



KNOWLEDGE OF DAIRY FARMERS ABOUT RECOMMENDED DAIRY MANAGEMENT PRACTICES

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Abstract

The research study was conducted in Konkan region of Maharashtra state, with the objectives of profile characteristics of the dairy farmers, adoption behaviour of dairy farmers about recommended dairy management practices, relationship between personal, socio-economic and psychological characteristics of dairy farmers with adoption behaviour of recommended dairy management practices, document the existing dairy management practices followed by dairy farmers, assess the training needs of the dairy farmers and suggest the strategies to improve milk production in Konkan region. In all, 200 dairy farmers were selected from eight tahsils from selected four districts. Personal interview technique was used for data collection. The personal, socio-economic and psychological characteristics of the dairy farmers namely, self-education, family size, experience in dairying, annual income, number of milch animals, milk production, availability of water, land holding, social participation, training received, economic motivation, management orientation were considered as independent variables, while adoption behaviour were selected as dependent variable for the present study. The adoption behaviour consisted four parameters namely, knowledge, and skill was measured with the help of specially developed scale, while extent of adoption and attitude towards dairy farming was measured with developed scheduled. Many dairy farmers trust on various existing dairy management practices because this practices are very easily available, low cost and no any side effect on animals.

Key words : Dairy farmers, knowledge, production, management.

Introduction

The uniqueness of traditional Indian agriculture from time immemorial is the inseparable nature of men, animals and materials *i.e.*, the farmers, livestock and plough. The interaction of these three closely with soils forms the very foundation for Agriculture. The other inputs like seeds, fertilizers and water contribute greatly to the functional efficiency of these three. This complex interaction determines the overall food production. Livestock contributes manure and drought power to agriculture, besides providing essential foods of animal origin like milk and meat. Crop residue forms the major source of feed to the livestock and this system of interdependence has sustained for centuries. Livestock and livelihood are very intimately related in our country and crop livestock integrated farming is the pathway of farmers' well-being.

Livestock rearing in rural systems is not the primary occupation for the rural population but serves instead as

a support enterprise to agriculture. Mixed herds with goats, sheep, cattle and buffaloes are found in this system. Cattle are reared primarily for drought power and manure, rather than for milk. In this system, crop residues and grazing in community lands form major source of fodder.

Animal husbandry signifies as the second largest economical activity, next to agriculture, in rural areas. It is an inherited and easiest profession for the semi-skilled and unskilled personnel. The livestock sector has been recognized as "Power House of Growth" by the Planning Commission of India and has potential to galvanize the rural economy through generation of 75.00 per cent employment opportunities in rural areas. According to National Sample Survey Organization's last survey (61st round of survey), it is estimated that livestock sector has provided employment to 11.44 million people in principal status and 11.01 million people in subsidiary status, which contributes 05.50 per cent of total working population of the country. Further to note that out of total 22.45 million personnel engaged in livestock sector, 16.84 million (75.01

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per cent) are women. Thus, it can be concluded that it is proven source of family livelihood for providing supplementary but sustainable income to meet domestic needs. Therefore, raising adoption of clean milk production practices are of paramount importance for dairy farmers. This will open up new vistas and make possible for dairy farmer to achieve substantial gains in income. Raising the clean milk production is the fundamental problem. This problem needs to be carefully tackled for long run resolution of under developed animal husbandry.

Livestock and dairy has been one of the sector in India where female work force participation has been high. Majority of rural women are involved in animal husbandry, but the nature and extent of their involvement varies widely and is strongly influenced by their economic status, caste and ethnic background. Women are the prime decision makers in dairy production activities such as utilization of milk, care of pregnant animals and calves, brining of fodder and feeding of concentrate.

Therefore, there is need to study, document and share, some of the specific experiences of the farmers collected during the field work at grass root level of programme areas. In this context, present research project entitled "A critical study on Dairy Management Practices in Konkan region of Maharashtra state." was undertaken with the following specific objectives.

1. To study the profile characteristics of the dairy farmers.
2. To study the knowledge of the dairy farmers about recommended dairy management practices.

Materials

The present study was conducted in Konkan region of Maharashtra, as dairy farming is one of the important activity of the rural population of our country. Two tahsils were selected from each district by considering the criterion of having highest proportion of milch animals (cows and buffaloes). Thus, in all 8 tahsils of Konkan region were finalized by consulting with Dairy Development Officer. The respondents were selected by proportionate random sampling method, so that each district represents 25 dairy farmers. Thus, the total sample consisted 200 dairy farmers. The steps in construction and standardization of scale to measure the knowledge of the dairy farmers towards recommended dairy management practices are explained below.

Collection of statements

A schedule, consisting of selected 72 knowledge statements was prepared and was sent to 90 selected

extension specialists working in the Department of Extension Education of the State Agricultural Universities in India. They were asked to check each of the statements carefully for their relevance and to opine whether the particular statement is indicative of most relevant, relevant and not relevant knowledge towards the dairy management practices. They were also asked to check if each statement included only one interpretation and was easy to understand. They informed that they were free to make any modification or suggest any change in each statement, if they so felt. In the light of the criticisms and comments of judges, the statements were modified.

Editing of statements

The statements thus collected were carefully examined in the light of the fourteen criterion suggested for screening the items. After rigorous culling, only 36 items were retained. Efforts were made to select an equal number of 'Yes' and 'No' statements in the scale.

Item analysis

The judges were requested to examine each statement and indicate their degree of agreement with each of the statements on a three point continuum for relevancy namely 'most relevant' 'relevant' and 'not relevant', with the weightage of 2, 1 and 0, respectively. Sixty judges returned the schedule.

Knowledge score of a judge was obtained by summing the score of all individual items. Thus, total score obtained by each of the judges was worked out. Afterwards, the judges were arranged in the descending order of their scores. For the purpose of item analysis, 25 per cent of the subjects with highest total score and 25 per cent of the subjects with lowest total score were selected. The 'high' and 'low' groups provided the criterion groups to calculate the critical ratio of each item. The critical ratio was calculated by the following formula.

$$t = \frac{\bar{X}_H - \bar{X}_L}{\sqrt{\frac{\sum(X_H - \bar{X}_H)^2 + \sum(X_L - \bar{X}_L)^2}{n - (n - 1)}}$$

$$\sum(X_H - \bar{X}_H)^2 = \sum H_H^2 - \frac{(\sum X_H)^2}{n} \text{ and}$$

$$\sum(X_L - \bar{X}_L)^2 = \sum H_L^2 - \frac{(\sum X_L)^2}{n}$$

$$\sum XH^2 = \text{sum of the squares of the individual}$$

scores in the high group

$\sum XL^2$ = sum of the squares of the individual scores in the low group.

$\overline{X_H}$ = the mean score on a given statement for the high group.

$\overline{X_L}$ = the mean score on a given statement for the low group

n = number of respondents in each group.

The value of ‘t’ is a measure of the extent to which a given statement differentiates between the high and low group. As a crude and approximate rule of thumb, any statement which obtained ‘t’ ratio greater than 1.50, was considered good and was retained in the final scale and those, which did not obtained this required limit were eliminated. In the present scale, 36 statements obtained ‘t’ ratio greater than 1.50 and those were retained in the final scale.

Reliability of the scale

In this study, the split half method for testing reliability was used. The scale was split into two halves on the basis of odd and even numbers of statements and administered to 10 respondents separately which were not included in the final sample. Thus, two rates of scores were obtained. The Pearson’s Product Moment Correlation Coefficient was calculated between the two sets of scores obtained. The reliability coefficient was found to be significant ($r = 0.7999$).

Validity of the scale

The content validity of the present scale was worked out by the method of collecting the items within the universe of dairy management practices. The universe of the content, as evident from the method employed in item collection, was covered widely. Before collecting the items for knowledge scale, wide ranging sources such as books, journals, experts of the State Department of Agriculture and Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli were consulted. The process acted as a measure of check. Thus the validity of the scale was built-in, in the very process of the scale construction. The calculated ‘t’ values being significant for all the 36 statements of the scale, indicated that the knowledge statements of the scale had discriminating values.

Method of scoring

The final scale consisting of 36 statements was administered to the respondents. The responses were obtained on two point continuum namely ‘yes’ and ‘no’

with weightage 1 and 0. Knowledge score of the respondents was calculated by adding the score of all the statements. Thus, maximum obtainable score was 36 for each respondent.

Based on the score obtained, the respondents were categorized into three groups taking mean (34.38) ± standard deviation (2.95) as a measure of check.

S. no.	Category	Knowledge (score)
1.	Low	Up to 30
2.	Medium	Between 31 to 34
3.	High	35 and above

The respondents were selected by proportionate random sampling method, so that each district represents 25 dairy farmers. Thus, the total sample consisted 200 dairy farmers. ‘Knowledge of the dairy farmers with reference to the dairy management practices’ was the dependent variable for the study. Independent variables namely self-education, family size, experience in dairying, annual income, number of milch animals, milk production, availability of water, land holding, social participation, training received, economic motivation, management orientation were studied.

The Exploratory Survey Research design was used for the present study. In the present study knowledge of the dairy farmer was operationalized, with reference to recommended dairy management practices and its extent of adoption by them in their fields.

The overall Knowledge score of the respondents was calculated by using the following formula.

$$\text{Knowledge level} = \frac{\text{Obtained score}}{\text{Obtainable score}} \times 100$$

To ascertain the degree of association between the personal traits of the dairy growers and their extent of knowledge, Pearson’s coefficients of correlation (r) were worked out by using the following formula.

$$r = \frac{\sum XY - \frac{(\sum X)(\sum Y)}{n}}{\sqrt{\sum X^2 - \frac{(\sum X)^2}{n}} \sqrt{\sum Y^2 - \frac{(\sum Y)^2}{n}}}$$

Where,

r = coefficient of correlation

X = score of independent variable

Y = score of dependent variable

n = number of observations

Results and Discussion

One of the major objectives of the study was to determine the knowledge of the dairy farmers with reference to recommended dairy management practices. The results pertaining to these parameters are given here under.

Knowledge

In the present study, knowledge refers to know-how about different dairy management practices adopted by the dairy farmers. Adequate knowledge is essential to dairy farmers for the success and profitable dairy farming. It was therefore thought necessary to obtain information from the dairy farmers about the knowledge of dairy management practices. The data regarding level of knowledge are given in table 1.

Table 1 : Distribution of the respondents according to Overall knowledge level about recommended dairy management practices.

S. no.	Overall Knowledge (Score)	Total respondents (N = 200)	
		Number	Percentage
1	Low (Up to 30)	25	12.50
2	Medium (31 to 34)	71	35.50
3	High (35 and above)	104	52.00
(Average: 34.38) Total		200	100.00

From table 1 revealed that majority (52.00 per cent) of the respondents were found in ‘high’ category of knowledge level, while 35.50 per cent and 12.50 per cent of the respondents were in ‘medium’ and ‘low’ category of knowledge level about recommended dairy management practices, respectively. The average knowledge score of the respondents was 34.38. It clearly indicates that majority of the dairy farmers have complete knowledge about the recommended dairy management practices.

Distribution of the respondents according to their practice wise knowledge of dairy management practices

The data pertaining to practices wise knowledge and extent of adoption of recommended dairy management practices by the respondents were collected. The information regarding these aspects is given in tables 2(a) to 2 (h).

Housing management practices

The data with regard to the Housing management practices by the dairy farmers are presented in table 2.1 (a).

Table 2.1 (a): Distribution of the respondents according to Housing management practices.

(N = 200)

S. no.	Practices	Knowledge	
		Yes	No
1.	Accessibility	190(95.00)	10(05.00)
2.	Water supply	182(91.00)	18(09.00)
3.	Electricity	125(62.50)	75(37.50)
4.	Proper space requirement (M ²)	191(95.50)	9(09.00)
5.	Site of manure pit	193(96.50)	7(03.50)

Figures in parentheses indicate percentages.

Table 2.2 (b): Distribution of the respondents according to health and care management practices.

(N = 200)

S. no.	Practices	Knowledge	
		Yes	No
1.	Care of sick animals	200(100.00)	00(00.00)
2.	Control of Endo and Ecto parasites	190(95.00)	10(05.00)
3.	Vaccination	186(93.00)	14(07.00)
4.	Age at first service	189(94.50)	11(05.50)

Figures in parentheses indicate percentages.

Table 2.3 (c): Distribution of the respondents according to breeding management practices.

(N = 200)

S. no.	Practices	Knowledge	
		Yes	No
1.	Heat detection	200(100.00)	0(00.00)
2.	Method of breeding	186(93.00)	16(08.00)
3.	Time of Artificial Insemination after onset of oestrus	193(96.50)	7(03.50)
4.	Pregnancy diagnosis	200(100.00)	0(00.00)

Figures in parentheses indicate percentages.

It is noticed from table 2.1 (a) that among the five practices under housing management practices, maximum respondents (96.50 per cent) had knowledge about ‘site of manure pit’ followed by ‘proper space requirement (M²)’ with knowledge among 95.50 per cent respondents. In case of ‘accessibility’ practices, with knowledge among 95.00 per cent respondents. While in case of remaining two practices more than sixty per cent dairy farmers had knowledge, and their adoption was noticed mostly at fully level. This observation indicates that, dairy farmers had positive response towards housing

Table 2.4 (d): Distribution of the respondents according to feed and fodder management practices.

(N = 200)

S. no.	Practices	Knowledge	
		Yes	No
1.	Daily requirement of green fodder	185 (92.50)	15 (07.50)
2.	Daily requirement of dry fodder	200 (100.00)	00 (00.00)
3.	Various feedstuffs	187 (93.50)	13 (06.50)
4.	Daily requirement of mineral mixture	182 (91.00)	18 (09.00)
5.	Daily requirement of concentrates and Dry matter to Pregnant Animal	189 (94.50)	11 (05.50)
6.	Daily requirement of Clean water for drinking	200 (100.00)	0 (00.00)

Figures in parentheses indicate percentages.

Table 2.5 (e): Distribution of the respondents according to clean and hygienic milk production.

(N = 200)

S. no.	Practices	Knowledge	
		Yes	No
1.	Milking shed	200(100.00)	0(00.00)
2.	Machine Milking	169(84.50)	31(15.50)
3.	Condition of breed during milking	194(97.00)	6(03.00)
4.	Utensils used and their cleaning and sanitization	200(100.00)	0(00.00)
5.	Use of disinfectants for udder and teat	182(91.00)	18(09.00)

Figures in parentheses indicate percentages.

management practices, which are important practices in dairy enterprises.

Health and care management practices

The data with respect to the health and care management practices by the dairy farmers are presented in table 2.2 (b).

Data related to health and care management practices in table 2.2 (b) reveal that 100 per cent of the respondents had knowledge about ‘care of sick animals’. In case of other three practices, it was noticed that more than 90.00 per cent of the respondents had knowledge. With respect to last practice in this sub-head *i.e.* ‘age at first service’, it was noticed that 94.50 per cent

Table 3.6 (f): Distribution of the respondents according to care and management of pregnant animals.

(N = 200)

S. no.	Practices	Knowledge	
		Yes	No
1.	Calving pen	192(96.00)	8(04.00)
2.	Sign of Calving	200(100.00)	0(00.00)
3.	Removal of placenta	200(100.00)	0(00.00)

Figures in parentheses indicate percentages.

respondents had knowledge this practice.

Breeding management practices

The data with regard to breeding management practices followed by the dairy farmers are presented in table 2.3 (c).

It is revealed from table 2.3 (c) that a ‘heat detection’ and ‘pregnancy diagnosis’ practices are known by 100.00 per cent of dairy farmers. In case of other two practices, it was noticed that more than 90.00 per cent of the respondents were aware of its knowledge.

Feed and fodder management practices

The data with regard to feed and fodder management practices followed by the dairy farmers are presented in table 2.4(d).

It is noticed from table 2.4 (d) that 100.00 per cent of the respondents had knowledge about ‘daily requirement of dry fodder’ and ‘daily requirement of clean water for drinking’. Remaining four practices, it was noticed that more than 90.00 per cent respondents knows about that.

Clean and hygienic milk production

The data pertaining to the clean and hygienic milk production followed by the respondents are given in table 2.5 (e).

It is noticed from table 2.5 (e) that, cent per cent dairy farmers had knowledge about ‘milking shed’ and ‘Utensils used and their cleaning and sanitization’ while 97.00 per cent and 91.00 per cent dairy farmers were very well acquainted with the practice like ‘condition of breed during milking’ and ‘Use of disinfectants for udder and teat’ respectively. More than eighty per cent (84.50 per cent) of the dairy farmers had knowledge about ‘use of machine milking’.

Care and management of pregnant animals

The care and management of pregnant animals followed by the dairy farmers in recommended dairy management practices are presented in table 2.6 (f).

Table 2.7 (g): Distribution of the respondents according to care and management of calf and heifer.

(N = 200)

S. no.	Practices	Knowledge	
		Yes	No
1.	Removal of naval cord	200(100.00)	0(00.00)
2.	Colostrum feeding	193(96.50)	7(03.50)
3.	Removal of extra teat	178(89.00)	22(11.00)
4.	Castration	182(91.00)	18(09.00)
5.	Steaming up	171(85.50)	29(14.50)

Figures in parentheses indicate percentages.

Table 2.8 (h): Distribution of the respondents according to care and management of breeding bull.

(N = 200)

S. no.	Practices	Knowledge	
		Yes	No
1.	Age of separation of breeding bull	198(99.00)	2(02.00)
2.	Feeding	200(100.00)	00(00.00)
3.	Service from bull	200(100.00)	00(00.00)
4.	Exercise to breeding bull	179(89.50)	21(10.50)

Figures in parentheses indicate percentages.

It is observed from table 2.6 (f) that 100.00 per cent of the dairy farmers were aware about both the practices *i.e.* 'sign of calving' and 'removal of placenta'. Remaining one practice *i.e.* 'calving pen' was well known to dairy farmers.

Care and management of Calf and Heifer

The data with respect to the care and management of calf and heifer followed by the respondents are presented in table 2.7 (g).

It is observed from table 2.7 (g) that 100.00 per cent dairy farmers had knowledge about 'removal of naval cord'. Remaining practices *i.e.* 'colostrum feeding', 'castration' 'removal of extra teat' and 'steaming up', were well known to more than 85.00 per cent dairy farmers.

Care and management of breeding bull

The data pertaining to the care and management of breeding bull are given in table 2.8 (h).

It can be observed from table 2.8 (h) that practices namely 'feeding' and 'service from bull' were known to 100.00 per cent of the dairy farmers. Remaining two practices was very well known to dairy farmers.

Knowledge is one of the important components of adoption behaviour and as such it plays a major role in the covert and overt behaviour of human beings. Once knowledge is acquired, it produces changes in the thinking process. It is assumed that with proper knowledge, both naturally occurring and created one can be used to convert favourable attitude into decisions to adopt innovations.

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