2014) in Sundarban but the present findings is not corroborated with findings of Samanta *et al.* (2009) and Roy *et al.* (2018) as they also reported that the general trend of sheep and goat farming is preferred by the SC which may be due the location of their study. Education status of the farmers under present study revealed that most of the farm women are either primary (15.57%), secondary (11.58%) and higher secondary (29.99%) while 19.18% are illiterate, 2.45% are can read and 19.18% can read and write though they have no formal education. Most interesting, 2.06% farm women are Graduate. Most of the farmers under present study are less educated which is quite obvious finding as the mostly women goat farmers of middle and more age been deprived of education. Similar trend of observation have been observed by Dhara *et al.* (2019), Dhara *et al.* (2016) and Goswami (2014).but different observation have been made Roy *et al.* (2018) which may be smaller sample size and location specific. Sheep and goat rearing is much popular amongst the landless (23.17%), small (41.06%) and marginal farmers (29.99%) in this remote island. The women farmer have no or less amount of land other than household works which very much obvious situation of the rural area which indicates the ray of hope to lake sufficient endeavor for their livelihood security through improved goat

farming. This finding is corroborated with the finding of Dhara *et al.* (2019), Goswami (2014) which considered being the normal scenario of rural Bengal. .There may be some different opinion in this regard which may be due region specific impact. Agricultural labourers (41.18%) and those who are engaged in cultivation (37.97%) are mainly engaged in sheep and goat farming. Such finding is also made by Dhara *et al.* (2019), Dhara *et al.* (2016), Tudu *et al.* (2015) and De *et al.* (2014) while this observation disagrees from Samanta *et al.* (2009) which may accrue smaller sample size. Since the livelihood of these women farmers was in stake as they earn less Rs.30,000/- per year, an alternative arrangement for better livelihood is the need of the hours. The living standards of its goat farmers and ensuring inclusive growth for them are the main priority of the policy making authorities to take a tangible action in this regard.

Economic status of the farmers under present study almost all (73.61%) of these farmers are having monthly income less than Rs 5,000/- and only 16.39% farmers earned more than Rs. 5000 per month. Since most of the farmers (73.61%) were having monthly income less than Rs 5000/- , emphasis may be given to economic upliftment of these farmers. There are several studies were made in this regard was found that most of the farmers are in low categories as 79.33 % in Bangladesh (Islam *et al.*2018) 91.3% in Malabar Region of Kerala (Raghavan and Raja 2012) but Braj Mohan *et al.* (2016) reported the majority of goat farmers (34%) are in a medium income group in Semi Arid Zone of Uttar Pradesh. The variation in economic condition is region specific and person specific. Most of the farmers are of Joint family (84.81%) and having medium size family (73.23%). Almost all the farmers are having own residence (89.58%) and all of them are having materials like cycle, TV etc but farm power is not popular in this area. These findings are like in tune with finding of Dhara *et al.* (2019), Goswami (2014) which considered being the normal scenario of rural Bengal. In the villages of West Bengal particularly in the Sundarban area which lies in the remote part where Kancha or mixed house are predominant. The Chi square test revealed that all the category are having significant ($p<0.01$) changes (Table 1)

Table : 1: Demographic and Socio Personal characteristics of Farm women (N = 777)

Characters	Category	Overall		Chi Square
		Freq.	(%)	
Age	Young group (up to 30 years)	202	26.00	45.34**
	Most active group (30-60years.)	522	67.18	
	Elder group (above 60 years.)	53	6.82	
Religion	Hindu	544	70.01	74.55**
	Muslim	233	29.99	
Marital status	Unmarried	77	9.91	162.18**
	Married	680	87.52	
	Widow/ Widower	20	2.57	
Caste	General	311	40.03	107.17**
	Schedule caste	342	44.02	
	Schedule tribe	74	9.52	
	Other backward caste	50	6.44	
Education of the respondent	Illiterate	149	19.18	105.94.**
	Can read only	19	2.45	
	Can read & write	149	19.18	
	Primary	121	15.57	
	Middle school	90	11.58	
	High school	233	29.99	
	Graduate	16	2.06	
Land	No land/Land less	180	23.17	211.94**
	Up to 1 hectare	319	41.06	
	Up to 2 hectares	233	29.99	
	Above 2 hectares	45	5.79	
Occupation	Labour	320	41.18	145.65**
	Caste Occupation	106	13.64	
	Business	50	6.44	
	Independent	6	0.77	
	Cultivation	295	37.97	
Gross family	Below Rs.2000/-	245	31.53	190.66**

income/month	Rs. 2001-5000/-	327	42.08	
	Rs. 5001-10,000/-	137	17.63	
	Rs. 10001 & above	68	8.75	
Family type	Joint family	659	84.81	122.78**
	Nuclear family	118	15.19	
Family Size	Small	208	26.77	187.22**
	Medium	569	73.23	
House Type	No house	81	10.42	228.58**
	Hut	171	22.01	
	Kutcha House	143	18.40	
	Mixed House	131	16.86	
	Pucca House	242	31.15	
	Mansion	9	1.16	
Farm Power	No Drought Animal	566	72.84	177.25**
	1-2 Drought animals	149	19.18	
	3-4 drought /1 or more prestige animal	37	4.76	
	5-6 Drought animals/Tractors	25	3.22	
Material Possession	Bullock Cart	139	17.89	124.22**
	Cycle	746	96.01	
	Radio	264	33.98	
	Television	528	67.95	

Impact of Training

The impact of the farmers training on scientific sheep and goat farming practices among the farm women of Sundarban was assessed and the effectiveness of capacity building with modern curriculum is found to be satisfactory (Table 2) with gain in mean knowledge score pertaining to various aspects of sheep and goat rearing practices. Highest knowledge gain has been found in General care & management (87.14%) followed by Health care management (78.89%), feeding practices (78.56%) housing management (73.90%), Breeds & breeding practices (70.30%) and fodder production (68.36%) were observed in decreasing order among the farm women. It is evident that there has been a highly significant difference in their knowledge level, before and after the conduct of training programme. The findings are not in close agreement with the finding of Belakeri *et a*l (2017) as they have found that fodder production (70.36%), health care management (61.33%), housing management (60.60%), feeding practices (51.60%), breeds and breeding management (59.26%), general care and management (53.06%) in Bengaluru, Karnataka. However, Senthilkumar *et al.* (2014), where farmers had gained knowledge in housing (73.0%), breed awareness (73.5%), vaccination (72.5%, and fodder production (70.0%**)** because of training on goat rearing conducted in KVK of Nammakal district of Tamil Nadu which is observed to be in the tune of present study. It showed a positive sign among farmers and its leads to extend the level of adoption in future to feed as fresh and dry fodder along with other concentrate feed. The overall adoption percentage by the farmers, which indicated that training, had a significant impact in uptake of new technologies thereby increasing their livelihood with renewed income. The training imparted to the farmers increased the exposure of awareness to new messages in the respondents, increased their knowledge and also farmers got experienced to new technologies. In a recent study, Kadagi et al (2020) observed that 53.65, 51.74, 49.13 and 61.66 per cent of the trainees gained knowledge on types of different breeds of sheep and goats, sheep and goat shelter, Feed and fodder and Animal Health maintenance after training which is also not exactly corroborated but the trend is in same with the present findings.

Table: 2: Farmers' Knowledge scores at pre and post training programme.

Sl. No	Parameters	Mean knowledge score		Mean knowledge gain score	Percent of knowledge gain
		Before training	After training		
1.	Housing management	5.95 ± 0.84	22.8 ± 1.84**	16.85	73.90
2.	Breeds & breeding practices	7.04 ± 1.02	23.7 ± 2.14**	16.66	70.30
3.	Feeding practices	4.31 ± 0.75	20.1 ± 2.78**	15.79	78.56
4.	Fodder production	5.22 ± 0.95	16.5 ± 3.28**	11.28	68.36
5	General care & management	2.88 ± 0.55	22.4 ± 5.33**	19.52	87.14
6.	Health care management	4.75 ± 0.66	22.5 ± 2.28**	17.75	78.89
7.	Overall	5.025 ± 0.75	21.33 ± 3.25**	16.31	76.19

** Highly Significant at P<0.001

Adoption of different technology

The training programme has been found a tremendous impact on the farmers on adoption of scientific method of Sheep and Goat rearing practices. Among different parameters housing had highest level of adoption percentage (72.97%) Breed (64.48%), Vaccination (PPR, FMD) (62.42%), Deworming (59.46%) and least adoption percentage in azolla feeding practices (16.47%) was observed (Table 3). It revealed that azolla cultivation and feeding technologies are emerging one among livestock farmers and farmers are gaining knowledge about year round production of azolla in their own farm itself under controlled atmosphere. It showed a positive sign among farmers and its leads to extend the level of adoption in future to feed as fresh and dry fodder along with other concentrate feed. The overall adoption percentage by the farmers, which indicated that training, had a significant impact in uptake of new technologies thereby increasing their livelihood with renewed income. The adoption of technology among the majority of farm women practiced vaccination, breed selection, shed construction and fodder cultivation as observed by Kadagi et al (2020) is in the tune with the present study though they have made their study in Bagalkote, Karnataka. The present result is agreement with the findings of Senthilkumar *et al.*, (2014) as the also found that adoption of trainees of goat rearing training were 25.0% housing system, 20.0% Breed, 36.0% deworming and 30.5% Green fodder production. The results were also in agreement with Biswas *et al.*, (2008) who reported on the effect of training on advanced dairy farming practices and indicated that there was a significant level of adaption in deworming, artificial insemination and vaccination as a result of training.

Table: 3: Farmers' adoption of different technology in the training programme.

Category	Adoption Level	
	Freq	(%)
Vaccination against contagious disease	485	62.42
Deworming for parasitic control	462	59.46
Cultivation of Green fodder	279	35.91
Feeding of green fodder	281	36.16
Feeding of Concentrate Mixture	341	43.89
Breeds of sheep and Goat	501	64.48
Housing and management	567	72.97
Azolla feeding	128	16.47
Value addition of Milk & Meat	171	22.01

Impact on Knowledge level

A glance (Table 4) on distribution of farm women according to their knowledge level at pre and post training programme clearly indicated that more number of trainees shifted over to high level knowledge category from low knowledge level. At pre-training stage, more trainees (88.03%) were under low knowledge level category followed by medium level (10.55%) and very few (1.42%) under high knowledge level group but the sequence got reversed after the training programme where, majority (88.42%) of trainees under high knowledge category followed by medium level (10.94%) and low knowledge level (0.64%) category. Chi square test revealed that all the category are having significant (p<0.01) changes in knowledge level which considered to be positive impact of the training. The present finding is in close proximity of the result observed by Kadagi et al (2020), Belakeri *et a*l (2017) in Bengaluru, Karnataka. The findings were in consonance with Rajesh *et. al* (2013), where they found highly significant difference (P<0.01) in the knowledge level of the respondents before and after animal husbandry training among farmers interest groups (FIGs) in the state of Tamil Nadu. Rachna *et al.*, (2013), reported that exposure to training increased the knowledge of farmers, farm women and youths which is consonance with the present result. Nagaraj *et al.*, (2017) also observed that 71.43 per cent of the trainees were deviating knowledge after training which is corroborated the present result.

Table 4: Distribution of farmers according to their knowledge level

Sl. No	Category	Pre- training		Post- training		Chi Square
		Freq.	(%)	Freq.	(%)	
1.	Low level of knowledge (1-10)	684	88.03	5	0.64	144.95**
2.	Medium level of knowledge (11-20)	82	10.55	85	10.94	255.69**
3.	High level of knowledge (21-30)	11	1.42	687	88.42	239.39**

The present result can be concluded that the training programme had a significant positive impact in terms of

knowledge gain and adaption on scientific practices of sheep and goat rearing through effective capacity building of these farmers with a need based suitable curriculum. In future day livestock sector has to meet huge demand of meat and its other products in local, national and international markets. This needs propagation of scientific and recent technologies in to sheep and goat rearing farmers. In this aspect training played important role and it is recommended to conduct more training programmes to make farmers more skilled and knowledgeable. Such training programme has certainly provided a suitable alternative solution for their better livelihood of these Islanders.

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