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Knowledge Level Study of Various Scientific Management Practices on Small Ruminant Livestock Owners in Different Agro-climatic Zones of West Bengal, India

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Abstract

Small Ruminants play a significant role in the survival of the economically weaker section of our society. The present study was planned and carried out among 280 respondents in 08 nos. of GP from 04 nos. of selected blocks in South 24 Parganas and Purulia district to study the knowledge level distribution of small ruminant livestock owners in various small ruminant livestock farming practice in West Bengal. The study highlighted the knowledge level distribution of Small Ruminant Livestock Owners (SRLO) in considering reproduction, feeding, deworming & vaccination practices which play a significant role in sustainable and profitable farming practices for the weaker section of rural India. The study revealed that the knowledge level of SRLO about various improved reproductive, feeding, deworming and vaccination practices was more or less similar and in some parameters more or less in the selected study district, which was very much indicative of proper dissemination and demonstration for improved small ruminant livestock farming practices and better socio-economic development of these stakeholders in the functional area of the state of W.B., India.

Keywords: Small Ruminant, Knowledge, Livestock, Farming

Introduction:

The Small Ruminants are the most potential livestock for our rural, poor people of the society. These have significant contributions to the survival of the economically weaker section of our society and to meet the requirements in the industry, besides earning valuable foreign exchange through the export trade of our Country. Small ruminants can be reared under varied conditions and evidently, the goat is the last species to live in ecology where virtually no food is available. Education is thus a very important condition of information concerning basic principles of animal production in a significant means by which the developed countries of the world can continue to be of immense value to developing countries (Gupta and Shankar, 1997). The efficient application of scientific knowledge and attitude of small ruminant farming will go a long way towards the production of more meat, milk, skin and other products and by-products for a better economic resurgence of the country.

Singh and Kunzru (1985), enumerated that the existing livestock practices may provide us not only feedback but an insight into the inventiveness or creativity of the local farmers. Moreover, extension programmers seek to modify existing practices. Thus it is important to monitor periodically such practices, to study not only what impact has been made by extension intervention, but also to suggest in what manner further changes may be expected. This would also indicate a modification of the existing technology. Implementation of any improved Animal Husbandry technology in the practical field depends upon the improved knowledge about small ruminant livestock farming practices. Considering this theoretical backup and objectives, the study on knowledge level distribution of small ruminant livestock owners in various SRL farming practices was conducted in Purulia & South 24 Parganas district in the state of West Bengal, India.

Materials and Methods:

The study was conducted in two agro-climatic zones *i.e* South 24 Parganas district from the coastal saline zone and Purulia district from the red laterite zone purposively considering the importance of small ruminants in the rural economy for both the districts of the state West Bengal, India. These two districts had relative potential for conducting research work on small ruminant livestock production as it ranked third (South 24 Parganas) and seventh (Purulia) in total small ruminant livestock production in the state. Two blocks were selected randomly from each district *i.e.* Barabazar and Kashipur blocks from the Purulia district and Patharpratima and Gosaba blocks were selected from the South 24 Parganas district of West Bengal. Two Gram Panchayats *i.e.*Tumrasole and Lodpoda GP from Barabazar block, Kalidaha and Rangamati Rangandhi Gram Panchayats from Kashipur block of Purulia district were selected from each block considering the highest number of small ruminant livestock population (judgment sampling). On the other hand, Patharpratima and G-Plot GP from

Patharpratima block and Kumirmari and Amlatali GP from Gosaba block were selected where eight Gram Panchayats of four selected blocks from two different agro-climatic zones of West Bengal. From each Gram Panchayat thirty-five (35 nos.) respondents were selected randomly with judgment sampling. In this process, 280 nos. of respondents were selected for the present study. A Structured interview schedule was prepared, pre-tested, and administered personally for data collection. The data were collected, compiled, tabulated, and also categorized to clarify further, understand, and interpret with the calculation of frequency and percentage analysis.

Results and Discussion:

After proper calculation of data, the analytical studies are depicted as follows:

Distribution of Small Ruminant Livestock Owners (SRLO) according to their knowledge about reproduction practices

The Measurement of knowledge included the test situations, which emphasized recalling of memory or information received on the small ruminant livestock practices *viz.* reproduction, vaccination, deworming, and feeding practices in the study. The Table 1 indicated that, in case of male livestock, 69.6 per cent of SRLOs knew the first age of mating, whereas 20.7 per cent of SRLOs knew how many times they used their male livestock for breeding purposes per week, 45.0 per cent of respondents knew the maximum breeding age of male livestock. Nearly eighty two (81.8) per cent of SRLOs said that, they did not know seasonal activity of breeding. 96.8 per cent of SRLOs knew about castration but 66.3 per cent did not know the age of castration. In the study area nearly sixty two (61.8) per cent of SRLOs used the closed method or burdizo castrator and only 28.6 per cent of SRLOs preferred the open method for castration.

In the case of female livestock, it was concluded that only 71.1 per cent and 77.1 per cent of SRLOs had no idea about the duration of the heat period and the idea about a number of service necessary per conception. In the overall study, 75 per cent, 76.1 per cent, 69.3 per cent, 28.6 per cent and 34.3 per cent of SRLOs knew the age of first heat, duration of heat interval, gestation length, kidding interval and idea about the lifetime number of kidding of small ruminant livestock, respectively. Only 18.2 per cent, 18.9 per cent, 4.3 per cent and 16.1 per cent of SRLOs knew male-female ratio, distocia, stillbirth and repeat breeding, respectively. 98.2 per cent, 83.2 per cent, 78.2 per cent and 91.1 per cent of SRLOs knew retention of placenta, grading up, care and management before and after parturition and idea about lamb or kid management, whereas 37.1 per cent, 96.1 per cent, 42.1 per cent and 44.6 per cent of SRLOs knew about the reproductive problem; identify heat detection, maintenance of breeding record and knowledge about crossbreeding, respectively. The above-mentioned findings represented the overall study of the area including both the districts.

The Table 1 shows the knowledge level of SRLOs in the Purulia District about the reproductive practices of male livestock, that the majority of them (62.9%, 99.3% and 53.6%) knew the first age of mating, an idea about castration, and castration by burdizo castrator, respectively. Whereas 71.4 per cent, 52.9 per cent, 83.6 per cent, 67.1 per cent and 70 per cent did not have any knowledge about the number of mating necessary per week, maximum breeding age, the seasonal activity of breeding, the age of castration and did not use the open method castration respectively.

The table also revealed the knowledge level of SRLOs in South 24 Parganas district about the reproductive practices of male livestock, that the majority of them (76.4%, 94.3%, and 70.0%) knew first age of mating, an idea about castration and castration by burdizo castrator, respectively. Whereas 87.1 per cent, 57.1 per cent, 80.0 per cent, 60.0 per cent and 72.9 per cent were not having any knowledge about the number of mating necessary per week, maximum breeding age, the seasonal activity of breeding, age of castration and did not use open method castration, respectively.

It was found from the above findings that, the knowledge level of SRLOs about the castration of small ruminants was high and more or less equal in both the district. The knowledge level about the first age of mating and the use of burdizo castrator for castration was higher among the SRLOs in the South 24 Parganas than that of the Purulia district. Nell (1998) indicated that the use of mating season was a positive predictor for full and over-adoption of external parasite remedies.

The Table 1 observed the knowledge level of SRLO in the Purulia District about the reproductive practices of female livestock, the majority of them (69.3%, 73.6%, 69.3%, 98.6%, 82.9%, 91.4%, 90.7%, 95.0%, and 54.3%) were knowing the age at first heat, heat interval, gestation length, an idea about retention of placenta, an idea about grading up of animal, care and management before and after parturition, an idea about kid/ lamb management, an identify heat detection of small ruminant livestock and an idea about cross breeding, respectively. Whereas 65.0 per cent, 80.7 per cent, 69.3 per cent, 66.4 per cent, 78.6 per cent, 87.9 per cent, 97.9 per cent, 85.0 per cent, 56.4 per cent and 69.3 per cent were not having any knowledge about the duration of the heat period, number of services necessary per conception, kidding interval, lifetime number of kidding, male-female ratio, an idea about distocia, stillbirth, repeat breeding, reproductive problem and maintenance of breeding records for better reproductive management, respectively.

The Table 1 revealed the knowledge level of SRLO in South 24 Parganas about the reproductive practices of female livestock, that majority of them (80.7%, 78.6%, 69.3%, 97.9%, 83.6%, 65.0%, 91.4%, 97.01% and 53.6%) was knowing the age at first heat, heat interval, gestation length, an idea about retention of placenta, an idea about grading up of animal, care and management before and after parturition, an idea about kid/ lamb management, identify heat detection of small ruminant livestock and an idea about cross breeding, respectively. Whereas 73.6 per cent, 73.6 per cent, 65.0 per cent, 85.0 per cent, 74.3 per cent, 93.6 per cent, 82.9 per cent, 69.3 per cent, and 65.0 per cent were not having any knowledge about the duration of the heat period, number of services necessary per conception, kidding interval, lifetime number of kidding, male-female ratio, an idea about distocia, stillbirth, repeat breeding, reproductive problem and idea about cross breeding, respectively.

It was found from the above findings that the knowledge level of SRLO about female reproduction of small ruminant livestock was more or less equal in both districts. The knowledge level about the male-female ratio, an idea about distocia, care and management before and after parturition, reproductive problems and an idea about cross-breeding was more among the SRLO in the Purulia district than that of South 24 Parganas district. However, knowledge about the maintenance of breeding records for better reproductive management was higher in the South 24 Parganas district's SRLO than in the district Purulia.

Distribution of small ruminant livestock owners (SRLO) according to their knowledge about feeding practices

The results of Table 2 revealed that maximum (96.4%) SRLO preferred tethering, 99.3 per cent respondents did not give concentrate; they only used green fodder and leaf of the tree for feeding. Whereas only 15.4 per cent, 46.4 per cent and 10.7 per cent SRLO knew the ratio of concentrates and green fodder in different stages of the lifecycle, feeding of the mineral mixture and time for stall feeding of small ruminant livestock, respectively. The individual findings of the two districts revealed that the concentrates and the green fodder in different stages of the lifecycle (24.3%), knowledge about the feeding of the mineral mixture (50.7%), and an idea about the time of stall feeding (20.0%) was more found in Purulia district than the district South 24 Parganas (6.4%, 42.1% and 1.4%). Goswami (1987) indicated that the majority of the livestock owners (76.99%) had a moderate level of idea regarding the cultivation of green fodder crop and 52.21 per cent owners were having a high level of knowledge regarding the feeding of green fodder. He also reported that majority of the livestock owners had to have a medium level of knowledge about feeding concentrates (53.10%).

Distribution of small ruminant livestock owners (SRLO) according to their knowledge about deworming practices

It was concluded from the Table 3 that, 75.0 per cent SRLO knew why the deworming practice should be followed. 55.7 per cent, 31.8 per cent and 56.8 per cent of SRLOs knew about the time for administer dewormer, schedule of deworming and idea about control of external parasites respectively in the overall study. The separate findings of the two districts were also more or less the same. Goswami (1987) reported that the majority of the livestock owners (41.59%) had a low level of knowledge about deworming in small ruminant livestock farming.

Distribution of small ruminant livestock owners (SRLO) according to their knowledge about vaccination practices

It was revealed in the Table 2, that sixty-five per cent of SRLOs had an idea about vaccination but only 18.6 per cent of SRLOs vaccinated their livestock for the prevention of diseases and 15.7 per cent of SRLOs preferred season for vaccination. From the study, it was found that SRLO of South 24 Parganas had more knowledge about vaccination practices than that of the Purulia district. Goswami (1987) reported that the majority of the livestock owners 54.87 per cent had a moderate awareness level regarding immunization against contagious diseases.

Conclusion:

Small Ruminant Livestock plays a crucial role to providing important subsidiary and gainful employment and thus raising the economic status of a large portion of the rural population of the country. The study highlighted that knowledge-based distribution of Small Ruminant livestock owners (SRLO) in considering reproduction, feeding, deworming & vaccination practices plays a significant role in sustainable and profitable farming practices for the weaker section of rural India. The study found that the knowledge level of SRLO about the castration of small ruminants was higher and more or less equal in both districts. The knowledge level about the first age of mating and the use of the burdizo castrator for castration was higher among the SRLO in South 24 Parganas than in the Purulia district. The knowledge level of SRLO about female reproduction of SRLO was more or less equal in both districts. The knowledge level about other reproductive practices was higher among the SRLO in the Purulia district than in South 24 Parganas. The findings of the two districts revealed that knowledge about various improved feeding practices was more found in Purulia than in South 24 Parganas district. The deworming practice among SRLO in the two districts was also more or less the same but in knowledge about vaccination practices South 24 Parganas had more than

that of the Purulia district in the West Bengal. The study revealed that proper dissemination and demonstration of improved small ruminant livestock farming practices through training and demonstration, farmers meeting with workshops, celebration field day and exposure visits, one to one advisory systems, group formation and capacity building will be helpful for better socio-economic development of these stakeholders in the functional area of the state of West Bengal, India.

Conflicts of Interest:

No conflict of interest among the authors.

Data availability:

Data will be available on request.

Authors' contributions:

All authors contributed for the study as and when they have required their need.

Ethical approval:

Not applicable.

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References:

Goswami A. 1987. A study of the knowledge level of the livestock owners about selected animal husbandry practices. M.V.Sc. thesis submitted to the Indian Veterinary Research Institute, Uttar Pradesh.

Gupta VK, Shankar H. Goats and the environment. Livestock International. 1997; 1(3): 18-21.

Nell WT. 1998. Adoption of Veterinary Surgeon Services by sheep and goat farming in Qwaqwa. Ph. D. thesis submitted to University of Orange Free State, Bloemfontein. http://www.farmingsuccess.com/chapters.htm

Singh B, Kunzru ON. Attitude of farmers towards goat and sheep farming. Indian Journal of Extension Education. 1985; 21 (1&2): 86-8.

Table 1: Distribution of small ruminant livestock Owners (SRLO) according to their knowledge about reproduction practices

S.No.	Activities	Overall (n=280)		Purulia (n=140)		South 24 Pgs (n=140)	
	In Case of Male Livestock:	Yes	No	Yes	No	Yes	No
1.	Have you any knowledge about first age of mating?	69.6 (195)	30.4 (85)	62.9 (88)	37.1 (52)	76.4 (107)	23.6 (33)
2.	Do you know number of mating necessity per week?	20.7 (58)	79.3 (222)	28.6 (40)	71.4 (100)	12.9 (18)	87.1 (122)
3.	Do you know maximum breeding age?	45.0 (126)	55.0 (154)	47.1 (66)	52.9 (74)	42.9 (60)	57.1 (80)
4.	Do you know seasonal activity of breeding?	18.2 (51)	81.8 (229)	16.4 (23)	83.6 (117)	20.0 (28)	80.0 (112)
5.	Have You any idea about castration?	96.8 (271)	3.2 (9)	99.3 (139)	0.7 (1)	94.3 (132)	5.7 (8)
6.	Do you know the age of castration?	36.4 (102)	66.3 (178)	32.9 (46)	67.1 (94)	40.0 (56)	60.0 (84)
7.	Which type of method do you use for castration? i) Open method	28.6 (80)	71.4 (200)	30.0 (42)	70.0 (98)	27.1 (38)	72.9 (102)
	ii) Closed method or using burdizo castrator	61.8 (173)	38.2 (107)	53.6 (75)	46.4 (65)	70.0 (98)	30.0 (42)
	In Case of Female Livestock:						
8.	Have you any idea about age at first heat?	75.0 (210)	25.0 (70)	69.3 (97)	30.7 (43)	80.7 (113)	19.3 (27)
9.	Do you know about duration of heat period?	28.9 (81)	71.1 (199)	35.0 (49)	65.0 (91)	22.9 (32)	77.1 (108)
10.	Do you know heat interval?	76.1 (213)	23.9 (67)	73.6 (103)	26.4 (37)	78.6 (110)	21.4 (30)
11.	Have you any idea about number of service is	22.9	77.1	19.3	80.7	26.4	73.6

	necessary per conception?	(64)	(216)	(27)	(113)	(37)	(103)
12.	Do you know gestation length?	69.3 (194)	30.7 (86)	69.3 (97)	30.7 (43)	69.3 (97)	30.7 (43)
13.	Do you know kidding interval?	28.6 (80)	71.4 (200)	30.7 (43)	69.3 (97)	26.4 (37)	73.6 (103)
14.	Have you any idea about life time number of kidding?	34.3 (96)	65.7 (184)	33.6 (47)	66.4 (93)	35.0 (49)	65.0 (91)
15.	Do you maintain the male and female ratio?	18.2 (51)	81.8 (229)	21.4 (30)	78.6 (110)	15.0 (21)	85.0 (119)
16.	Have you any idea about distocia?	18.9 (53)	81.1 (227)	12.1 (17)	87.9 (123)	25.7 (36)	74.3 (104)
17.	Have you any idea about stillbirth?	4.3 (12)	95.7 (268)	2.1 (3)	97.9 (137)	6.4 (9)	93.6 (131)
18.	Have you any idea about retention of placenta?	98.2 (275)	1.8 (5)	98.6 (138)	1.4 (2)	97.9 (137)	2.1 (3)
19.	Have you any idea about repeat breeding?	16.1 (45)	83.9 (235)	15.0 (21)	85.0 (119)	17.1 (24)	82.9 (116)
20.	Have you any idea about grading up of animal?	83.2 (233)	16.8 (47)	82.9 (116)	17.1 (24)	83.6 (117)	16.4 (23)
21.	Have you any idea about care and management before and after parturition?	78.2 (219)	21.8 (61)	91.4 (128)	8.6 (12)	65.0 (91)	35.0 (49)
22.	Have you any idea about kid/ lamb management?	91.1 (255)	8.9 (25)	90.7 (127)	9.3 (13)	91.4 (128)	8.6 (12)
23.	Do you know what the reasons for reproductive problems are?	37.1 (104)	62.9 (176)	43.6 (61)	56.4 (79)	30.7 (43)	69.3 (97)
24.	You have any capability to identify heat detection in your small ruminant livestock?	96.1 (269)	3.9 (11)	95.0 (133)	5.0 (7)	97.1 (136)	2.9 (4)
25.	Is maintenance of breeding records must for better result?	42.1 (118)	57.9 (162)	30.7 (43)	69.3 (97)	53.6 (75)	46.4 (65)
26.	Have you any idea about cross breeding?	44.6 (125)	55.4 (155)	54.3 (76)	45.7 (64)	35.0 (49)	65.0 (91)

(Figures in parentheses indicate number of SRLO)

Table 2: Distribution of small ruminant livestock farming (SRLO) according to their knowledge about feeding, deworming and vaccination practices

Sl. No.	Activities	Overall (n=280)		Purulia (n=140)		South 24 Pgs (n=140)	
	Feeding practices	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
1.	Do you prefer tethering?	96.4 (270)	3.6 (10)	92.9 (130)	7.1 (10)	100 (140)	0.00
2.	Do you give feed concentrate?	0.7 (2)	99.3 (278)	0.00	100 (140)	1.4 (2)	98.6 (138)
3.	Do you know the ratio of concentrates and green fodder in different stage of life cycle?	15.4 (43)	84.6 (237)	24.3 (34)	75.7 (106)	6.4 (9)	93.6 (131)
4	Have you any knowledge about feeding of mineral mixture?	46.4 (130)	53.6 (150)	50.7 (71)	49.3 (69)	42.1 (59)	57.9 (81)
5	Have you idea about time of stall feeding?	10.7 (30)	89.3 (250)	20.0 (28)	80.0 (112)	1.4 (2)	98.6 (138)
	Deworming practices						
1.	Do you know why deworming practice should be followed?	75.0 (210)	25.0 (70)	74.3 (104)	25.7 (36)	75.7 (106)	24.3 (34)
2.	Do you know the time for administer dewormer?	55.7 (156)	44.3 (124)	65.7 (92)	34.3 (48)	45.7 (64)	54.3 (76)
3.	Have you any knowledge about the schedule	31.8	68.2	32.9	67.1	30.7	69.3

	of deworming?	(89)	(191)	(46)	(94)	(43)	(97)
4.	Have you any idea about control of external parasites?	56.8 (159)	43.2 (121)	48.6 (68)	51.4 (72)	65.0 (91)	35.0 (49)
	Vaccination practices						
1.	Have you any idea about vaccination?	65.0 (182)	35.0 (98)	60.0 (84)	40.0 (56)	70.0 (98)	30.0 (42)
2.	Do you prefer any season for vaccination?	15.7 (44)	84.3 (236)	15.0 (21)	85.0 (119)	16.4 (23)	83.6 (117)
3.	Do you vaccinate your small ruminant livestock?	18.6 (52)	81.4 (228)	15.7 (22)	84.3 (118)	21.4 (30)	78.6 (110)

(Figures in parentheses indicate number of SRLO)

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