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Adoption Index of Women Goat Farmers in Various Aspirational District of Niti-Ayog in West Bengal, India

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Abstract

The Goat husbandry plays a key role in sustainable livelihood and income generation of the rural small-marginal farmers, landless laborers and specially women folk. The research work was carried out on adoption index of women goat farmers in purposively selected 05 nos. of aspiration districts, of NITI Aayog, GOI in W.B. From each one block of each district50 nos. of women goat farmers' were randomly selected as respondents with total sample size of 250 nos. for the present study. The collected data were compiled and analyzed statistically with the help of pre-tested structured interview schedule for better interpretation of the findings of the study. The study had showed low level of adoption among the farm women, which indicated their lacking in application of improved husbandry practices in goat farming. The study revealed that, majority of farm women of Birbhum district were having higher % age of low adoption level in comparison to other four districts. The findings also revealed that, joint family married women were having more adoption index than nuclear family. The study explored that, South Dinajpur district had highest adoption level in terms of almost all enlisted adoption indicators than other four aspirational districts in the study. In future, a comprehensive farmer training and demonstration programme need to be conducted in this area for livelihood improvement of women goat farmers. The adoption level about goat farming need to be assessed for formulation of sustainable livelihood based promising endeavor in this functional area of the state of W.B.

Keywords: Women, goat farmer, adoption, index, aspiration, Niti-Ayog

1. Introduction

The Small animal husbandry plays a key role in sustainable livelihood and income generation of the rural pro-poor stakeholders in India. The goat as farm animals has widest ecological range and most reliable livelihood resources of poor people since their domestication during Neolithic period of about 10 million years ago. Goat farming has tremendous potential for income and employment generation, especially in rural areas (Singh et al., 2015). This small ruminant plays a significant role in providing self-employment through supplementary income to millions of resource poor farmers and acts as a cushion in distress situations like draught, famine etc. India possesses an enormous goat population of 124.5 million i.e. 18% of the World population. (Anonymous, 2015). Goats and their products accounted for about 8.5% of value of livestock

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output (at current prices) in 2010-11. The 19th livestock census revealed that, India accounts 135.17 million of goat population, among them rural area contributes 129.08 million goats. Goat population accounts for 22.06% of total livestock population in India (19th Livestock census, Dept. of A.H. & Dairying, Govt. of India). Goat rearing has distinct economic and managerial advantages over other livestock species, because of its less initial investment, low input requirement, higher reproductive rate, early sexual maturity, and ease in marketing (Kumar et al., 2015). To promote goat husbandry, women are key stake holder for goat rearing in back yard system apart from their household work. In India, about 70% of women work forces were engaged in livestock farming and women were key stakeholder for goat rearing in backyard system apart from their household works. This will provide employment and empowerment opportunities to females; two-third of female workforce in rural India is engaged in livestock rearing (Kumar and Singh, 2008). As per Census 2011, out of total female main workers, 55% were agricultural labourers and 24% were cultivators. Goat Husbandry will provide employment and empowerment opportunities to females as two-third of female workforce in rural India is engaged in livestock rearing (Kumar, 2004). Improvement of livelihood of this rural working force (women) through extensive capacity building including skill up gradation on various improved animal Husbandry practices is an important tool. Senthilkumar et al. (2014) concluded that training had positive impact to the farmers' knowledge level, perception and performance. Adoption is a decision to make full use of an innovation as the best course of action available (Rogers, 1961). This is the acceptance and continued use of improved practices and helps in adoption of any improved or new technology or practices many times. The five aspirational districts namely-Birbhum, Nadia, Malda, South Dinajpur and Murshidabad as identified by the NITI Ayog, Govt. of India in the state of West Bengal have been selected for the study considering its poverty, poor health, educational status and socio-economic characteristics etc. Considering this development scenario, a suitable plan needs to be promoted for better livelihood among the women folk engaged in goat farming in various aspirational districts of West Bengal with a linkage of available science and technology. Keeping this idea in mind, an attempt has been made to study on the adoption level of Women Goat farmers in various aspirational district of West Bengal state.

2. Materials and Methods

The present research work was conducted in purposively selected 05 numbers of aspirational districts, of the state West Bengal as identified by the NITI Aayog, Govt. of India. The five (05) aspirational districts of NITI Ayog i.e. Nadia, Murshidabad, Birbhum, Malda and Dakshin Dinajpur was selected purposively considering its poverty, poor health, educational status and socio-economic characteristics in the state of West Bengal. Moreover the districts have relatively high potential for conducting research on 'Study on adoption level of farm women on Goat farming in different aspirational districts of West Bengal'' as in these district Farm women has immense potential in rural Goat farming practice. A complete list of women Goat farmers of each selected blocks was prepared from the official record of district Animal resource development Dept. & other sources. From, the list so prepared, category wise, women farm families rearing Goat were identified, which formed the target population for the study. A sample of 50 number of women goat farmers were randomly selected as respondents from each one block of each one district of total five aspirational districts namely–*Nadia* (LN-23.471°N and LT-88.556°E), Murshidabad (LN-24.175°N and LT-88.280°E), Birbhum (LN-23.840°N and LT-887.619°E), Malda (LN-25.010°N and LT-88.141°E) and Dakshin Dinajpur (LN-25.371°N and LT-88.556°E) districts. In this way, total sample size was 250 nos. for the present research study. Data were collected through personal interview using a specially prepared pre tested structured interview schedule. In the present study, it is intended to study the general, socio-economic, communication, administrative, and socio-psychological profiles of the respondents along with Adoption Index in selected improved Goat farming practices. The independent variables (17) have been selected on their theoretical relationship with the dependent variable viz. Adoption Index in selected improved Goat farming practices. The dependent variable was measured by using the available scales of Dasgupta (1968) respectively for the present study. All the selected variables were measured either by test or established scale or by developing schedule. This has further scope of investigation and elaboration in near future. The data were collected with the help of pre-tested structured interview schedule by the research himself and the same were compiled, tabulated and analyzed statistically through the tools as-Mean±SE, Chi-square, ANOVA and Spearman correlation coefficient analysis for better interpretation of the findings in the study.

3. Results and Discussion

The Present study was pursued among the 250 numbers of sample women goat farmers of aspirational districts as identified by the NITI-Ayog of West Bengal (Birbhum, Nadia, Malda Dakshin Dinajpur, Murshidabad) to assess their adoption level in scientific goat farming practices for making a suitable plan through an ideal intervention to improve the livelihood of the stakeholders in the functional area of study. The analytical studies with supportive references are depicted as follows.

The adoption index (Mean±SEM) generated through standard practice among the farm women in the aspirational districts of West Bengal in relation to improved farm practices of goat husbandry like-vaccination against contagious diseases, deworming for parasitic disease, cultivation of green fodder,

Feeding of green fodder, feeding of concentrate mixture, feeding of colostrum to new born kid, feeding of urea and molasses treated straw, castration by bradizzo castrator, value addition of milk and meat as per Dasgupta (1968) has been represented in the Table 1. It had been appeared that, adoption index among the farm women of South Dinajpur district (7.01±0.64) was significantly higher than other four districts viz- Birbhum (5.01±0.72), Malda (5.20±0.67), Nadia (5.57±0.68) and Murshidabad (6.07±0.68) respectively. The result indicated that the farm women of south Dinajpur district were more adapted to improved goat husbandry practices. Similarly, the women farmer of joint family had significantly (p<0.01) higher adoption index (7.26±0.49) in comparison to those of nuclear family (5.22±0.47). It was obvious that,

Table 1: Adoption Index of the Farm women in the aspirational district of West Bengal

Category	Different factors	Adoption Index (Mean±SEM)	Adoption level			
			Low (<5.00)	Medium (>5.00 <6.5)	High (>6.5)	Chi Square
Overall		5.77±0.61 (250)	140 (56%)	81 (32.4%)	29 (11.6%)	88.75**
Districts	Birbhum	5.01±0.72 (50)	31 (62%)	14 (28%)	5 (10%)	122.26**
	Nadia	5.57±0.68 (50)	29 (58%)	15 (30%)	6 (12%)	
	Malda	5.2±0.67 (50)	30 (60%)	15 (30%)	5 (10%)	
	Dinajpur	7.01±0.64 (50)	23 (46%)	20 (40%)	7 (14%)	
	Murshidabad	6.07±0.68 (50)	27 (54%)	17 (34%)	6 (12%)	
Age	Young group (Up To 30 Yrs)	6.01±0.60 (65)	35 (53.85%)	22 (33.85%)	8 (12.30%)	107.94**
	Most active Grou (30-60 yrs)	6.19±0.59 (168)	87 (51.7%)	60 (35.7%)	21 (12.6%)	
	Elder group (Above 60 Yrs.)	5.7±0.68 (17)	10 (58.8%)	5 (29.4%)	2 (11.8%)	
Religion	Hindu	5.88±0.61 (195)	106 (54.3%)	61 (31.2%)	28 (14.5%)	201.44**
	Muslim	5.46±0.69 (55)	30 (54.5%)	18 (32.7%)	7 (12.8%)	
Marital status	Married	6.26±0.58 (185)	96(51.9%)	67 (36.2%)	22 (11.9%)	175.24**
	Unmarried	5.41±0.64 (59)	35 (59.93%)	18 (30.5%)	6 (9.57%)	
	Widow/ widower	5.19±0.10 (6)	3 (50%)	2 (33.33%)	1 (16.67%)	
Occupation	Labour	5.45±0.56 (135)	81 (60%)	41 (30.37%)	13 (9.63%)	160.77**
	Caste occupatn	6.99±0.88 (2)	1 (50%)	1 (50%)	0 (0%)	
	Business	5.06±0.63 (16)	10 (62.5%)	4 (25%)	2 (12.5%)	
	Independent	5.04±0.90 (2)	1 (50%)	1 (50%)	0 (0%)	
	Cultivation	5.55±0.58 (95)	55 (57.90%)	28 (29.47%)	12 (12.63%)	
Caste	General	4.95±0.74 (85)	53 (62.35%)	24 (28.23%)	8 (9.42%)	104.98**
	Schedule caste	5.42±0.56 (125)	72 (57.6%)	40 (32%)	13 (10.4%)	
	Schedule tribe	5.52±0.56 (24)	14 (58.33%)	7 (29.17%)	3 (12.5%)	
	OBC	5.37±0.87 (16)	10 (62.50%)	4 (25%)	2 (12.5%)	
Education of the farm women	Illiterate	4.74±0.62 (48)	31 (64.58%)	13 (27.08%)	4 (8.34%)	114.68**
	Can read only	5.04±0.66(6)	3 (50%)	2 (33.33%)	1 (16.67%)	
	Can read and write	5.29±0.60 (48)	28 (58.33%)	14 (29.17%)	6 (12.5%)	
	Primary	5.41±0.62 (39)	23 (58.97%)	12 (30.77%)	4 (10.26%)	
	Middle school	5.72±0.64 (29)	16 (55.17%)	9 (31.03%)	4 (13.81%)	
	High school	5.85±0.61 (75)	42 (56%)	24 (32%)	9 (12%)	
	Graduate	6.09±0.75 (5)	3 (60%)	2 (40%)	0 (0%)	
Family type	Nuclear family	5.22±0.47 (212)	127 (59.90%)	64 (30.19%)	21 (9.91%)	97.84**

Table 1: Continue...

Category	Different factors	Adoption Index (Mean ± SEM)	Adoption level			
			Low (<5.00)	Medium (>5.00 <6.5)	High (>6.5)	Chi Square
	Joint Family	7.26±0.49 (38)	18 (47.37%)	15 (39.47%)	5 (13.16%)	
Family Size	Small	5.36±0.89 (183)	110 (60.01%)	55 (30.05%)	18 (9.94%)	96.66**
	Large	5.66±0.51 (67)	39 (58.2%)	21 (31.34%)	7 (10.46%)	
House Type	No house	5.57±0.66 (26)	15 (57.69%)	8 (30.77%)	3 (11.54%)	108.180**
	Hut	6.19±0.60 (55)	29 (52.72%)	20 (36.36%)	6 (10.92%)	
	Kutcha House	6.02±0.62 (46)	25 (54.35%)	16 (34.78%)	5 (10.87%)	
	Mixed House	5.55±0.64 (42)	24 (57.14%)	12 (28.57%)	6 (14.29%)	
	Pucca House	6.02±0.61 (78)	42 (53.84%)	26 (33.33%)	10 (12.83%)	
	Mansion	6.09±0.75 (3)	2 (66.67%)	1 (33.33%)	00 (0%)	
Land Holding	No land/Land less	5.32±0.62 (52)	31 (59.60%)	15 (28.80%)	6 (11.60%)	94.65**
	Up to 1 hectare	5.54±0.58 (99)	57 (57.60%)	32 (32.3%)	10 (10.1%)	
	Up to 2 hectares	5.92±0.58 (73)	39 (53.4%)	23 (31.5%)	11 (15.1%)	
	Above 2 hectare	7.63±0.62 (26)	11 (42.3%)	11 (42.3%)	4 (15.4%)	

Values bearing same or no superscript within a column between rows do not differ significantly

the women farmer belonging to joint family were more acquainted with animal husbandry practices particularly goat rearing. The adoption of improved technology was thus preferred by this farmer. In case of, land holding pattern the adoption of improved technology was thus preferred by this farmer. In case of land holding pattern, the adoption index of women goat farmer having land holding above 2 hector was significantly (p<0.05) higher (7.63±1.33) than other three groups viz landless (5.32±0.62), marginal (5.54±0.58) and small farmer (5.92±0.58). The farmers having land particularly agriculture land more than 2 hector were fond of farm animal rearing as a source alternative family source of income. The improved technology for scientific goat rearing was essential to improve their economic gain and that's why adoption index was comparatively higher. The other factor like- age, religion, occupation, education, caste, marital status, family size and house type had no significant effect on adoption index of farm women in functional area of the study. The adoption level was a key factor to assess how much the improved technology was essential among these farm women. The adoption level was described in three groups viz low, medium and high and the value was depicted in Table. It had been observed that, majority of farm women of Birbhum district (62%) were having higher % age of low adoption level in comparison to other four districts. Widows (50%), person engaged in business (62.5%) illiterate (64%) were also having higher frequency of low level adoption. The farm women of general caste were having low level of adoption in relation to other caste.

The Chi-square test in Table 2 found that, the difference in value in adoption level of these farm women based on different category had a highly significant effect (p<0.01). The adoption of technology by mainly small and marginal farmers

Table 2: Adoption Level of the farm women in the aspirational districts of West Bengal

Source of variance	df	Mean Square	F
District	4	24.913	6.792**
Age	4	4.375	1.193
Religion	2	4.127	1.125
Marital status	2	5.183	1.413
Occupation	4	7.672	2.092
Education	6	6.638	1.810
Family size	4	2.347	0.640
Family type	2	32.998	8.996**
Category	3	8.788	2.396
Land holding	4	9.234	2.518*
Error	214	3.668	

*p<0.05; **p<0

in the under developed aspirational districts of West Bengal was the prime focus of the present study The result had showed low level of adoption among this farm women which indicated their lacking in application of improved husbandry practices in goat farming. The finding was about to be similar with the observation made by Jeelani et al. (2015) studies in Jammu districts of Jammu & Kashmir. Gunaseelan et al. (2018) had also different observation with the present findings as they had conducted their studies in commercial goat farmer in Tamil Nadu. The present study conducted mainly with small and marginal farmers in the aspirational districts of West Bengal. Kumar et al. (2015) had also found similar type

of observation in Bihar. The result was disagreed with the findings of Podikunju et al. (2002) as they had made their studies among the tribal women, who were less interested in adoption of improved technology in goat farming during this period. As the day progress, these women are being advanced with extensive activities of the extension functionaries engaged in animal husbandry practices.

The Spearman correlation co-efficient of each of the personal and socio-economic characteristics with adoption level of respondent have been furnished in Table 3. It was revealed that, overall in five districts among- 11 independent variables, 07 variables *viz*., religions, occupation, education, family type, house type and land holding showed significant (p<0.01) relationship, whereas- caste showed significant relationship at 0.05 level of probability with the adoption level of women goat farmer in five aspirational districts in West Bengal. The remaining six variables *viz.,* district*,* age, marital status did not establish any significant relationship with adoption level of women goat farmer in five aspirational districts in West Bengal. It was interestingly shown that, the family size had a significantly (p<0.01) negative correlation with adoption index which indicated that, the women farmer of joint family were having more adoption index than nuclear family. Marital status had a negative correlation with

Table 3: Spearman correlation of adoption index of women goat owners of aspirational districts of W.B.

Variables	Districts	Age	Religion	Marital status	Occupation	Caste	Education	Family type	Family size	House type	Land holding	Adoption index
Districts	1.0	-0.158*	0.142*	-.640**	0.383**	.301**	-.628**	0.01	-0.290**	0.234**	-0.1	0.1
Age		1.0	0.0	.164**	-0.1	-0.396**	.150*	0.1	0.1	0.0	0.1	0.1
Religion			1.0	-.269**	.403**	0.127*	.333**	0.418**	.170**	-0.1	0.01	0.362**
Marital status				1.0	-.358**	-0.223**	0.528**	-0.1	.245**	-0.218**	0.317**	-0.1
Occupation					1.0	0.444**	0.0	0.353**	0.1	0.0	0.353**	0.440**
Caste						1.0	-.153*	0.1	0.01	0.1	0.203**	0.162*
Education							1.0	0.267**	0.407**	-.337**	0.401**	0.273**
Family type								1.0	0.608**	0.1	0.125*	0.356**
Family size									1.0	-0.1	0.248**	-0.256**
House type										1.0	-0.323**	0.269**
Land holding											1.0	0.373**
Adoption index												1.0

*p<0.05; **p<0

adoption index but it was not statistically significant. Married women were more acquainted with improved technology of goat husbandry. The present result was almost in the tune with the findings of Ghosh et al. (2004), Roy and Tiwari (2017) and Mausami et al. (2017) who had also reported that among socio-economic variables, age and education of the respondents were significantly correlated with adoption of improved animal husbandry practices, though they had done their work in different area of study.

The following previous observations will support the present study to get better realization. Pawar (1979) had stated positive correlation in adoption level with attitude towards dairy farming. Swami et al. (1978) had made positive relation with utilization of mass media. Singh (1982) reported that age had no significant relationship with adoption of improved goat husbandry innovations. Gupta (1978) found no significant impact of income with the adoption of improved A.H. technology. Sayeedi (1983) and Dana et al. (1998) found significant relation of family educational status with adoption of dairy innovations. Tripathi and Kunzru (1992), Sharma (1994), also worked on various independent variables relating to relationship with the adoption of different A. H. Practices. Teklewold et al. (2006) and Goswami (2007). also reported different observations on adoption behaviour related to different variables which supported the present findings. Daipuria (2001) reported that age, education, house type, social participation, risk orientation, mass media, marketing orientation, knowledge etc. were significantly associated with the adoption of goat husbandry practices.

The study in Table 4 on Adoption Level of different Technology among the Women Goat farmers of Aspirational districts of Niti-Ayog in West Bengal revealed that, in South Dinajpur

Table 4: Adoption level of different technology among the women goat farmers of aspirational districts of Niti-Ayog in West Bengal, India

Category	Birbhum		Nadia		Malda		S. Dinajpur		Murshidabad		Overall	
	F	%	F	%	F	%	F	%	F	%	F	%
Vaccination against contagious disease	34	68.00	37	74.00	36	72.00	41	82.00	38	76.00	186	74.40
Deworming for parasitic control	33	66.00	32	64.00	33	66.00	36	72.00	34	68.00	168	67.20
Cultivation of green fodder	18	36.00	18	36.00	19	38.00	25	50.00	23	46.00	103	41.20
Feeding of green fodder	18	36.00	16	32.00	16	32.00	20	40.00	21	42.00	91	36.40
Feeding of concentrate mixture	23	46.00	17	34.00	18	36.00	28	56.00	23	46.00	109	43.60
Feeding of colostrum to new born kid	14	28.00	10	20.00	14	28.00	17	34.00	16	32.00	71	28.40
Feeding of urea and molasses treated straw	12	24.00	10	20.00	12	24.00	14	28.00	13	26.00	61	24.40
Castration by bradizzo castrator	15	30.00	13	26.00	16	32.00	18	36.00	17	34.00	79	31.60
Value addition of milk and meat	11	22.00	14	28.00	15	30.00	22	44.00	21	42.00	83	33.2

district, vaccination against contagious diseases (82%), Deworming for parasitic control (72%), Cultivation of green fodder (50%), Feeding of concentrate mixture (56%), Feeding of colostrum to new born kid (34%), Feeding of urea and molasses treated straw (28%), Castration by bradizzo castrator (36%), Value addition of milk and meat (44%) had highest adoption level followed by other four districts as- Murshidabad, Nadia, Malda and Birbhum district respectively. But, in Murshidabad district, feeding of green fodder (42%) had highest adoption level followed by other four districts in the functional area. The result was in agreement with the findings of Roy and Tiwari (2017) particularly in West Bengal because both the studies were almost contemporary. Hence, in future days a comprehensive farmer training and demonstration programme need to be conducted in this lacking area for livelihood improvement of women goat farmers in the functional area of the state West Bengal.

4. Conclusion

The Study revealed low adoption level among farm women, which indicated their lacking in improved goat husbandry practices. The joint family married women were more acquainted and adopted with improved goat husbandry. The South Dinajpur district had highest adoption level than other aspirational districts in the state. Hence, a comprehensive HRD programme should be conducted for better livelihood generation. Adoption index among the farm women need to be assessed for sustainable livelihood driven work plan as promising endeavor in future.

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