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Extent of knowledge and adoption of livestock rearing practices by the farmers from South Konkan

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Abstract

Majority (75.00 per cent) of the farmers had low knowledge regarding livestock rearing practices. Among the eight practices under housing management practices, all respondents (100.00 per cent) had knowledge about standing space, drainage channel/ gutter, single row housing system and water supply. Data related to health care management practices revealed that 100 per cent of the respondents had knowledge about care of sick animals and vaccination programme. In case of breeding management practices, it is observed that, heat detection in animals, method of breeding, time of artificial insemination, superior stock identification for extensive breeding practices were known to 100.00 per cent of dairy farmers. The result noticed from feed and fodder management practices revealed that, all of the respondents (100.00 per cent) had knowledge about concentrates and dry matter for pregnant animal and hay/ straw shed (Dutch barn). Cent per cent dairy farmers had knowledge about utensils used and their cleaning as well as sanitization, before milking, use of disinfectants for udder and teat cleaning and sign of calving. It was seen from care and management practices immediately after calving that 100.00 per cent dairy farmers had knowledge about watching of cow for placenta expulsion, allowing the calf to suck the colostrum, mucus removal from face and nostrils of calf, well ventilated environment and dry bedding.

In case of extent of adoption of livestock rearing practices it was found that majority (49.16 per cent) of the farmers had low extent of adoption, followed by (39.17 per cent) of them show high adoption level, while 7.50 per cent and 4.17 per cent of the livestock owners were having medium and very high adoption level, respectively. In case of livestock rearing practices, full adoption was observed in practices like before milking, use of disinfectants for udder and teat cleaning, watching of cow for placenta expulsion, allowing the calf to suck the colostrum, mucus removal from face and nostrils of calf.

Keywords: knowledge, adoption, livestock rearing practices

Introduction

Livestock rearing is an important economic activity in India. Milk and milk products (Butter, Ghee etc.), meat and leather are raw materials for industries. Animals provide a large proportion of energy required in the farm sector. Their dung are used for biomass gas production and for making manure. Livestock play an important role in Indian economy. Livestock sector plays an important role in the livelihood security and employment generation for rural areas in study area. India is the leading producer of the milk in the world. It is due to initiative taken by government through 'Operation flood' in year 1970. The density of animals in India is the highest in the world. It is about 130 heads of livestock per 100 hectare of land. Cattles, Buffaloes, Sheep and Goats are important livestock in India. The yield of milk from Indian cows is the lowest in the world. It is only 188 litres per animals per annum in India, while in Netherland it is 4200 litres differing by about twenty three times. (www.icd-online.com/technical_references).

Despite many efforts of the concerned agencies for promoting the rearing of livestock, the results are not so encouraging on the part of the dairy farming condition of Konkan region. The policy makers and the agencies for implementing dairy development programmes should consider the knowledge and adoption of the farmers towards livestock rearing before a programme is implemented. Therefore, the present study was formulated and designed with the specific objective to know the extent of knowledge and adoption of livestock rearing

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practices by the farmers from South Konkan.

Methodology

The present study was conducted in Ratnagiri and Sindhudurg districts of Konkan region of Maharashtra state. From each selected district, two tahsils having maximum functional dairy co-operatives were selected for the present study. Thus, Khed, Chiplun tahsils from Ratnagiri district and Kudal, Sawantwadi tahsils from Sindhudurg district were identified for the study. From each selected tahsils, two village dairy cooperatives having maximum milk collection were selected. Thus, total eight villages along with dairy cooperatives were selected for study.

1. Extent of knowledge of livestock rearing practices by the farmers

In the present study, the knowledge referred to the awareness about the livestock rearing practices by the farmers. According to Rogers and Shoemaker (1971), "Awareness knowledge" which refers the information that the innovation exist. The structured schedule with eight items were prepared and responses are collected in two point continuum viz; 'yes' and 'no' with score '1' and '0' respectively. The respondents were classified into five categories on the basis of mean (41.84) \pm S.D. (3.61). Thus, after computing the knowledge scores the respondents were grouped into very low, low, medium, high and very high categories by considering the mean and standard deviation.

Table 1: Distribution of the farmers according to their overall knowledge level

Sr. No.	Overall knowledge level (Score)	Respondents (N=120)	
		Number	Per cent
1	Very low (Upto 38)	-	-
2	Low (39 to 40)	90	75.00
3	Medium (41 to 44)	11	9.17
4	High (45 to 46)	-	-
5	Very high (47 and above)	19	15.83
Total		120	100.00
Mean = 41.84			
S.D. = 3.61			

It seems from the result that livestock owners do not rely upon the personal professional sources for getting knowledge in general, and livestock rearing, in particular. This could be attributed to many factors like inability of the farmers to reach upto the knowledge source, poor access to veterinary extension personnel, lack of time with the farmers due to their hectic schedule of managing their dairy farm. The finding is

2. Adoption of livestock rearing practices by the farmers

Adoption of livestock rearing practices by livestock owners was the dependent variable for the study. This variable was measured with the help of the scale developed by Bhise (2015) [2] with slight modification. The responses were obtained against each statement in a three point continuum indicating adoption namely 'Full', 'Partial' and 'No'. The statements of adoption were served as 2, 1 and 0 score respectively. Summation of the score of all the statements were gave the total adoption score. On this basis, the respondents were grouped into five categories as very low, low, medium, high and very high. The respondents were classified into five categories on the basis of mean (68.62) \pm S.D. (7.93).

Result and Discussion

Extent of knowledge level of the farmers

It can be concluded in Table 1 that less than three-fourth (75.00 per cent) of the respondents had low knowledge regarding livestock rearing practices, followed by very high (15.83 per cent) and medium (9.17 per cent) level of knowledge. Average knowledge level score of the respondents was 41.84 which indicated low to slightly medium degree of knowledge about livestock rearing practices among the livestock owners.

in contrast with that of Priyanka (2009) [5], Banwari (2014) [1], Lohakare *et al.* (2015) [4], Sabapara *et al.* (2016) [6] and Chakravarthy (2017) [3].

Extent of adoption of livestock rearing practices

The data regarding the overall adoption of livestock rearing practices were collected and presented in Table 2.

Table 2: Distribution of the farmers according to overall adoption of livestock rearing practices.

Sr. No.	Adoption level (Score)	Respondents (N=120)	
		Number	Per cent
1	Very low (Upto 61)	59	49.16
2	Low (62 to 65)	00	0.00
3	Medium (66 to 73)	09	7.50
4	High (74 to 77)	47	39.17
5	Very high (78 and above)	05	4.17
Total		120	100.00
Mean = 68.62			
S.D. = 7.93			

It is revealed from Table 2 that nearer to half (49.16 per cent) of the livestock owners had very low extent of adoption, followed by (39.17 per cent) of them show high adoption level, while 7.50 per cent and 4.17 per cent of the livestock owners were having medium and very high adoption level,

respectively. Average adoption score of the respondents was 68.62.

This brings to notice that half of the dairy farmers had low and remaining farmers were partly medium to very high level of overall adoption of livestock rearing practices. This might

have happened because of the constraints faced by the livestock owners.

Practice wise knowledge and adoption of livestock rearing practices

The data pertaining to practices wise knowledge and extent of

adoption of livestock rearing practices by the farmers were collected. The practice wise information regarding these aspects is given in Table 3 (a) to 3 (h).

Table 3 (a): Distribution of the farmers according to housing management practices

3.1 Housing management practices:

Sl. No.	Practices	Knowledge		Adoption		
		Yes	No	Fully	Partially	No
1	Milch animal shed					
i)	Milking parlour	69 (57.50)	51 (42.50)	10 (8.34)	72 (60.00)	38 (31.66)
ii)	Menger	73 (60.83)	47 (39.17)	7 (5.83)	113 (94.16)	00 (0.00)
iii)	Standing space	120 (100.00)	00 (0.00)	54 (45.00)	66 (55.00)	00 (0.00)
iv)	Drainage channel/Gutter	120 (100.00)	00 (00.00)	119 (99.16)	00 (0.00)	01 (0.84)
v)	Conventional fodder/feed material barns for heavy rainfall region	29 (24.16)	91 (75.84)	19 (15.84)	67 (55.83)	34 (28.33)
2	Single row housing system	120 (100.00)	00 (0.00)	102 (85.00)	01 (0.84)	17 (14.16)
3	Double row housing system					
i)	Tail to tail system	63 (52.50)	57 (47.50)	04 (3.34)	04 (3.33)	112 (93.33)
ii)	Head to head system	118 (98.33)	02 (1.67)	51 (42.50)	62 (51.66)	07 (5.84)
4	Young stock/heifer shed	101 (84.16)	19 (15.84)	61 (50.83)	40 (33.33)	19 (15.84)
5	Dry animal shed	06 (5.00)	114 (95.00)	38 (31.66)	1 (0.84)	81 (67.50)
6	Electricity	119 (99.16)	01 (0.84)	52 (43.33)	67 (55.83)	1 (0.84)
7	Water supply	120 (100.00)	00 (0.00)	27 (22.50)	93 (77.50)	00 (0.00)
8	Site for manuring pit	76 (63.34)	44 (36.66)	45 (37.50)	64 (53.34)	11 (9.16)

It is noticed from Table 3 (a) that among the eight practices under housing management practices, all respondents (100.00 per cent) had knowledge about standing space, drainage channel/ gutter, single row housing system and water supply with partial adoption by 55.00 per cent, 99.16 per cent of full adoption, 85.00 per cent full adoption and partial adoption of 77.50, respectively. It followed by electricity and head to head system with knowledge among 99.16 per cent and 98.33 per cent and partial adoption of 55.83 per cent and 51.66 per cent, respectively. In case of young stock/heifer shed and site for manuring pit the knowledge among respondents was 84.16 per cent and 63.34 per cent, respectively and its full adoption was noticed to 50.83 per cent and partial adoption by 53.34 per cent, respectively. Knowledge among respondents was 60.83 per cent, 57.50 per cent and 52.50 per cent in case of menger, milking parlour and tail to tail system with partial adoption by 94.16 per cent, 60.00 per cent and no adoption by 93.33 per cent, respectively. While in case of remaining two practices dairy farmers had no knowledge about conventional

barns for heavy rainfall region (75.84 per cent) and dry animal shed (95.00 per cent), and their partial adoption was 55.83 per cent and no adoption by 67.50 per cent, respectively.

3.2 Health care management practices

The data with respect to the health and care management practices by the dairy farmers are presented in Table 3 (b).

Data related to health care management practices in Table 3 (b) reveal that 100 per cent of the respondents had knowledge about care of sick animals and vaccination programme with full adoption by 67.50 per cent and partial adoption by 49.16 per cent, respectively. In case of other two practices, it was noticed that 70.00 per cent and 68.33 per cent of the respondents had knowledge about disinfection of animal houses and isolation of sick animals, with partial adoption by 91.66 per cent and full adoption by 52.50 per cent, respectively.

Table 3 (b): Distribution of the farmers according to health care management practices (N = 120)

Sl. No.	Practices	Knowledge		Adoption		
		Yes	No	Fully	Partially	No
1.	Care of sick animals	120 (100.00)	00 (0.00)	81 (67.50)	39 (32.50)	00 (0.00)
2.	Vaccination programme	120 (100.00)	00 (0.00)	26 (21.67)	59 (49.16)	35 (29.17)
3.	Disinfection of animal houses	84 (70.00)	36 (30.00)	8 (6.67)	110 (91.66)	2 (1.67)
4.	Isolation of sick animals	82 (68.33)	38 (31.66)	63 (52.50)	17 (14.17)	40 (33.33)

3.3 Breeding management practices

The data with regard to breeding management practices

followed by the dairy farmers are presented in Table 3 (c).

Table 3 (c): Distribution of the farmers according to breeding management practices (N = 120)

Sl. No.	Practices	Knowledge		Adoption		
		Yes	No	Fully	Partially	No
1	Information about indigeneous dairy breeds of cattle	86 (71.66)	34 (28.34)	13 (10.83)	8 (6.66)	99 (82.50)
2	Information about exotic cattle breeds	16 (13.34)	104 (86.66)	06 (5.00)	05 (4.17)	109 (90.83)
3	Information about indigeneous buffalo breeds	29 (24.17)	91 (75.83)	06 (5.00)	21 (17.50)	93 (77.50)
4	Heat detection in animals	120 (100.00)	00 (0.00)	58 (48.34)	62 (51.66)	00 (0.00)
5	Method of breeding	120 (100.00)	00 (0.00)	56 (46.66)	64 (53.34)	00 (0.00)
6	Time of Artificial Insemination	120 (100.00)	00 (0.00)	117 (97.50)	03 (2.50)	00 (0.00)
7	Pregnancy diagnosis	118 (98.33)	02 (1.67)	119 (99.16)	1 (0.84)	0 (0.00)
8	Housing of bulls separately for natural breeding	101 (84.16)	19 (15.83)	00 (0.00)	59 (49.16)	61 (50.84)
9	Special feeding programme for breeding bull	73 (60.83)	47 (39.17)	60 (50.00)	36 (30.00)	24 (20.00)
10	Exercise to breeding bull	59 (49.17)	61 (50.83)	00 (00.00)	57 (47.50)	63 (52.50)
11	Natural service from breeding bull	86 (71.66)	34 (28.34)	2 (1.67)	118 (98.33)	00 (0.00)
12	Superior stock identification for extensive breeding	120 (100.00)	00 (0.00)	14 (11.67)	106 (88.33)	00 (0.00)

(Figures in parentheses indicate percentages)

It could be seen from Table 3 (c) that, heat detection in animals, method of breeding, time of artificial insemination, superior stock identification for extensive breeding practices were known to 100.00 per cent of dairy farmers with partial adoption by 51.66 per cent, 53.34 per cent, full adoption by 97.50 per cent and partial adoption by 88.33 per cent, respectively. In case of pregnancy diagnosis, housing of bulls separately for natural breeding, information about indigeneous dairy breeds of cattle and natural service from breeding bull it was noticed that 98.33 per cent, 84.16 per cent, 71.66 per cent and 71.66 per cent of the respondents had knowledge however, full adoption by 99.16 per cent, no adoption by 50.84 per cent, no adoption by 82.50 per cent and partial adoption by 98.33 per cent was noticed. Special

feeding programme for breeding bull, exercise to breeding bull, information about indigeneous buffalo breeds and information about exotic cattle breeds were known to 60.83 per cent, no knowledge to 50.83 per cent of the farmers, no knowledge to 75.83 per cent of the farmers and no knowledge to 86.66 per cent of the farmers, respectively with 50.00 per cent of full adoption, no adoption by 52.50 per cent of the farmers, no adoption by 77.50 per cent of the farmers and no adoption by 90.83 per cent of the farmers, respectively.

3.4 Feed and fodder management practices

The data pertaining to feed and fodder management practices followed by the livestock owners are presented in Table 3 (d).

Table 3 (d): Distribution of the respondents according to feed and fodder management practices (N = 120)

Sl. No.	Practices	Knowledge		Adoption		
		Yes	No	Fully	Partially	No
1	Green fodder management	63 (52.50)	57 (47.50)	59 (49.17)	04 (3.34)	57 (47.50)
2	Dry fodder management	63 (52.50)	57 (47.50)	54 (45.00)	9 (7.50)	57 (47.50)
3	Feed stuffs	84 (70.00)	36 (30.00)	02 (1.66)	116 (96.66)	02 (1.66)
4	Mineral mixture	110 (91.66)	10 (8.34)	37 (30.83)	70 (58.33)	13 (10.84)
5	Concentrates and Dry matter for Pregnant Animal	120 (100.00)	00 (0.00)	118 (98.33)	02 (1.67)	00 (0.00)
6	Clean drinking water	63 (52.50)	57 (47.50)	63 (52.50)	00 (0.00)	57 (47.50)
7.	Hay/ Straw shed (Dutch barn)	120 (100.00)	00 (0.00)	119 (99.16)	01 (0.84)	00 (0.00)

(Figures in parentheses indicate percentages)

The result noticed from Table 3 (d) that, all of the respondents (100.00 per cent) had knowledge about concentrates and dry matter for pregnant animal and hay/ straw shed (Dutch barn) however its adoption level was noticed 98.33 per cent and 99.16 per cent fully by the dairy farmers.

From remaining five practices, it was noticed that 91.66 per cent and 70.00 per cent of the respondents had knowledge about mineral mixture and feed stuffs, with partial adoption by 58.33 per cent and full adoption by 99.16 per cent of the

respondents, respectively. 52.50 per cent of the respondents had knowledge regarding green fodder management, dry fodder management and clean drinking water with adoption level of 49.17 per cent, no adoption of 47.50 per cent and full adoption by 52.50 per cent, respectively.

3.5 Clean and hygienic milk production

The data pertaining to the clean and hygienic milk production followed by the respondents are given in Table 3 (e).

Table 3 (e): Distribution of the respondents according to clean and hygienic milk production (N = 120)

Sl. No	Practices	Knowledge		Adoption		
		Yes	No	Fully	Partially	No
1	Milking parlor	71 (59.16)	49 (40.84)	65 (54.16)	51 (42.50)	04 (3.34)
2	Milking machine	20 (16.67)	100 (83.33)	01 (0.84)	00 (0.00)	119 (99.16)
3	Utensils used and their cleaning as well as sanitization	120 (100.00)	00 (0.00)	60 (50.00)	60 (50.00)	00 (0.00)
4	Before milking, use of disinfectants for udder and teat cleaning	120 (100.00)	00 (0.00)	120 (100.0)	00 (0.00)	00 (0.00)

(Figures in parentheses indicate percentages)

The result noticed from Table 3 (e) that cent per cent dairy farmers had knowledge about utensils used and their cleaning as well as sanitization and before milking, use of disinfectants

for udder and teat cleaning and it was adopted by 50.00 per cent and 100.00 per cent of the farmers fully, while 59.16 per cent of the livestock owners had knowledge and 83.33 per

cent livestock owners had no knowledge with the milking parlor and milking machine, respectively with full adoption by 54.16 per cent and no adoption by 99.16 per cent of the livestock owners, respectively.

3.6 Care and management of pregnant animals

The data with respect to the care and management of pregnant animals followed by the livestock owners as per recommended dairy management practices are presented in Table 3 (f).

Table 3 (f): Distribution of the farmers according to care and management of pregnant animals (N = 120)

Sl. No.	Practices	Knowledge		Adoption		
		Yes	No	Fully	Partially	No
1	Calving pen	79 (65.83)	41 (34.17)	76 (63.33)	44 (36.66)	00 (0.00)
2	Signs of calving	120 (100.00)	00 (0.00)	116 (96.66)	04 (3.33)	0 (0.00)

(Figures in parentheses indicate percentages)

It is observed from Table 3 (f) that 100.00 per cent of the dairy farmers were aware about sign of calving with 96.66 per cent of full adoption, while 65.83 per cent of the respondents were aware about calving pen with 63.33 per cent of full adoption.

3.7 Care and management immediately after calving

The data with respect to the care and management immediately after calving followed by the farmers are presented in Table 3 (g).

It was seen from Table 3 (g) that 100.00 per cent dairy farmers had knowledge about watching of cow for placenta expulsion, allowing the calf to suck the colostrum, mucus

removal from face and nostrils of calf, well ventilated environment and dry bedding with 100.00 per cent full adoption for watching of cow for placenta expulsion, allowing the calf to suck the colostrum, mucus removal from face and nostrils of calf and remaining 98.33 per cent and 78.33 per cent for well ventilated environment and dry bedding, respectively.

Majority (97.50 per cent) of the respondents had knowledge about naval cord treatment, followed by deworming of calves (89.16 per cent) and trimming of hooves (52.50 per cent) with no adoption by 97.50 per cent, partial adoption by 62.50 per cent and no adoption by 49.16 per cent of the farmers, respectively.

Table 3(g): Distribution of the respondents according to care and management immediately after calving (N= 120)

Sl. No.	Practices	Knowledge		Adoption		
		Yes	No	Fully	Partially	No
1	Watching of cow for placenta expulsion	120 (100.00)	00 (0.00)	120 (100.00)	00 (0.00)	00 (0.00)
2	Allowing the calf to suck the colostrum	120 (100.00)	00 (0.00)	120 (100.00)	00 (0.00)	00 (0.00)
3	Mucus removal from face and nostrils of calf	120 (100.00)	00 (0.00)	120 (100.00)	00 (0.00)	00 (0.00)
4	Well ventilated environment	120 (100.00)	00 (0.00)	118 (98.33)	2 (1.67)	00 (0.00)
5	Dry bedding	120 (100.00)	00 (0.00)	94 (78.33)	26 (21.67)	00 (0.00)
6	Deworming of calves	107 (89.16)	13 (10.84)	35 (29.16)	75 (62.50)	10 (8.34)
7	Naval cord treatment	117 (97.50)	03 (2.50)	03 (2.50)	00 (0.00)	117 (97.50)
8	Trimming of hooves	63 (52.50)	57 (47.50)	47 (39.17)	14 (11.67)	59 (49.16)

(Figures in parentheses indicate percentages)

3.8 Record keeping and marketing

The data pertaining to the record keeping and marketing are given in Table 3 (h).

It can be observed from Table 3 (h) that majority (97.50 per cent) of the respondents were having knowledge about

livestock health register with 62.50 per cent of partial adoption, followed by (52.50 per cent) about breeding register, milk yield and distribution register and income register with no adoption by 47.50 per cent, partial adoption by 89.16 per cent and 84.16 per cent, respectively.

Table 3 (h): Distribution of the respondents according to record keeping and marketing (N = 120)

Sl. No	Practices	Knowledge		Adoption		
		Yes	No	Fully	Partially	No
1	Birth/ Calving register	56 (46.66)	64 (53.34)	53 (44.16)	04 (3.34)	63 (52.50)
2	Young stock register	37 (30.84)	83 (69.16)	02 (1.67)	02 (1.67)	116 (96.66)
3	Breeding register	63 (52.50)	57 (47.50)	07 (5.84)	56 (46.66)	57 (47.50)
4	Milk yield and distribution register	63 (52.50)	57 (47.50)	13 (10.84)	107 (89.16)	00 (0.00)
5	Sale/Disposal register	57 (47.50)	63 (52.50)	47 (39.16)	16 (13.34)	57 (47.50)
6	Fodder/feed stock register	06 (5.00)	114 (95.00)	05 (4.17)	34 (28.33)	81 (67.50)
7	Income register	63 (52.50)	57 (47.50)	18 (15.00)	101 (84.16)	01 (0.84)
8	Livestock trade register	51 (42.50)	69 (57.50)	02 (1.67)	35 (29.17)	83 (69.16)
9	Livestock health register/ vaccination	117 (97.50)	03 (2.50)	44 (36.66)	75 (62.50)	01 (0.84)

(Figures in parentheses indicate percentages)

However, (57.50 per cent) of the respondents had no knowledge about, livestock trade register, followed by birth/calving register (53.34 per cent) and sale/disposal register (52.50 per cent), with no adoption of 69.16 per cent, 52.50 per cent and 47.50 per cent of the respondents, respectively.

However, 69.16 per cent of the farmers had no knowledge about young stock register with no adoption by 99.66 per cent of the farmers as well as no knowledge of fodder/feed stock register (95.00 per cent) with no adoption by 67.50 per cent of the farmers.

Conclusion

1. It was revealed that the majority of the farmers had low to medium level of knowledge regarding livestock rearing practices. It means, there is good scope for research and development of location specific breeds and livestock rearing practices in the study area.
2. The results pertaining to adoption indicated that the half of the livestock owners were at low and remaining farmers were at partly medium to very high level of adoption. It means, these practices may give good experiences to livestock owners in terms of quantity and quality of milk produced by their animals. It calls for intensification of policy support to the livestock owners by the field extension workers of the veterinary departments, NGO's, SAU's and private organizations to make them more enterprising.
3. Only possessing knowledge about livestock rearing practices is not enough to promote adoption but at a same time it is necessary to give the actual experience with hands on training and providing them opportunities to practice livestock rearing at their field condition.

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