

RELATIVE INVOLVEMENT OF MEN AND WOMEN IN DAIRYING

By

S. S. ANIL

THESIS

Submitted in partial fulfilment of the
requirement for the degree

Master of Veterinary Science

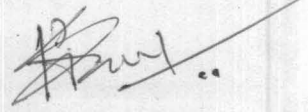
Faculty of Veterinary and Animal Sciences
Kerala Agricultural University

Department of Extension
COLLEGE OF VETERINARY AND ANIMAL SCIENCES
Mannuthy - Thrissur

1992

CERTIFICATE

Certified that the thesis entitled **RELATIVE INVOLVEMENT OF MEN AND WOMEN IN DAIRYING** is a record of research work done independently by Sri. S.S.Anil under my guidance and supervision and that it has not previously formed the basis for the award of any degree, fellowship or associateship to him.



Dr. P.S. PUSHKARAN
(Chairman, Advisory Committee),
Professor and Head,
Department of Extension,
College of Veterinary and
Animal Sciences, Mannuthy.

Mannuthy,
7-5-1992.



CERTIFICATE

We, the undersigned members of the Advisory committee of Sri. S.S. Anil, a candidate for the degree of Master of Veterinary Science in Extension, agree that the thesis entitled **RELATIVE INVOLVEMENT OF MEN AND WOMEN IN DAIRYING** may be submitted by Sri. S.S. Anil in partial fulfilment of requirement for the degree.

Dr. P.S. PUSHKARAN,
(Chairman, Advisory Committee),
Professor and Head,
Department of Extension,
College of Veterinary and Animal Sciences,
Mannuthy.

[Signature]
7/5/92

Dr. T. Prabhakaran,
Professor and Head,
Department of Animal production Economics,
College of Veterinary and Animal Sciences,
Mannuthy.

T. Prabhakaran
7/5/92

Dr. V. Raju,
Associate Professor,
Department of Extension,
College of Veterinary and Animal Sciences,
Mannuthy.

V. Raju
7-5-92

Dr. K.C. George,
Professor and Head,
Department of Statistics,
College of Veterinary and Animal Sciences,
Mannuthy.

K.C. George
7-5-92

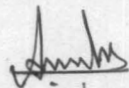
External Examiner

[Signature]

DECLARATION

I hereby declare that the thesis entitled **RELATIVE INVOLVEMENT OF MEN AND WOMEN IN DAIRYING** is a bonafide record of research work done by me during the course of research and that the thesis has not previously formed the basis for the award to me of any degree, diploma, associateship, fellowship or other similar title of any other university or society.

Mannuthy,
7-5-1992.



(S.S.ANIL)

ACKNOWLEDGEMENT

I would like to express my sincere thanks to Dr. P.S.Pushkaran, Professor and Head, Department of Extension, College of Veterinary and Animal Sciences and Chairman of Advisory Committee for the guidance and support extended by him in the development of this research.

My greatest personal indebtedness and gratitude are due to Dr. V. Raju, Associate Professor, Department of Extension and member of Advisory Committee for the personal interest and attention bestowed in preparing my thesis.

I am thankful to Dr. K.C. George, Professor and Head, Department of Statistics, College of Veterinary and Animal Sciences, and member of Advisory Committee for the timely help provided by him without which the development of this research would not have been a reality.

I am grateful to Dr. T. Prabhakaran, Professor and Head, Department of Animal Production Economics and member of advisory committee for his guidance and many incisive comments in the preparation of my thesis.

I would like to place on record my heartfelt thanks to Dr. Joy Mathew, Associate Professor, Directorate of Extension,

for the valuable time and effort he spent in contributing to this research.

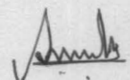
I am indebted to Dr. G. Nirmalan, Dean in charge, College of Veterinary and Animal Sciences and Dr. J. Abraham, Associate Professor, Academic Cell, College of Veterinary and Animal Sciences, not only for the facilities provided for the study but also for having shown personal interest in getting this research completed.

I would like to express my sincere thanks to Dr. Peethambaran, Associate Professor, Centre for Advanced Studies in Poultry Science and Dr. V. Sudarsanan, Professor, Department of Animal Reproduction who were always there to help me.

The help rendered by Smt. K.P. Santha Bai and Sri. K.V. Prasad, Department of Statistics is specially acknowledged.

My sincere thanks are due to Sri. Varghese, Secretary, Milk Producers' Co-operative Society, Vilanganoor for the personel help rendered during the data collection.

The sincere co-operation of the members of the milk producers' Co-operative Society, Vilangannoor during the data collection is specially acknowledged.



(S.S. ANIL)

*Dedicated to
my Father, Mother & Wife*

TABLE OF CONTENTS

Sl. No.	Chapters	Page No.
1.	INTRODUCTION	1
2.	REVIEW OF LITERATURE	5
3.	MATERIALS AND METHODS	42
4.	RESULTS	68
5.	DISCUSSION	118
6.	SUMMARY	166
7.	REFERENCES	172
	APPENDIX	i
	ABSTRACT	

LIST OF TABLES

Table No.	Title	Page No.
1.	Distribution of respondents based on age.	69
2.	Distribution of respondents on the basis of educational status.	70
3.	Distribution of respondents based on occupation.	71
4.	Distribution of respondents based on land holding .	72
5.	Distribution of respondents based on herd size.	73
6.	Distribution of respondents based on annual income.	74
7.	Distribution of respondents based on family size.	74
8.	Distribution of respondents based on social participation.	75
9.	Distribution of respondents based on experience in dairying.	76
10.	Distribution of respondents based on contact with extension agencies.	77
11.	Distribution of respondents based on availability of professional help at their premises.	78

12.	Distribution of respondents based on availability of inputs.	79
13.	Distribution of respondents based on socio-economic status.	80
14.	Inter correlation between independent variables (Husbands).	82
15.	Inter correlation between independent variables (Wife).	83
16.	Distribution of respondents based on knowledge about improved practices in dairying.	86
17.	Results of 't' test applied to the knowledge levels of husbands and wives.	87
18.	Distribution of respondents based on their extent of physical involvement in dairying.	88
19.	Results of 't' test applied to the physical involvement scores of husbands and wives.	90
20.	Pattern of physical involvement of children (Percentage).	91
21.	Distribution of respondents based on the extent of involvement in decision-taking.	92
22.	Results of 't' test applied to the scores obtained by husbands and wives for extent of involvement in decision-taking.	93
23.	Pattern of involvement of children in decision-taking, (Percentage).	94

24.	Distribution of respondents based on adoption index.	96
25.	Distribution of respondents based on age and adoption index.	97
26.	Distribution of respondents based on educational status and adoption index.	98
27.	Distribution of respondents on the basis of occupation and adoption index.	99
28.	Distribution of respondents based on land holding and adoption index.	100
29.	Distribution of respondents based on herd size and adoption index.	101
30.	Distribution of respondents based on annual income and adoption index.	102
31.	Distribution of respondents based on family size and adoption index.	102
32.	Distribution of respondents based on social participation and adoption index.	103
33.	Distribution of respondents based on experience in dairying and adoption index.	104
34.	Distribution of respondents based on contact with extension agencies and adoption index.	105
35.	Distribution of respondents based on availability of professional help at farmers' premises and adoption index.	106

36.	Distribution of respondents based on availability of inputs and adoption index.	107
37.	Distribution of respondents on the basis of socio-economic status and adoption index.	108
38.	The values of correlation coefficients between the selected socio-economic factors and the extent of adoption of selected practices (Husbands).	109
39.	The values of correlation coefficients between the selected socio-economic factors and the extent of adoption of selected practices (Wives).	110
40.	Table showing the results of analysis of variance in the case of husbands.	112
41.	Table showing the results of analysis of variance in the case of wives.	112
42.	Constraints in the adoption of scientific selection.	114
43.	Reasons for non-adoption of scientific housing	114
44.	Constraints in the adoption of scientific feeding.	115
45.	Constraints faced by farmers in adopting scientific breeding practices.	116
46.	Reasons for partial adoption of scientific treatment.	117

LIST OF PLATES

Sl. No.	Title
I.	Graph showing knowledge level of husbands and wives.
II.	Graph showing physical involvement of husbands and wives.
III.	Graph showing involvement of husbands and wives in decision-making.
IV.	Graph showing distribution of respondents based on adoption index.
V.	Pictorial representation of the association between selected socio-economic factors and adoption.

Introduction

INTRODUCTION

The population of cattle and buffaloes in India is considered to be the largest in the world. But the milk production is comparatively less. According to 1987 census, Kerala had 1701989 crossbred cattle, 1721996 indigenous cattle and 329084 buffaloes and the total milk production during 1984-85 was 1220000 metric tonnes (Report on 14th Quinquennial Livestock Census, 1987).

The status of animal husbandry sector in Kerala cannot be compared with that of other states in India. Majority of cattle owners in the state maintain only one or two milch animals as an integral part of the mixed farming system. Most of the cattle owners in the state who maintain animals for income belong to the low and middle income groups. They may not be able to spend much money for adopting costly innovations. Similarly they are utilizing family labour for various practices concerned with dairying. Consequently all the members of the family will be involved in one way or other in activities connected with dairying. As a result of the social change the joint family system has diminished. Due to the repeated division of the properties, the land availability per family has also reduced considerably which has also affected the animal rearing to a great extent. Dairying is only a rural and subsidiary occupation although the income from milk production forms a very important

part of the earning of the farming community. But dairying has not yet assumed commercial proportions in the state. One of the major reasons for the poor production performance of our animals was the improper management. Attempts to introduce better dairy management practices started as early as the community development programmes launched in the year 1952. Since then various animal development programmes were being implemented by the different departments of the state many of which are still under implementation. With the formation of Kerala Agricultural University in 1972, the development programmes carried out by various departments were augmented. Vilanganoor, the study area of the present research was one of the regions where the efforts of the University on this aspect was concentrated and as a result there was appreciable improvement.

Women's involvement in livestock production is a long standing tradition in our country where domestic animals have been an integral part of family farming systems. It is a known fact that the contributions of women, both physical and intellectual are significant to the overall development of livestock production although the literature on women's role in this aspect is very few. Some of the available studies indicate that in other states there is an appreciable contribution by women in certain aspects of dairying especially in rural areas. Without an adequate data base it is difficult to direct inputs to help women in this regard.

Rural woman plays the dual role of house wife and mother along with that of primary producer, processor and seller of products from family farm. In any farming system, the rural women is the central part of the human ecosystem in which livestock forms a part and rural woman's role extends from her labour contribution to participation in decision-making about the choice of animals, their care, feeding and breeding (FAO Report, 1990).

So far no study has been undertaken to understand the involvement of women in these aspects in dairying in Kerala. The results of the present study will be useful in formulating the future plan of action in dairy development.

Under these circumstances the present study is undertaken with the following objectives.

1. To assess the extent of physical involvement of men and women in dairy management practices.
2. To find out the extent of involvement of men and women in decision-taking in dairying.
3. To probe into the influence of women in the adoption of practices.

4. To study the extent of adoption of improved practices in dairying, the reasons for non-adoption/partial adoption, if any, and the influence of selected socio-economic factors on adoption.

Besides this, attempt is made to reveal the knowledge level of men and women about selected aspects in dairying.

Limitation of the study:

Due to the non-availability of time and resources, the study had to be restricted to a sample of 100 households selected from the area of milk producers' co-operative society, Vilanganoor. So the findings of the study can not be generalised and applied to the state or country as a whole, as there may be variations in farming conditions and characteristics of farmers.

Review of Literature

REVIEW OF LITERATURE

A close review of past research works is essential in a scientific investigation as it will provide a clear insight into the existing situations and thus helps in formulating a sound conceptual frame work for the study. The main objective of this chapter is to review the theoretical and empirical information available from similar or atleast related studies. Such a recapitulation will serve as a basis for relating the empirical findings of the present study with those of earlier investigations. Only a few studies pertaining directly to certain variables like physical involvement, decision-making in dairying by the husband and wife of the family and availability of inputs have been reported in the past. No literature could be collected on availability of professional help at farmers' premises and marketing facilities. An earnest effort has been made to review the available literature and they are arranged in this section in the following manner.

1. Relationship between selected independent variables and adoption of selected dairying practices.
2. Level of knowledge of improved dairying practices of farmers.
3. Extent of adoption of improved dairying practices.
4. Extent of physical involvement of men and women in dairying.
5. Extent of involvement of men and women in decision-taking in dairying.
6. Reasons for non-adoption/partial adoption.

1. Relationship between selected independent variables and adoption of selected dairying practices

The socio-economic characteristics (independent variables) included in this study are age, educational status, occupation, land holding, herd size, annual income, family size, social participation, experience in dairying, contact with extension agencies, availability of professional help at farmers' premises, availability of inputs, socio-economic status of the respondents and marketing facilities. The available studies showing the relationship of each of these independent variables with adoption (dependent variable) are given separately under the respective headings.

1.1. Age:

Jothiraj (1974) in his study noted that age was not a differentiating factor between adopters and non-adopters of the selected husbandry practices among dairymen.

Sinha et al. (1974) found that age had no significant relationship with adoption of feeding cattle feed mixture.

Chandrakandan and Subramanyan (1975) found that there was no significant relationship between age and adoption of recommended practices among paddy cultivators.

Saini et al. (1977) found that age was not significantly associated with adoption of dairy production innovations.

Bhaskaran (1978) observed no correlation between the farmers' age and their extent of adoption of improved agricultural practices.

Subhadra (1979) observed that age had no significant relationship with the adoption of dairy husbandry practices.

Prakash (1980) revealed that age had a positive relationship with adoption behaviour among tribes in more developed areas.

Sohi and Kherde (1980) stated that age had no contribution to the adoption of dairy practices among small and marginal farmers.

Somasekharan Nair (1980) revealed that age had no significant influence on the extent of adoption of selected husbandry practices by milk producers.

Ogunfiditimi (1981) noted that age of the farmer had no significant correlation with the adoption of improved farm practices.

Sanoria and Sharma (1983) revealed that age had significant association with adoption among beneficiaries of farm development programme.

Singh (1983) revealed that age was not related with the adoption of farm mechanisation.

Yadav and Jain (1984) found that there was positive and significant correlation between age and level of adoption of hybrid cattle in Western Madhya Pradesh.

Singh et al. (1985) found that age had significant positive association with adoption of dairy innovations among farmers in progressive dairy village.

Kakoty and Sharma (1986) noted that age did not have significant association with the adoption of dairy production innovations.

Ramkumar (1987) revealed that age had no significant association with the extent of adoption of improved dairy practices.

Upadhyay and Gupta (1987) revealed that age had no significant impact on adoption of home making practices.

Ingole et al. (1988) revealed that there was no significant relationship between adoption of improved animal husbandry practices and age of the respondents.

Sheoran and Ramkumar (1988) found that age was not having any significant relationship with adoption of breeding, feeding, health care and management practices independently, in dairying. But it had positive and significant correlation with overall adoption.

Katarya (1989) found that age was significantly associated with adoption of wheat technology.

Talawar and Hirevenkanagoudar (1989) showed that age was significantly and positively correlated with level of adoption of poultry management practices

Sasikumar (1990) showed that age had no significant effect on adoption of scientific practices in prawn farming.

Singh and Rajendra (1990) found that age had positive and significant association with adoption of improved sugar cane variety.

As in the case of above studies, in the present study also some influence of age on adoption is expected.

1.2. Educational status:

Jothiraj (1974) observed that there was no relationship between education and adoption of artificial breeding practices while a positive relationship was found between education and adoption of practices like use of commercial cattle feeds, preventive vaccination and regular breeding.

Sinha et al. (1974) found that education was not significantly associated with adoption of feeding cattle feed mixture.

Saini et al. (1977) noted that education was not significantly associated with adoption of recommended dairy production innovations.

Bhaskaran (1978) observed no relationship between education and adoption of high yielding varieties among paddy farmers.

Singh et al. (1979) revealed that education had non-significant association with innovativeness as far as the practice of artificial insemination in cows was concerned.

Subhadra (1979) revealed that no relationship existed between adoption of dairy husbandry practices and education.

Sohi and Kherde (1980) showed that education level was positively and significantly associated with level of adoption of dairy innovations.

Somasekharan Nair (1980) revealed a significant positive relationship between level of education and level of adoption of selected husbandry practices by milk producers.

Balasubramaniam and Kaul (1982) stated that education had no influence on adoption behaviour of fish curers.

Sanoria and Sharma (1983) showed that education had significant association with adoption behaviour of beneficiaries of farm development programmes.

Singh (1983) found that education had significant association with adoption of farm mechanisation.

Yadav and Jain (1984) showed that there was significant positive correlation between education and level of adoption of hybrid cattle in Western Madhya Pradesh

Kologi and Usha Anand (1985) noted that level of education was positively and significantly associated with adoption of dairying innovations.

Prasannan (1987) revealed that educational status and adoption behaviour among contact farmers of T & V system were positively and significantly correlated.

Ramkumar (1987) found that education had no significant association with the adoption behaviour of dairy farmers.

Ingole et al. (1988) noted that education was positively related with adoption of improved animal husbandry practices.

Reddy and Reddy (1988) concluded that education was found to be positively and significantly associated with adoption of improved paddy cultivation practices.

Sheoran and Ramkumar (1988) revealed that family education status had significant positive correlation with adoption of improved feeding practices for dairy animals.

Katarya (1989) noted that education was significantly associated with adoption of wheat technology.

Kunzru et al. (1989) showed that family education status had no significant relationship with adoption of green fodder production.

Talawar and Hirevenkanagoudar (1989) found that education had significant positive correlation with adoption of poultry management practices.

Saxena et al. (1990) noted that educated farmers adopted the rainfed wheat technology to a greater extent than others.

Singh and Rajendra (1990) noted that education had positive and significant association with adoption of improved sugarcane variety.

The above studies reveal that education has got some influence on adoption of improved practices. So it is expected that level of education of the respondent will be having some influence on adoption of improved practices in dairying.

1.3. Occupation:

Bhaskaran (1978) noted that no relationship existed between occupation and extent of adoption of agricultural practices.

Singh and Dubey (1978) by their study could not find any association between occupation and adoption of scientific feeding practices by cattle owners of I.C.D.P. Karnal.

Balasubramaniam and Kaul (1982) observed that occupation had no significant association with adoption of fish curing practices.

Tyagi and Sohal (1984) observed that occupation was positively and significantly related to adoption of dairy innovations by rural farmers.

Singh et al. (1985) found that occupation had positive and significant relationship with adoption of innovations by farmers of non-progressive dairy village.

Ratinasabapathi (1987) noted that there was no significant relationship between occupation and adoption of integrated pest management measures for cotton.

Upadhyay and Gupta (1987) stated that occupation had no significant impact on adoption of home making practices by rural women.

Krishnamoorthy (1988) observed no association between occupation and adoption behaviour of cotton and millet growers.

Venkataprabhu (1988) found that occupation and adoption of water management measures for paddy, sugarcane and turmeric were significantly associated.

Katarya (1989) noted that occupation did not show any significant relationship with adoption of wheat technology.

Kunzru et al. (1989) found that occupation was positively and significantly correlated with adoption of green fodder production by livestock owners.

The above studies reveal different influences of occupation on adoption. In the present study it is expected that occupation will have a significant influence on the adoption of improved practices in dairying.

1.4. Land holding:

Sohi and Kherde (1980) noted that land holding was significantly associated with adoption of dairy innovations by small and marginal farmers of Punjab.

Sanoria and Sharma (1983) found that size of holding had significant association with adoption behaviour of beneficiaries of T & V system. But it had no significant association with adoption behaviour of beneficiaries of Lab-to-land programme.

Singh (1983) observed that size of holding was significantly associated with adoption of farm mechanisation.

Singh et al. (1985) concluded that operational land holding was positively and significantly correlated with adoption of innovations by farmers of both progressive and non-progressive dairy villages.

Singh and Ray (1985) in their study observed that land holding had positive and significant contribution to the level of fertilizer use by marginal farmers.

Ingole et al. (1988) noted that size of land holding was not significantly related with adoption of improved animal husbandry practices by owners of cross bred cattle under I.C.D.P.

Reddy and Reddy (1988) found that farm size had positive and significant association with adoption of improved practices of paddy cultivation.

Sheoran and Ramkumar (1988) stated that farm size was having positive and significant correlation with adoption of dairy innovations by I.R.D.P. beneficiaries.

Kunzru et al. (1989) stated that farm size was significantly and negatively correlated with adoption of green fodder production by livestock owners.

Talawar and Hirevenkanagoudar (1989) found no significant relationship between land holding and adoption of poultry management practices.

Bevalatti and Sundaraswamy (1990) observed positive and significant relationship between land holding and adoption of dryland farming practices by the farmers of Bijapur.

Saxena et al. (1990) found that farmers with larger size of holdings adopted rainfed wheat technology practices to a greater extent than others.

Singh and Rajendra (1990) found that land holding had positive and significant association with adoption of improved sugarcane variety.

From the above studies it could be seen that land holding had definite influence in the adoption of improved practices by farmers. In the present study also it is expected that land holding will be having some influence on the adoption of improved dairying practices.

1.5. Herd size:

Jothiraj (1974) in his study found that herd size was positively and highly significantly associated with adoption of selected dairy husbandry practices.

Sinha et al. (1974) found that herd size was not having significant association with adoption of feeding of cattle feed mixture.

Saini et al. (1977) observed that herd size was not associated with adoption of dairy production innovations.

Singh and Dubey (1978) found no relationship between herd size and adoption of selected animal husbandry practices except the feeding of fodder, by the cattle owners of I.C.D.P., Karnal.

Subhadra (1979) could not find any relationship between herd size and adoption of dairy husbandry practices.

Sohi and Kherde (1980) noted that herd size was significantly associated with adoption behaviour of small and marginal farmers of Punjab.

Somasekharan Nair (1980) observed that herd size was having positive correlation with extent of adoption of selected husbandry practices.

Raju (1981) observed that there was significant relationship between herd size and adoption behaviour of non-beneficiaries of schemes for financial assistance.

Kologi and Usha Anand (1985) found that herd size and adoption of dairying innovations were positively and significantly correlated.

Singh et al. (1985) revealed that herd size was positively and significantly associated with adoption behaviour of farmers of progressive and non-progressive dairy villages.

Kakoty and Sharma (1986) could observe no significant association between herd size and adoption of dairy production innovations.

Sheoran and Ramkumar (1988) concluded that herd size was having positive and highly significant correlation with adoption of feeding practices by I.R.D.P. beneficiaries.

Kunzru et al. (1989) found positive and significant correlation between livestock holding and adoption of green fodder production by livestock owners.

Talawar and Hirevenkanagoudar (1989) noticed that number of birds possessed had positive and significant correlation with adoption of poultry management practices.

Above studies showed that herd size had some influence in the adoption of improved practices by farmers. As such, herd size of the respondents of this study is also likely to have some influence on the adoption of recommended dairy husbandry practices.

1.6. Annual income:

Jothiraj (1974) observed that gross annual income of farmers influenced the adoption of commercial cattle feeds and regular breeding but it had no relationship with the adoption of artificial breeding practice and preventive vaccination.

Subhadra (1979) concluded that gross income of farmers had influence on adoption of certain individual practices like artificial breeding, deworming of calf and timely veterinary aid. But it had no influence on the adoption of selected husbandry practices in general.

Somasekharan Nair (1980) found that annual income was not related to the adoption of dairy husbandry practices.

Balasubramaniam and Kaul (1982) observed that annual income had no significant association with the adoption of fish curing practices.

Balasubramanian and Kaul (1985) reported that total income had positive and significant association with adoption behaviour of traditional fishermen in Kerala.

Kologi and Usha Anand (1985) noted that annual income and adoption of dairying innovations were positively and significantly correlated.

Singh et al. (1985) noted that total annual income was positively and significantly related with adoption of innovations by farmers of both progressive and non-progressive dairy villages.

Satwant and Surinder (1986) revealed that income was associated with adoption of improved house hold practices by farm women.

Ramkumar (1987) found no significant association between income and adoption behaviour of dairy farmers.

Katarya (1989) reported that income was significantly associated with adoption of wheat technology before and after training.

Kunzru et al. (1989) concluded that there was positive and significant correlation between total annual income and adoption of green fodder production by livestock owners.

Talawar and Hirevenkanagoudar (1989) noted significant and positive correlation between income and adoption of poultry management practices.

The above studies revealed that annual income of farmers had significant influence on their adoption behaviour. In the present study also it is anticipated that annual income will have some influence on the adoption of improved dairying practices by the respondents.

1.7. Family size:

Saini et al. (1977) noted that family size had negative and significant relationship with adoption of dairy innovations.

Sohi and Kherde (1980) observed that family size was significantly associated with dairy adoption behaviour of small and marginal farmers of Punjab.

Sanoria and Sharma (1983) noted that family size was related with the adoption behaviour of beneficiaries of T & V system and Lab-to-land programme.

Singh et al. (1985) noticed significant and positive correlation between family size and adoption behaviour of farmers of progressive and non-progressive dairy villages.

Kakoty and Sharma (1986) found that family size was not significantly related to adoption of dairy production innovations.

Kunzru et al. (1989) concluded that family size was significantly and negatively correlated with adoption of green fodder production by livestock owners.

Most of the above studies show some degree of influence of the family size on the adoption of improved practices. There is every possibility of family size of the respondents in this study showing some influence on the adoption of recommended practices.

1.8. Social participation:

Saini et al. (1977) observed that farmers with high level of social participation did not show high adoption levels of improved animal husbandry practices.

Bhaskaran (1978) could not find any relationship between social participation and adoption behaviour of farmers in using high yielding varieties of paddy.

Subhadra (1979) observed that social participation had no influence on the adoption of selected dairy husbandry practices.

Sohi and Kherde (1980) noted that social participation and dairy adoption behaviour of small and marginal farmers of Punjab were significantly associated.

Somasekharan Nair (1980) found that social participation and extent of adoption were directly correlated.

Singh (1983) found that social participation was significantly associated with adoption of farm mechanisation.

Kolagi and Usha Anand (1985) noticed positive and significant relationship between social participation and adoption of dairying innovations.

Singh et al. (1985) concluded that social participation was positively and significantly correlated with the adoption behaviour of farmers of progressive dairy village.

Sheoran and Ramkumar (1988) found that social participation had no significant relationship with adoption of dairy innovations by I.R.D.P. beneficiaries.

Talawar and Hirevenkanagoudar (1989) noticed that social participation was having significant positive correlation with adoption of poultry management practices.

Singh and Rajendra (1990) found that social participation and adoption of improved sugarcane variety were positively and significantly associated.

In majority of the above studies the social participation had some influence in the adoption of improved practices by the farmers and dairy men. As such, the social participation of the respondents of this study is also likely to have some influence on the adoption of recommended dairy husbandry practices.

1.9. Experience in dairying:

Subhadra (1979) observed that no significant relationship existed between farming experience and adoption of dairy husbandry practices.

Balasubramaniam and Kaul (1982) stated that experience in farming had no significant relationship with the adoption of fish curing practices.

Ratinasabapathi (1987) noted that farming experience and adoption of integrated pest management measures for cotton were not significantly associated.

Katarya (1989) found that farming experience was negatively and significantly associated with post training adoption score of wheat farmers.

Sasikumar (1990) found that experience in farming had no significant relationship with the extent of adoption of scientific practices in prawn farming.

The above studies emphasise that there was no influence of farming experience on adoption of improved practices except the study of Katarya (1989) which showed a significant negative correlation. In the present study, the attempt is to find out the nature of influence of above variable, if any, on the adoption behaviour of the respondents

1.10. Contact with extension agencies:

Saini et al. (1977) concluded that extension contact had highly significant positive relationship with adoption of recommended dairy production innovations.

Singh et al. (1979) found that extension contact and innovativeness were significantly associated.

Raju (1981) observed that no significant relationship existed between extension contact and adoption behaviour of beneficiaries and non-beneficiaries of schemes for financial assistance in dairying.

Singh (1983) observed that extension contact had significant association with adoption of farm mechanisation.

Reddy and Reddy (1988) concluded that contact with extension agency was positively and significantly associated with adoption of improved practices of paddy cultivation.

Sheoran and Ramkumar (1988) noticed that extension contact had negative and highly significant correlation with adoption of dairy innovations by I.R.D.P. beneficiaries.

Gogoi and Gogoi (1989) found that extension contact was an important variable explaining the adoption of plant protection practices in rice.

Katarya (1989) concluded that extension contact was not significantly associated with adoption of wheat technology.

Talawar and Hirevenkanagoudar (1989) found that extension contact had significant positive correlation with adoption of poultry management practices.

Singh and Rajendra (1990) observed significant and positive relationship between extension contact and adoption of improved sugarcane variety.

The above studies point out that there is definite influence for the extension contact on the adoption of improved practices. In the present study the attempt is to find out whether there is any correlation between these two variables and if present the nature of correlation.

1.11. Availability of inputs:

Katarya (1989) observed that input availability had significant association with pre and post training adoption scores of wheat farmers.

Kunzru et al. (1989) found that availability of critical inputs and adoption of green fodder production by livestock owners were significantly related.

The above two studies available show some definite correlation between the availability of inputs and adoption. In the present study it is expected that this variable may have some influence on practices related to housing, feeding and milking.

1.12. Socio-economic status:

Prakash (1980) found that socio-economic status was positively and significantly correlated with adoption of improved agricultural practices by tribal farmers of Kerala.

Sinha and Sinha (1980) reported that adopters of high yielding varieties of maize had higher socio-economic status than non-adopters.

Sushama Kumari et al. (1981) found that socio-economic status had significant correlation with adoption behaviour in more developed areas whereas in less developed areas it showed a non-significant relationship.

Singh (1983) found that socio-economic status was significantly associated with level of adoption of farm mechanisation.

Yadav and Jain (1984) observed that higher the socio-economic status of farmers, greater was the tendency towards adoption.

Sudha (1987) noted that socio-economic status was not significantly associated with the adoption behaviour of both tribal and non-tribal participants and non-participants of Lab-to-land programme in Kerala Agricultural University.

Anitha Vijayan (1989) found that the difference in socio-economic status of the farmers did not influence the adoption of technology for cultivation of banana var. Nendran in Trichur district.

The above studies reveal that socio-economic status had definite influence on the adoption of improved practices by farmers. In the present study also it is expected that socio-economic status will be having some influence on the adoption of improved practices in dairying.

2. Level of Knowledge of farmers about dairying

Gill and Singh (1977) found that the knowledge level of dairy farmers in breeding, feeding, housing and animal health was low. They had medium knowledge about selection of adult animals

and heifers, fodder production, precautions against parasitic diseases, weaning of calves, general cleanliness of cattle shed and maintenance of farm records. Their knowledge level in care at calving was high.

Surendran and Pushkaran (1977) concluded that people had above average knowledge level about livestock maintenance.

Sohal and Tyagi (1978) reported that the level of knowledge of respondents in the non-ICDP areas was very low as compared to ICDP areas.

Somasundaram and Singh (1978) concluded that adopter small farmers had more knowledge about cultivation of high yielding varieties of paddy than non-adopter small farmers.

Vijayaraghavan and Somasundaram (1979) noted that majority of the respondents (72.18 per cent) had low level of knowledge about high yielding varieties of paddy.

Pachori and Tripathi (1983) found that contact farmers of all the age groups in Intensive agricultural extension and research programme had higher knowledge as compared to non-contact farmers.

Sharma and Sharma (1988) revealed that majority of contact farmers possessed low to medium level of knowledge of recommended wheat production practices.

Prabhu and Kandan (1990) observed that majority of adopters and non-adopters had medium level of knowledge on soil conservation practices. The mean knowledge score of adopters was higher than that of non-adopters.

Rathore and Shaktawat (1990) noted that 61.66 per cent of farm women had low and 38.33 per cent had high knowledge about innovations of hybrid bajra cultivation.

From the above studies it could be seen that a practice wise variation in knowledge level exists among the farmers. The knowledge level of women on agricultural innovations has been measured only in one study which showed majority had low level of knowledge. As such, the attempt in the present study is to find out the difference if any, between the knowledge levels of men and women about improved practices in dairying.

3. Extent of adoption of selected practices

Jothiraj (1974) found that 11 per cent of the respondents were adopting all the four selected practices, 18 per cent three

practices, 61 per cent two practices, eight per cent one practice and two per cent of the respondents were not adopting even a single recommended practice in dairy husbandry.

Saini et al. (1977) reported that out of 143 potential adopters of dairy production innovations, 65 had high adoption whereas 46 and 32 belonged to the categories of medium and low adoption. The mean adoption score was 52.32.

Subhadra (1979) observed that only five per cent of the respondents had adoption quotient of 100, eight per cent had 90, eleven per cent 80, twenty per cent 70, seventeen per cent 60, eighteen per cent 50, eight per cent 40, nine per cent 30, three per cent 20 and one per cent 10 as far as adoption of improved dairy husbandry practices was concerned.

Sohi and Kherde (1980) revealed that out of 120 respondents 21.67 per cent were low adopters, 53.33 per cent were medium adopters and 25 per cent were high adopters as far as dairy adoption behaviour was concerned.

Somasekharan Nair (1980) concluded that the mean value of extent of adoption of selected husbandry practices was 74.64. He also found that 49, 33 and 16 per cent of the respondents belonged to high, medium and low adopter categories.

Raju (1981) revealed that the mean adoption indices among the beneficiaries and non-beneficiaries of the schemes for financial assistance were 53.75 and 53.55 respectively.

Kakoty and Sharma (1986) found that 94 per cent and 83 per cent of the total respondents adopted improved disease control and breeding practices respectively, while only 27 per cent and 15 per cent respondents adopted improved feeding and management practices respectively.

Talawar and Hirevenkanagoudar (1989) reported that majority of the farmers belonged to high category as far as the adoption of poultry management practices was concerned.

Saxena et al. (1990) found that only 17.6 per cent of the farmers had adopted the package of practices of wheat in full under rainfed conditions, 49.6 per cent partially and 32.8 per cent to the minimum level.

The above studies reveal that the extent of adoption of the improved practices varies with the practices both in agriculture and animal husbandry. There is every possibility that the extent of adoption may show variation in the case of the respondents selected for the present study also. The attempt is to find out such variation and the factors influencing the same.

4. Extent of physical involvement of men and women in dairying

Devadas (1975) found that feeding cattle, looking after the milch animals and poultry keeping were entirely the jobs of farm women.

Mazumdar (1975) observed that jobs like transplanting, sowing, weeding and harvesting were traditionally done by women.

Sithalakshmi (1975) found that women participated mainly in the agricultural activities like storage of produces, sowing seeds and transplanting.

Achanta (1982) reported that in many places the entire management of livestock starting from cutting, collection, carrying and chaffing of fodder, feeding and milking, preparation of milk products, cleaning of cattle shed, collection of urine and cow dung for the manure pits, preparation of cow dung cakes and their storage were all done by women.

Bhatnagar (1982) reported that apart from work in home and farm, rural women were also responsible for taking care of cattle. They collected fodder for the animals from distant places. Other related activities done by rural women were cleaning of cattle and cattle shed, feeding the cattle and

milking. The time spent by rural women for activities such as care of cattle, bringing fodder for cattle and milking were one, two and one hour respectively.

Dineshkumar and Singh (1983) reported that rural women of the hill region of Uttar Pradesh derived employment from various activities including livestock enterprises such as grass cutting, feeding and milking of animals. The per capita employment (in days per year) of women in livestock activities was 79 whereas that for male was 51.

Singh and Chander (1983) stated that women played a key role in performing various tasks related to cattle management.

Venkatachalam (1983) observed that all over the country cattle were being looked after by women in rural areas. As the house wife and mother the lady of the house was concerned with the utilization of milk and milk products in the house and were the back bones of dairy industry and regarded as entrepreneurs of rural dairying.

Azad et al. (1985) revealed that the scheduled caste females besides working as wage earners, were also engaged in the maintenancé of their milch cattle and in the procurement of fodder and grains for the animals.

Ghosh (1985) found that an overwhelming majority of women among scheduled caste households in the village were engaged in multiple activities including animal care.

Sisodia (1985) concluded that on animal based tasks, family female labour was utilized substantially (34 per cent) in Chambal region of Madhya Pradesh. Cake making, ghee making, milking of animals, removing cow dung from cattle shed and feeding of animals were mostly done by the farm women.

Vinodkumar et al. (1985) noted that the employment of women workers in maintenance of cattle was 12.7 per cent.

Singh et al. (1987) noted that on an average rural homemakers spent about 3.04 hours per day on animal care activities.

Nagpal (1989) found that women play a great role in proper selection and purchase of animals during cattle fairs. Feeding, watering, milking and cleaning of cattle shed were done exclusively by women.

George et al. (1990) reported that females supplied 62 per cent of the labour used in cattle keeping. The role of women was especially important in activities centred around the home such

as preparation of feed, fodder collection, feeding, shed cleaning and to a lesser extent milking.

Sangwan et al. (1990) revealed that on small and marginal farms, farm women constituted about equal labour force and on medium and large farms they were generally replaced by hired labour. It was also found that the men were the planners and the women implemented the activity.

Shashikala et al. (1990) observed participation of majority of farm women in similar activities like feeding the animals (73.75 and 81.25 per cent), cleaning the cattle shed (66.5 and 63.75 per cent) and milking (67.5 and 72.5 per cent) in both rainfed and irrigated areas.

In all the above studies the physical involvement of women has been mentioned. But practically nothing has been mentioned about the physical involvement of men. The present study is to know about the involvement of men also.

5. Extent of involvement of men and women in decision taking in dairying

Badiger (1979) found that the participation of women in decision making was high in the case of animal management.

Malik (1979) noted that women were also taking part in decision-making process about improved agricultural practices.

Bhagat (1980) stated that employed rural women played a dominant role in decision-making process especially on money and management of family.

Hiranad and Kumar (1980) showed that women had a significant role in decision-making regarding purchase and sale of animals.

Dubey et al. (1982) found that majority of farm women had high participation in decision-making on aspects like number of milch animals to be kept and quantity and type of green fodder to be fed to milch animals.

Sadhu and Renuka (1982) reported that farm women played an important role in decision-making related to the purchase and sale of cattle.

Sisodia (1985) stated that women had a significant role in decision-taking in farm practice operations.

Kaur et al. (1988) showed that husband played a dominant role in farm related decisions in small and medium size categories. In large farm size category husband and wife were participating in farm related decision like purchase of animals.

Ahilan and Selvaraj (1991) found that fisher women were having an important role in house hold and social decision-making. As far as financial decision-making was concerned, only the earning women had active participation.

From the above studies it could be seen that farm women had a significant role in decision-making. In many cases they were taking independent decisions in the adoption of practices and in other cases they were having varying degree of influence, though the final decisions were made by the heads of the families. As such, under the prevailing conditions in the study area it is expected that women will be having much influence in making decisions to adopt or reject various dairy husbandry practices.

6. Reason for non- adoption/partial adoption

Jothiraj (1974) pointed out that high cost of cattle feed was the main reason for non-adoption of feeding commercial feeds.

Sohi and Kherde (1980) found that the reasons for non-adoption of artificial insemination were risk, unprofitability and lack of quality semen. High cost was the reason for non-adoption of commercial cattle feed. Major reason for poor management was higher capital investment.

Balasubramaniam and Knight (1982) concluded that repeater/poor conception was the most important reason for partial and non-adoption of artificial insemination. Other reasons were easy availability of facilities for natural service, more distance to veterinary hospital, limited hours of artificial insemination service in veterinary hospital and unsuitability of the method to buffaloes. The reasons for non-adoption of feeding commercial cattle feed were high cost and lack of income from feeding commercial cattle feed. Non adoption of green fodder production was due to limited farm size, lack of income and non-availability of water for irrigation. Non adoption of the practice of vaccination was due to availability of ayurvedic and local medicines, scarcity of vaccines at proper time and non relevance of disease.

Singh and Rajendra (1990) concluded that lack of money was a main reason for non-adoption of improved sugarcane variety by the farmers.

The above studies disclose various reasons pointed out by the respondents for the non-adoption of different practices. Since the conditions prevailing in this state are different from that of the other states, there may be other reasons and problems facing the farmers in adopting improved practices in dairying. The attempt in this study is to explore them.

Materials and Methods

MATERIALS AND METHODS

The materials and methods employed in this study are furnished under the following headings:

1. Selection of study area.
2. Selection of the respondents.
3. Selection of the practices.
4. Selection and measurement of variables.
5. Method of data collection.
6. Analytical procedures.
7. Operational definitions of terms used in the study.

1. Selection of study area

The milk producers' co-operative society, Vilanganoor was selected purposively for the study, considering the following points.

- a. Existence of milk producers' co-operative society for more than 10 years.
- b. Proximity to the Veterinary College and thereby more possibility of adoption of practices.
- c. Large number of members in the society and collection of more liters of milk per day.
- d. The willingness of the members to co-operate with animal husbandry activities which has been proved previously.

2. Selection of Respondents

At first, the list of entire members of the society was prepared. From the total list of members a list of members who were current milk producers was prepared. From the above list 100 members were selected at random using Tippett's random numbers. Their households were the units of study. Thus the 100 members currently producing milk formed the study sample.

3. Selection of practices

Six major aspects relating to dairy husbandry were selected based on the package of practices recommendations by the Kerala Agricultural University and discussions with experts in the University regarding the important aspects to be considered. Thus the practices under following aspects were included for the study.

1. Selection
2. Housing
3. Feeding
4. Milking
5. Breeding
6. Treatment

4. Selection and measurement of variables

i. Selection of independent variables and their measurement.

Based on the objectives of the study, review of relevant literature and discussion with extension experts in the field of animal husbandry and agriculture the following variables were selected.

1. Age
2. Educational status
3. Occupation
4. Land holding
5. Herd size
6. Annual income
7. Family size
8. Social participation
9. Experience in dairying
10. Contact with extension agencies
11. Availability of professional help at farmers' premises
12. Availability of inputs
13. Socio-economic status
14. Marketing facilities

1. Age:

The chronological age of the respondent was measured on the basis of the total number of completed years from the date of birth. The method adopted by Subhadra (1979) was used for the study.

The respondents were classified into the following three age groups keeping mean and standard deviation as measures of check.

Sl. No.	Category	Age in years	
		Husbands	Wives
1.	Young	Upto 44	Upto 37
2.	Middle	45 to 67	38 to 60
3.	old	68 and above	61 and above

2. Educational status:

The respondents were classified into five categories depending upon their level of education and were given scores as follows for the purpose of analysis. The illiterate category was excluded in the light of the fact that Kerala has attained cent per cent literacy.

Sl. No.	Category	Score
1.	Those without formal education	1
2.	Lower primary school	2
3.	Upper primary school	3
4.	High school	4
5.	College	5

3. Occupation:

The respondents were classified into, agricultural and other labourers, those involved in agriculture and allied activities, self employees, private employees, government employees and housewives. The scoring pattern was as follows.

Sl. No.	Category	Score
1.	Agricultural and other labourers	6
2.	Agriculture and allied activities	5
3.	Self employment	4
4.	Private employment	3
5.	Government employment	2
6.	Housewife	1

4. Land holding:

The respondents were classified into four categories depending upon the land holding ie., those having below 10 cents, those having 10 cents to one hectare, those having one to two hectares and those having above two hectares of land. The scoring pattern was as follows.

Sl. No.	Category	Score
1.	Below 10 cents	1
2.	10 cents to 1 ha	2
3.	1 to 2 ha	3
4.	Above 2 ha	4

5. Herd size:

Farmers of the study area were maintaining cattle as a supplementary source of income. So a restricted classification had to be resorted to. A score of one was assigned to each livestock in the house (cow, buffalo and/or goat). The respondents were classified as follows based on mean and standard deviation.

Sl. No.	Category	Score
1.	Large	5 and above
2.	Medium	2 to 4
3.	Small	1

6. Annual income:

Based on the total annual income of the family through all means including dairying the respondents were classified into the following three groups based on mean and standard deviation. The total annual income as such was taken as the score for annual income.

Sl. No.	Category	Score
1.	High	Rs 8162 and above
2.	Medium	Rs 1524 to 8161
3.	Low	Upto Rs 1523

7. Family size:

For calculating the family size, a score of one was given to each member of the family in the household and the total of this formed the index of family size. The respondents were classified into three categories considering mean and standard deviation.

Sl. No.	Category	Score
1.	Large	9 and above
2.	Medium	5 to 8
3.	Small	Upto 4

8. Social participation:

Social participation in this study was calculated considering the membership/office bearership of the respondent in organisations including the milk producers' co-operative society, attendance in meetings of the above organisations and attendance in other functions like marriages, religious functions and family functions. A score of one was given for membership and two for office bearership in each organisation. Attendance in the meeting was scored by assigning two points for 'regular', one for 'occasional' and zero for 'never'. Attendance in other functions was scored by assigning two points for 'regular', one for

'occasional' and zero for 'never'. An individual's total social participation score was obtained by summing up the scores obtained for the above three aspects. The respondents were categorised into three groups as follows based on mean and standard deviation.

Sl. No.	Category	Score	
		Husbands	Wives
1.	High	10 and above	7 and above
2.	Medium	6 to 9	4 to 6
3.	Low	Upto 5	Upto 3

9. Experience in dairying:

Experience in dairying was quantified by assigning score as follows. Those having more than 10 years of experience were given a score of three. Scores of two and one were assigned to those having five to ten years and less than five years of experience respectively. The respondents were scored and classified based on their experience in dairying as follows:

Sl. No.	Category	Score
1.	Above 10 years	3
2.	5 to 10 years	2
3.	Less than 5 years	1

10. Contact with extension agencies:

Frequency of personal contact with different extension personnel was considered in assessing the extent of contact with extension agencies. Seven categories of extension workers, viz., cattle improvement assistants, dairy farm instructors, village extension officers, veterinary surgeon, technical staff of Kerala Agricultural University, gram sevikas and health workers were included in the study to know the contact of respondents with them. The respondents were given scores in the order of one, two, three and four for 'never' 'once in a year' 'once in six months', and 'once in a month' respectively. The total score for each respondent was obtained by adding the scores for all the contacts made by him. The respondents were classified as follows considering mean and standard deviation.

Sl. No.	Category	Score	
		Husbands	Wives
1.	High	5 and above	3 and above
2.	Medium	3 and 4	2
3.	Low	Upto 2	1

11. Availability of professional help at farmers' premises:

Six categories of technical officials were included in the study viz., Veterinary Surgeon (MILMA), Cattle improvement assistants, dairy farm instructors, technical staff of Kerala Agricultural University, livestock inspectors and Veterinary Surgeon (DRDA) for finding out the availability of professional help at farmers' premises. The respondents were given scores depending upon the frequency of availability of these technical officials at their premises in the order of one for 'once in a year', two for 'once in six months', three for 'once in three months', four for 'once in a month' and five for 'as and when required'. The total for each respondent was found by adding the scores for all the six categories. The respondents were classified into three categories as follows for the purpose of analysis, based on mean and standard deviation.

Sl. No.	Category	Score
1.	High	12 and above
2.	Medium	8 to 11
3.	Low	Upto 7

12. Availability of inputs:

Under this variable, the availability of inputs like feed, water and source of power supply for lifting water, were considered. The respondents were given scores in the order of one for 'yes' and zero for 'no' answer. The respondents using a pump set for lifting water were given a score of one and those who collected water from other sources were given a score of zero. The total score for each individual was calculated by adding up the scores for all these three items.

The respondents were classified as follows based on mean and standard deviation.

Sl. No.	Category	Score
1.	High	4 and above
2.	Medium	3
3.	Low	Upto 2

13. Socio-economic status:

The socio-economic status of the respondent in this study was calculated by adding up the scores obtained by each individual for educational status, occupation, land holding, herd size and social participation. But the scoring pattern for occupation for this purpose was reversed, ie. government employees were given the highest score and agricultural and other labourers were given the lowest score. The reason for this was that, as far as the relationship between occupation and adoption of improved dairying practices by the respondents is concerned, there is every possibility that agricultural and other labourers will adopt more improved practices than a government employee because it is an important source of income for them. But in the case of socio-economic status it is a fact that a government employee has higher status than an agricultural or other labourer in the society.

The respondents were classified as follows based on mean and standard deviation.

Sl. No.	Category	Score	
		Husbands	Wives
1.	High	20 and above	16 and above
2.	Medium	14 to 19	11 to 15
3.	Low	Upto 13	Upto 10

14. Marketing Facilities:

Since all the respondents were members of the milk producers' co-operative society having equal and sufficient marketing facilities for their milk and animals, this variable was excluded from further analysis.

ii. Measurement of other variables

1. Knowledge level of farmers about dairying:

Under this, the knowledge levels of farmers about the practices under the selected aspects in dairying viz., selection of cows, housing, feeding, milking, breeding and treatment were measured. Objective type questions were used for this purpose. For each right answer a score of two was assigned and for the wrong answer a score of one. In the case of certain questions there were more than one possible right answer indicating their depth of knowledge. In such cases an additional score of one was given to each right answers. The total knowledge score of the respondent was obtained by adding up the scores obtained for all the questions. The respondents were categorised as follows for the purpose of analysis based on mean and standard deviation.

Sl. No.	Category	Score	
		Husbands	Wives
1.	High	23 and above	21 and above
2.	Medium	18 to 22	15 to 20
3.	Low	Upto 17	Upto 14

2. Extent of adoption of practices under selected aspects in dairying (Dependent variable)

In the present study extent of adoption was measured using the adoption index developed by Sengupta (1967) and modified by Jothiraj (1974) with required modifications to suit this study.

Full adoption of a practice by the respondent was given a score of three, partial adoption with a score of two and non-adoption with one. In the case of certain practices "Yes or No" questions were used and the scoring adopted was two for the "yes" answer for the first question and one for the "no". Where the number of questions were more, for each additional "yes" answer a score of one was given and for the "no" the score of zero. The total score obtained by adding the individual scores

of each practice was taken as the extent of adoption and the adoption index of the respondent was calculated as follows:

$$\text{Adoption index} = \frac{\text{Respondent's score}}{\text{Total maximum possible score}} \times 100$$

On the basis of the adoption index, the respondents were classified as follows considering the mean and standard deviation as the measures of check.

Sl. No.	Category	Adoption index
1.	High	98 and above
2.	Medium	76 to 97
3.	Low	upto 75

As far as the adoption of scientific/hygienic milking practices was concerned all the respondents were having the maximum scores and as such that variable was not included for further analysis.

3. Physical involvement in dairying:

For this purpose, the physical involvement of the respondent in carrying out the practices under the selected aspects in

dairying viz., selection of cows, housing, feeding, milking, breeding and treatment was considered. A score of four, three and two were assigned to 'always', 'often' and 'sometimes' respectively and a score of one for the non-involvement. A respondent's total score for physical involvement was found by adding up the scores obtained for all these six aspects.

In the case of few families these activities were done by male and female children also. Since the frequency of such instances was low only a percentage comparison was made for this.

The respondents were classified as follows based on mean and standard deviation.

Sl. No.	Category	Score	
		Husbands	Wives
1.	High	20 and above	18 and above
2.	Medium	12 to 19	11 to 17
3.	Low	upto 11	upto 10

4. Involvement in decision-taking in dairying:

For measuring the involvement in decision-taking all the six selected aspects in dairying were considered. Respondents were given scores in the order of four, three and two for 'always', 'often' and 'sometimes' respectively and for non-involvement a score of one. A respondent's total score for involvement in decision-taking was calculated by adding up the scores obtained for all these six aspects and the respondents were classified as follows based on mean and standard deviation.

Sl. No.	Category	Score	
		Husbands	Wives
1.	High	21 and above	14 and above
2.	Medium	11 to 20	7 to 13
3.	Low	upto 10	upto 6

In the case of few families the male and female children were also involved in decision-taking. Since the frequency of this was low only a percentage comparison was made.

5. Reasons for non-adoption/partial adoption:

For finding out the reasons for non-adoption/partial adoption, the respondents were asked to state the constraints they faced based on the past experience in dairying and those reasons were ranked based on the frequency.

5. Method of Data Collection

The data were collected using a well structured, pre-tested interview schedule by personally interviewing both the husband and wife of the family separately. For certain variables like, land holding, herd size, annual income, family size, availability of professional help at farmers' premises, availability of inputs and extent of adoption of improved dairying practices, it was not necessary to interview the husband and wife separately since those variables were common for the family. The questionnaire was carefully translated into the respondents' mother-tongue (Malayalam) to fit into their level of understanding. The data were recorded in the schedule shown in the appendix.

6. Analytical procedures

a. Analysis on percentage basis:

Simple comparisons and relationships were made on percentage basis.

b. Analysis based on correlation:

The associations between independent variables and the dependent variable (adoption) were analysed by computing correlation coefficients (r).

The formula used was

$$r = \frac{\sum xy - \frac{(\sum x)(\sum y)}{n}}{\sqrt{[\sum x^2 - \frac{(\sum x)^2}{n}][\sum y^2 - \frac{(\sum y)^2}{n}]}}$$

Where r = correlation coefficient

x = Independent variable

y = dependent variable

n = number of observations

c. Multiple regression analysis:

Multiple regression model was fitted to determine the net contribution of selected independent variables to the dependent variable. For the computation, the procedure as given by Snedecor and Cochran (1967) was followed.

The regression equation employed in the study was

$$y = a + b_1 x_1 + b_2 x_2 + \dots + b_n x_n \quad \text{where}$$

y = dependent variable

x_1, \dots, x_n = independent variables

b_1, \dots, b_n = partial regression coefficients.

a = y-intercept

d. 't' test:

't' test was applied to the means of different variables for husbands and wives to bring out the significant difference, if any, between the groups in relation to a particular character chosen for analysis. The hypothesis was that the two samples will have the same mean. The formula used was as follows:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{SP \sqrt{(1/N_1) + (1/N_2)}}$$

where \bar{X}_1 and \bar{X}_2 = means of the samples X_1 and X_2

SP = Pooled standard deviation

N_1 and N_2 = Number of observations in samples X_1 and X_2

e. Chi-square test:

To find out the association or otherwise between the independent variables and the dependent variable, the chi-square test was applied. The respondents were first classified into high, medium and low adopters on the basis of their adoption index using mean and standard deviation as measures of check. Then in relation to the independent variables the categories were studied.

The formula used was

$$\chi^2 (r-1) (c-1) = \sum \frac{(O-E)^2}{E}$$

where, $(r-1) (c-1)$ = degrees of freedom of a $r \times c$ table

O = observed frequency

E = Expected frequency

r = number of rows

c = number of columns.

7. Operational definitions used in the study

1. Age:

Age of the respondent is operationally defined as the number of years completed by the respondent at the time of interview since birth.

2. Educational status:

This is defined as the level of formal education of the respondent.

3. Occupation:

Occupation is operationally defined as the vocation on which major share of time of respondent is spent for major source of income.

4. Land holding:

It is defined as the area of land under possession of the family of the respondent at the time of interview.

5. Herd size:

Herd size is defined as the number of animals (cattle, buffalo and/or goat) of all age groups under the possession of family of the respondent at the time of interview.

6. Annual income:

It is defined as the total income of the family in a year from occupation, dairying and all other sources.

7. Family size:

It is operationalised as the number of individuals, both young and adult, belonging to that family, residing in the house at the time of interview.

8. Social participation:

It is operationally defined as the frequency of participation of the respondent in individual and group interactions under different situations.

9. Experience in dairying:

Experience in dairying is operationalised as the number of years since the respondent is directly engaged in dairying.

10. Contact with extension agencies:

It is defined as the frequency of contact of the respondent with selected categories of extension workers.

11. Professional help available at farmers' premises:

It is defined as the frequency of availability of technical help and services from various officials at the respondent's premises.

12. Availability of inputs:

It is operationally defined as the availability of the selected inputs as and when required without much difficulty.

13. Socio-economic status:

It is operationally defined as the status of the individual that could be ascribed by other individuals in the social system, based on his educational status, occupation, land holding, herd size and social participation.

14. Extent of adoption of improved practices in dairying:

In this study it is operationalised as the degree to which various scientific practices are put into use by the respondent.

15. Adoption:

Adoption is the decision to make full use of an innovation.

16. Non-adoption:

It is the decision not to make use of an innovation.

17. Knowledge level:

Knowledge level of respondents in this study is operationally defined as the depth of awareness of the respondent about the selected aspects in dairying.

18. Physical involvement:

It is operationally defined as the extent of physical participation of each individual in the family involved in carrying out the activities (selected aspects) connected with dairying.

19. Involvement in decision-taking:

It is operationally defined as the role played by the individuals as decision makers in the family in matters connected with dairying.

20. Men and women:

Men and women in this study are operationally defined as the husbands and wives of the families.

21. Influence of women in adoption of improved dairying practices:

It is operationally defined as the contribution of the wives in the families in taking decisions in dairying.

Results

RESULTS

The results of this study are presented under the following sections.

1. Profile analysis of the respondents selected for the study.
2. Knowledge level of the respondents about improved practices in dairying.
3. Extent of physical involvement of respondents in dairying.
4. Extent of involvement of respondents in decision-taking about dairying.
5. Extent of adoption of improved practices in dairying by the respondents.
6. Association between independent variables and the dependent variable - extent of adoption of improved practices in dairying.
7. Reasons for non-adoption/partial adoption of selected aspects in dairying.

1. Profile analysis of the respondents selected for the study

Age:

The distribution of the respondents based on age is given in table 1.

Table 1. Distribution of respondents based on age.

Sl. No.	Category	Husbands		Wives	
		Frequency	Percentage	Frequency	Percentage
1.	Young (H-upto 44) W-upto 37)	19	19	19	19
2.	Middle (H-45 to 67) W-38 to 60)	67	67	67	67
3.	Old (H-68 and above) (W-61 and above)	14	14	14	14

H - Husbands; W - Wives

	<u>Mean</u>	<u>S.D.</u>
Husbands	55.18	11.654
Wives	48.46	11.688

Majority of the husbands and wives (67 per cent each) belonged to middle age group. Nineteen per cent each of the husbands and wives belonged to young age group and 14 per cent of husbands and wives belonged to old age group.

Educational status:

All the respondents studied were literate. Based on the educational status the respondents were classified as shown in Table 2.

Table 2. Distribution of respondents on the basis of educational status.

Sl. No.	Category	Husbands		Wives	
		Frequency	Percentage	Frequency	Percentage
1.	Those without formal education	4	4	9	9
2.	Lower Primary School	15	15	17	17
3.	Upper Primary School	57	57	56	56
4.	High School	21	21	17	17
5.	College	3	3	1	1

Table 2 illustrates that majority of the respondents (57 per cent of husbands and 56 per cent of wives) had educational status upto upper primary school. Twenty one per cent of the husbands and 17 per cent of the wives had high school education. Fifteen per cent of husbands and 17 per cent of wives had undergone lower primary school education. Four per cent of husbands and nine per cent of wives had not undergone any formal education, but they were literate. Three and one per cent respectively of husbands and wives had college education.

Occupation:

Based on occupation the respondents were classified as shown in Table 3.

Table 3. Distribution of respondents based on occupation.

Sl. No.	Category	Husbands		Wives	
		Frequency	Percentage	Frequency	Percentage
1.	Agricultural and other labourers	21	21	8	8
2.	Agriculture and allied activities	75	75	70	70
3.	Self employment	2	2	0	0
4.	Private employment	0	0	0	0
5.	Govt. employment	2	2	0	0
6.	Housewife	0	0	22	22

Table 3 reveals that majority of husbands and wives (75 per cent and 70 per cent respectively) were engaged in agriculture and allied activities. Twenty one per cent of the husbands and eight per cent of the wives were agricultural and other labourers. Two per cent of the husbands were self employed. None of the wives were self employed. None of the

respondents were engaged in private employment. Only two per cent of the husbands were government employees. Among the wives 22 per cent were engaged in household activities alone.

Land holding:

The respondents were classified based on their land holding into four categories as shown in table 4.

Table 4. Distribution of respondents based on land holding

Sl.No.	Category	Frequency	Percentage
1.	Below 10 cents	3	3
2.	10 cents to 1 ha	63	63
3.	1 to 2 ha	26	26
4.	Above 2 ha	8	8

The table 4 shows that majority of the respondents (63 per cent) had 10 cents to one hectare of land. Twenty six per cent had one to two hectares of land. While eight per cent were having above two hectares of land, three per cent were having only below 10 cents.

Herd size:

The respondents were categorised based on herd size as given in table 5.

Table 5. Distribution of respondents based on herd size.

Sl.No.	Category	Frequency	Percentage
1.	Large (5 and above)	4	4
2.	Medium (2 to 4)	85	85
3.	Small (1)	11	11
Mean = 2.42		S.D. : 1.103	

Table 5 shows that majority of the respondents (85 per cent) had medium sized herds. Only four per cent had large sized herds. Eleven per cent of the respondents had small herd size.

Annual Income:

Based on the total annual income of the family, the respondents were classified into three groups as shown in table 6.

Table 6. Distribution of respondents based on annual income

Sl.No.	Category	Frequency	Percentage
1.	High (Rs 8162 and above)	20	20
2.	Medium (Rs 1524 to 8161)	72	72
3.	Low (Upto Rs 1523)	8	8
Mean = 4842			SD = 3318.975

Table 6 illustrates that 72 per cent of the respondents belonged to the medium category of annual income. Twenty per cent and eight per cent belonged to high and low income groups respectively.

Family size:

Considering the scores obtained for family size the respondents were categorised as shown in table 7.

Table 7. Distribution of respondents based on family size.

Sl.No.	Category	Frequency	Percentage
1.	Large (9 and above)	10	10
2.	Medium (5 to 8)	60	60
3.	Small (upto 4)	30	30
Mean : 5.62			S.D. : 1.958

Table 7 reveals that the family size of majority of the respondents (60 per cent) were medium. Thirty per cent and 10 per cent of the respondents belonged to the family size of small and large respectively.

Social participation:

The respondents were grouped into three based on their social participation scores as shown in table 8

Table 8. Distribution of respondents based on social participation

Sl. No.	Category	Husbands		Wives	
		Frequency	Percentage	Frequency	Percentage
1.	High (H-10 and above) (W-7 and above)	7	7	6	6
2.	Medium (H-6 to 9) (W-4 to 6)	78	78	57	57
3.	Low (H-Upto 5) (W-Upto 3)	15	15	37	37

H - Husbands; W - Wives

	<u>Mean</u>	<u>S.D.</u>
Husbands	7.24	1.759
Wives	4.49	1.567

Table 8 reveals that 78 per cent of the husbands and 57 per cent of the wives had medium social participation. Fifteen per cent of the husbands and 37 per cent of the wives had low social participation. Seven and six per cent respectively of husband and wives had high social participation.

Experience in dairying:

The respondents were classified into three based on experience in dairying. The categories are presented in table 9.

Table 9. Distribution of respondents based on experience in dairying

Sl. No.	Category	Husbands		Wives	
		Frequency	Percentage	Frequency	Percentage
1.	Above 10 years	81	81	82	82
2.	5 to 10 years	9	9	9	9
3.	Less than 5 years	10	10	9	9

Table 9 illustrates that 81 per cent of husbands and 82 per cent of wives had more than 10 years experience in dairying. Ten per cent of husbands and nine per cent of wives had only less than five years of experience in dairying. Nine per cent of the respondents (both husbands and wives) had five to ten years of experience.

Contact with extension agencies:

The respondents based on their contact with different extension agencies were categorised into three as shown in table 10.

Table 10. Distribution of respondents based on contact with extension agencies.

Sl. Category No.	Husbands		Wives	
	Frequency	Percentage	Frequency	Percentage
1. High (H-5 and above) (W-3 and above)	6	6	11	11
2. Medium (H-3 and 4) (W-2)	42	42	9	9
3. Low (H-Upto 2) (W-1)	52	52	80	80

H - Husbands; W - Wives

	<u>Mean</u>	<u>S.D.</u>
Husbands	2.7	0.905
Wives	1.35	0.796

From table 10 it can be seen that 52 per cent of husbands and 80 per cent of wives had only low level of extension contact. Forty two per cent of the husbands and nine per cent of the wives belonged to the medium category. Only six per cent of husbands and 11 per cent of wives had high level of extension contact.

Availability of professional help at farmers' premises:

The respondents were categorised into three based on the availability of professional help at their premises, as shown in table 11.

Table 11. Distribution of respondents based on availability of professional help at their premises

Sl.No.	Category	Frequency	Percentage
1.	High (12 and above)	2	2
2.	Medium (8 to 11)	78	78
3.	Low (Upto 7)	20	20
Mean = 9.14		SD = 2.025	

Table 11 illustrates that majority of the respondents (78 per cent) belonged to the medium category. Twenty per cent of the respondents belonged to the low category. Only two per cent of the respondents belonged to the high category.

Availability of inputs:

On the basis of availability of inputs the respondents of the study were grouped into three as shown in table 12.

Table 12. Distribution of respondents based on availability of inputs

Sl.No.	Category	Frequency	Percentage
1.	High (4 and above)	13	13
2.	Medium (3)	12	12
3.	Low (upto 2)	75	75
Mean = 2.39			SD = 0.737

Table 12 reveals that 75 per cent of the respondents under the study belonged to the low category as far as the availability of inputs was concerned. Thirteen and twelve per cent of respondents belonged to high and medium categories respectively.

Socio-economic status:

Based on socio-economic status the respondents were grouped into three as shown in table 13.

Table 13. Distribution of respondents based on socio-economic status.

Sl. No.	Category	Husbands		Wives	
		Frequency	Percentage	Frequency	Percentage
1.	High (H-20 and above) (W-16 and above)	12	12	12	12
2.	Medium (H-14 to 19) (W-11 to 15)	66	66	67	67
3.	Low (H-Upto 13) (W-Upto 10)	22	22	21	21

H - Husbands; W - Wives

	<u>Mean</u>	<u>S.D.</u>
Husbands	15.89	2.737
Wives	12.56	2.54

Table 13 shows that 66 per cent of husbands and 67 per cent of wives had medium socio-economic status. Twenty two per cent of husbands and 21 per cent of wives had low socio-economic status. Twelve per cent each of husbands and wives had high socio-economic status.

Inter correlations between the independent variables of the respondents selected for the study

The inter correlations between the independent variables selected viz. age, educational status, occupation, land holding, herd size, annual income, family size, social participation,

experience in dairying, contact with extension agencies, availability of professional help at farmers premises, availability of inputs and socio-economic status were worked out for husband and wives and tabulated as shown in tables 14 and 15.

- X_1 = Age
- X_2 = Educational status
- X_3 = Occupation
- X_4 = Land holding
- X_5 = Herd size
- X_6 = Annual income
- X_7 = Family size
- X_8 = Social participation
- X_9 = Experience in dairying
- X_{10} = Contact with extension agencies
- X_{11} = Availability of professional help at farmers' premises
- X_{12} = Availability of inputs
- X_{13} = Socio-economic status.

Table 14 reveals that in the case of husbands age had highly significant positive correlation with family size, and experience in dairying. Availability of inputs was significantly and positively correlated with age. Educational status had significant positive correlation with land holding and socio-economic status of which the latter one was highly significant whereas it was significantly and negatively correlated with

Table 14. Inter correlation between independent variables (Husbands).

Variable	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	X ₁₁	X ₁₂	X ₁₃
X ₁	1.000												
X ₂	-0.087	1.000											
X ₃	-0.185	-0.250*	1.000										
X ₄	0.164	0.230*	-0.308**	1.000									
X ₅	-0.140	0.015	-0.036	0.035	1.000								
X ₆	0.164	0.142	-0.441**	0.433**	-0.162	1.000							
X ₇	0.346**	-0.035	-0.197*	0.097	0.019	0.176	1.000						
X ₈	0.012	0.115	0.272**	0.166	0.161	-0.151	0.065	1.000					
X ₉	0.318**	0.023	-0.181	0.007	-0.012	0.164	0.129	-0.054	1.000				
X ₁₀	0.007	-0.025	0.087	-0.021	0.249*	-0.062	-0.042	0.338**	0.110	1.000			
X ₁₁	0.065	-0.121	-0.125	-0.055	0.010	0.036	0.016	-0.302**	0.390**	-0.230*	1.000		
X ₁₂	0.214*	0.076	-0.175	0.318**	0.095	0.142	0.237*	0.075	0.156	-0.095	0.051	1.000	
X ₁₃	0.044	0.439**	-0.214*	0.522**	0.494**	0.091	0.109	0.719**	0.033	0.264**	-0.209*	0.207*	1.000

* - Significant at 5% level

** - Significant at 1% level

Table 15. Inter correlation between independent variables (Wife).

Variable	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	X ₁₁	X ₁₂	X ₁₃
X ₁	1.000												
X ₂	-0.368**	1.000											
X ₃	0.255*	-0.129	1.000										
X ₄	0.182	0.092	-0.024	1.000									
X ₅	-0.123	-0.035	-0.029	0.035	1.000								
X ₆	0.200*	0.098	-0.066	0.433**	-0.162	1.000							
X ₇	0.280**	-0.055	0.038	0.097	0.019	0.176	1.000						
X ₈	-0.304**	0.075	-0.089	-0.011	0.178	-0.008	0.042	1.000					
X ₉	0.293**	-0.006	0.250*	-0.011	0.035	0.139	0.106	-0.102	1.000				
X ₁₀	-0.013	0.084	-0.037	-0.105	0.015	-0.111	-0.173	-0.026	0.153	1.000			
X ₁₁	0.118	0.019	0.243*	-0.055	0.010	0.036	0.016	-0.181	0.418**	0.070	1.000		
X ₁₂	0.126	-0.012	-0.054	0.318**	0.095	0.142	0.237*	-0.053	0.145	-0.046	0.051	1.000	
X ₁₃	-0.172	0.351**	0.209*	0.369**	0.532**	0.085	0.070	0.684**	0.039	-0.048	-0.049	0.076	1.000

-Significant at 5% level

-Significant at 1% level

occupation. Occupation showed significant and negative correlation with land holding, annual income, family size and socio-economic status of which the former two were highly significant, whereas a highly significant positive correlation was shown with social participation. Land holding had highly significant positive correlation with annual income, availability of inputs and socio-economic status. Herd size was significantly and positively related to contact with extension agencies and it had a highly significant positive relationship with socio-economic status. Family size and availability of inputs were positively and significantly correlated. Social participation was highly significantly and positively correlated with contact with extension agencies and socio-economic status and highly significantly and negatively correlated to availability of professional help at farmers' premises.

Experience in dairying and availability of professional help at farmers' premises were highly significantly and positively correlated. So also contact with extension agencies and socio-economic status. Contact with extension agencies and availability of professional help at farmers' premises were significantly and negatively correlated. A significant negative correlation existed between availability of professional help at farmers' premises and socio-economic status. Availability of

inputs and socio-economic status were positively and significantly correlated.

Table 15 shows that in the case of wives age had significant positive correlation with occupation, annual income, family size and experience in dairying of which the latter two were highly significant. Age had highly significant negative correlation with educational status and social participation. Educational status and socio-economic status were positively and highly significantly correlated. Occupation was significantly and positively correlated with experience in dairying, availability of professional help at farmers' premises and socio-economic status. Land holding showed highly significant positive correlation with annual income, availability of input and socio-economic status. Herd size and socio-economic status were positively and highly significantly correlated. Family size and availability of inputs were significantly and positively related. So also between social participation and socio-economic status but with high significance. Experience in dairying and availability of professional help at farmers' premises were positively correlated with a high significance.

2. Knowledge level of respondents about improved practices in dairying

Based on knowledge level the respondents were categorised as shown in table 16.

Table 16. Distribution of respondents based on knowledge about improved practices in dairying

Sl. No.	Category	Husbands		Wives	
		Frequency	Percentage	Frequency	Percentage
1.	High (H-23 and above) (W-21 and above)	10	10	9	9
2.	Medium (H-18 to 22) (W-15 to 20)	62	62	70	70
3.	Low (H-Upto 17) (W-Upto 14)	28	28	21	21

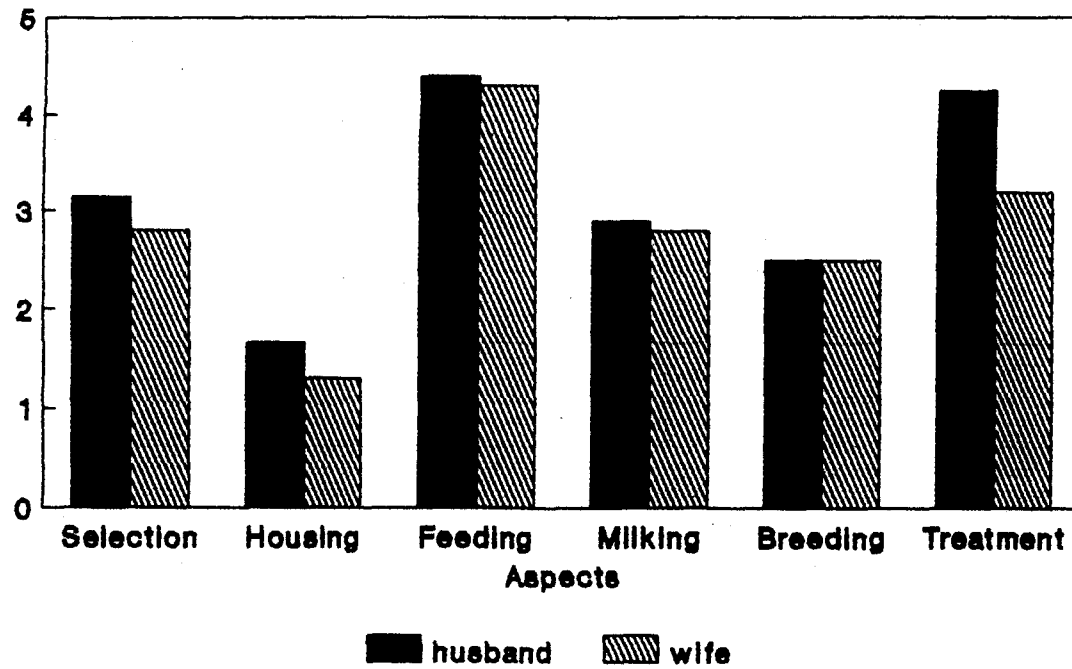
H - Husbands; W - Wives

	<u>Mean</u>	<u>S.D.</u>
Husbands	19.2	2.6
Wives	16.8	2.7

Table 16 illustrates that 62 per cent of the husbands and 70 per cent of wives had medium level of knowledge about improved dairying practices. Twenty eight per cent of husbands and 21 per cent of wives had low knowledge levels and ten and nine per cent respectively of husbands and wives had high level of knowledge. The knowledge levels of husbands and wives about the practices under the selected aspects are presented graphically based on the mean for each aspect in Plate No.I.

PLATE I

Graph showing knowledge level of husbands and wives



Results of 't' test applied to find out the difference if any, between the husbands and wives about the practices under the selected aspects are shown in table 17.

Table 17. Results of 't' test applied to the knowledge levels of husbands and wives

Sl. No.	Aspects in dairying	Husbands		Wives		't' value (in absolute terms)
		Mean	S.E.	Mean	S.E.	
1.	Selection	3.14	0.09	2.8	0.09	5.1880**
2.	Housing	1.66	0.084	1.3	0.06	4.0159**
3.	Feeding	4.4	0.10	4.3	0.10	1.1235NS
4.	Milking	2.9	0.08	2.8	0.08	1.1063NS
5.	Breeding	2.5	0.08	2.5	0.09	0.1671NS
6.	Treatment	4.24	0.107	3.2	0.11	6.5497**
7.	Total	19.2	0.26	16.8	0.27	6.3156**

** - Significant at 1% level

NS - Non-significant

A perusal of table 17 reveals that the knowledge levels of husbands were significantly higher than that of wives in the case of aspects like selection, housing and treatment. The knowledge level of husbands was significantly higher than that of the wives when all the aspects were taken together.

3. Extent of Physical involvement of the respondents in dairying

The respondents were classified into three groups on the basis of their extent of physical involvement in dairying. The classification is shown in table 18.

Table 18. Distribution of respondents based on their extent of physical involvement in dairying.

Sl. No.	Category	Husbands		Wives	
		Frequency	Percentage	Frequency	Percentage
1.	High (H-20 and above) (W-18 and above)	11	11	10	10
2.	Medium (H-12 to 19) (W-11 to 17)	71	71	71	71
3.	Low (H-Upto 11) (W-Upto 10)	18	18	19	19

H - Husbands; W - Wives

	<u>Mean</u>	<u>S.D.</u>
Husbands	15.0	4.0
Wives	13.4	3.4

Table 18 shows that majority of husbands and wives (71 per cent each) belonged to the medium category as far as physical involvement in dairying was concerned. Eighteen per cent of husbands and 19 per cent of wives had only low physical involvement in dairying whereas 11 and 10 per cent respectively of husband and wives had high physical involvement.

A graphic representation of the physical involvement of husbands and wives in practices under the selected aspects in dairying is given in plate II based on the mean values for each aspect.

Results of 't' test applied to know the difference if any, between the husbands and wives are shown in table 19.

From table 19 it can be seen that husbands had significantly higher physical involvement in aspects like selection, breeding and treatment, than the wives, while the wives, had significantly higher physical involvement than the husbands in aspects like housing and feeding. As far as the total physical involvement in dairying was concerned, the husbands were at a significantly higher position than the wives.

PLATE II

Graph showing physical involvement of husbands and wives

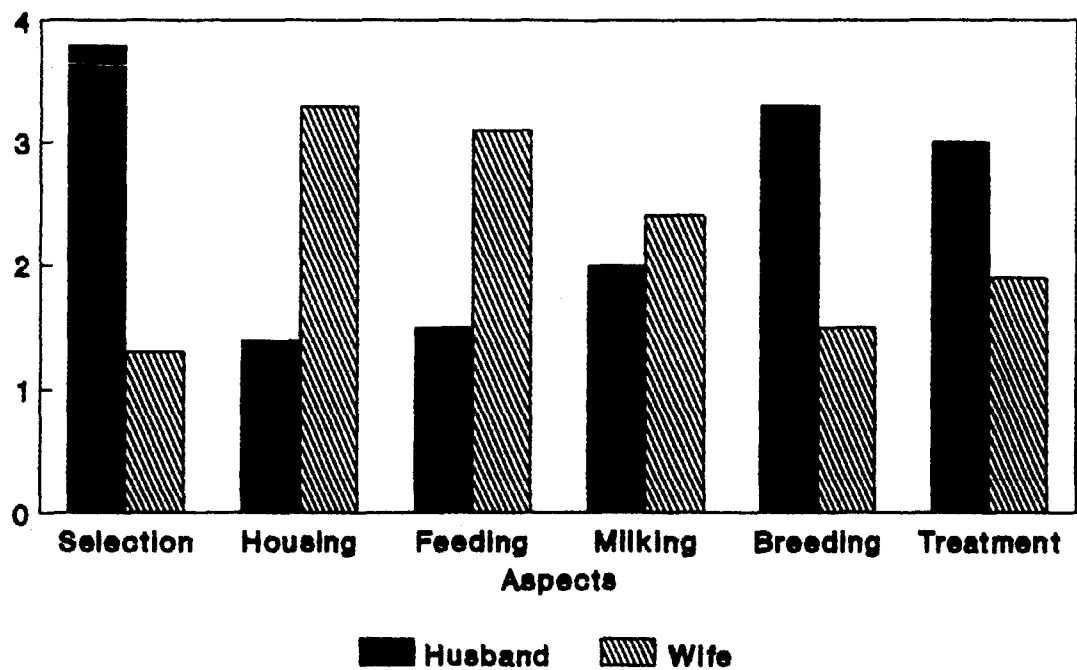


Table 19. Results of 't' test applied to the physical involvement scores of husbands and wives.

Sl. No.	Aspects in dairying	Husbands		Wives		't' value (in absolute terms)
		Mean	S.E.	Mean	S.E.	
1.	Selection	3.8	0.07	1.3	0.05	27.8280**
2.	Housing	1.4	0.09	3.3	0.11	13.5491**
3.	Feeding	1.5	0.01	3.1	0.12	10.1435**
4.	Milking	2.0	0.13	2.4	0.13	2.3125NS
5.	Breeding	3.3	0.12	1.5	0.09	11.7348**
6.	Treatment	3.0	0.14	1.9	0.09	7.0213**
7.	Total	15.0	0.40	13.4	0.34	2.9513**

** - Significant at 1% level

NS - Non-significant

A percentage distribution was worked out to find out the extent of involvement of children in the physical activities in dairying. The results are shown in table 20.

Table 20. Pattern of physical involvement of children
(Percentage)

Practices	Children					
	Male			Female		
	Always	Often	Some- times	Always	Often	Some- times
Selection	2	1	10	-	-	1
Housing	2	1	6	7	1	14
Feeding	6	-	6	6	1	16
Milking	13	-	4	8	-	7
Breeding	10	-	11	-	-	-
Treatment	15	-	12	-	-	2

Table 20 reveals the following. The involvement of male children was always seen in the aspect of selection in two families, in housing two families, in feeding six families, in milking 13 families, in breeding 10 families and in treatment 15 families. Occasional involvement of male children could be noticed in the case of selection, housing, feeding, milking, breeding and treatment, in 10, six, six, four, 11 and 12 families respectively. A more frequent involvement was noticed in one family each in the case of selection and housing.

The involvement of female children was always noticed in aspects of housing, feeding and milking in the case of seven, six

and eight families respectively. Occasional involvement was noticed in aspects of selection, housing, feeding, milking and treatment in the case of one, 14, 16, seven and two families respectively. A more frequent involvement was noticed in one family each in the case of housing and feeding.

4. Extent of involvement of the respondents in decision-taking about dairying

The respondents were categorised into three groups based on the extent of involvement in decision-taking about dairying, as shown in table 21.

Table 21. Distribution of respondents based on the extent of involvement in decision-taking.

Sl. No.	Category	Husbands		Wives	
		Frequency	Percentage	Frequency	Percentage
1.	High (H-21 and above) (W-14 and above)	18	18	14	14
2.	Medium (H-11 to 20) (W-7 to 13)	61	61	54	54
3.	Low (H-Upto 10) (W-Upto 6)	21	21	32	32

H - Husbands; W - Wives

	<u>Mean</u>	<u>S.D.</u>
Husbands	15.03	4.8
Wives	9.6	3.6

Table 21 illustrates that majority of the husbands and wives (61 per cent and 54 per cent respectively) were showing medium involvement whereas 21 per cent of the husbands and 32 per cent of the wives showed low involvement and 18 per cent of husbands and 14 per cent of wives showed high involvement. The involvement of husbands and wives in decision-taking about the practices under the selected aspects is graphically presented in Plate III.

The results of 't' test applied to know the difference if any, between husbands and wives are shown in table 22.

Table 22. Results of 't' test applied to the scores obtained by husbands and wives for extent of involvement in decision-taking.

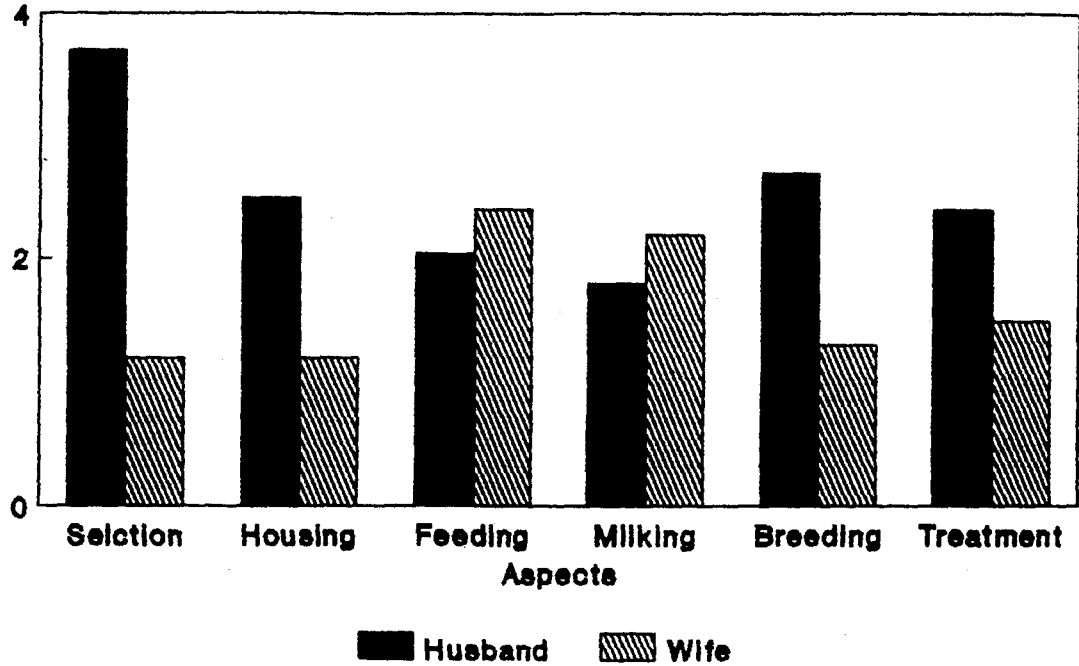
Sl. No.	Aspects in dairying	Husbands		Wives		't' value (in absolute terms)
		Mean	S.E.	Mean	S.E.	
1.	Selection	3.7	0.09	1.2	0.05	23.0349**
2.	Housing	2.5	0.15	1.2	0.05	7.8741**
3.	Feeding	2.04	0.138	2.4	0.15	1.8947NS
4.	Milking	1.8	0.13	2.2	0.14	1.9636NS
5.	Breeding	2.7	0.15	1.3	0.08	8.2085**
6.	Treatment	2.4	0.15	1.5	0.10	5.1248**
7.	Total	15.03	0.48	9.6	0.36	9.0488**

** - Significant at 1% level

NS - Non-significant

PLATE III

Graph showing involvement of husbands and wives in decision making



A perusal of table 22 shows that the husbands had significantly higher involvement in decision-taking about selection, housing, breeding and treatment. Husbands had significantly higher involvement in decision-taking than wives when all the aspects were taken together. Though the mean scores of wives were higher for feeding and milking aspects, the values were not significant.

A percentage distribution was worked out to find out the extent of involvement of children in decision-taking about dairying. The results are presented in table 23.

Table 23. Pattern of involvement of children in decision-taking. (Percentage)

Practices	Children					
	Male			Female		
	Always	Often	Some- times	Always	Often	Some- times
Selection	2	-	4	-	-	-
Housing	5	-	-	1	-	-
Feeding	3	-	1	4	-	6
Milking	8	-	1	8	-	3
Breeding	7	-	4	1	-	-
Treatment	6	-	-	1	-	-

Table 23 shows the extent of involvement of children in decision-taking with regard to selected aspects in dairying.

The male children in the family always involved in decision-taking in selection, housing, feeding, milking, breeding and treatment in the case of two, five, three, eight, seven and six families respectively. An occasional involvement could be seen in selection, feeding, milking and breeding in the case of four, one, one and four families respectively.

The female children in the family were involved always in decision-taking in aspects of housing, feeding, milking, breeding and treatment in the case of one, four, eight, one and one families respectively. Their occasional involvement could be noticed in feeding and milking in the case of six and three families respectively.

5. Extent of adoption of improved practices in dairying by the respondents:

Based on the adoption index of the respondents, they were classified into three categories as shown in table 24.

Table 24. Distribution of respondents based on adoption index.

Sl. No.	Category	Frequency	Percentage
1.	High (98 and above)	21	21
2.	Medium (76 to 97)	61	61
3.	Low (upto 75)	18	18
Mean = 86.037			S.D. 11.097

Table 24 reveals that majority of the respondents (61 per cent) were medium adopters. High adoption indices were shown by 21 per cent of the respondents and rest 18 per cent of the respondents only, had low adoption indices (Plate IV).

6. Association between independent variables and the dependent variable - extent of adoption of improved practices in dairying

Thirteen independent variables were considered for the study. Their relationships with the dependent variable are given below under the respective headings.

Age:

Table 25 shows the distribution of the respondents according to the age groups and adoption indices.

PLATE IV

Graph showing distribution of respondents based on adoption index

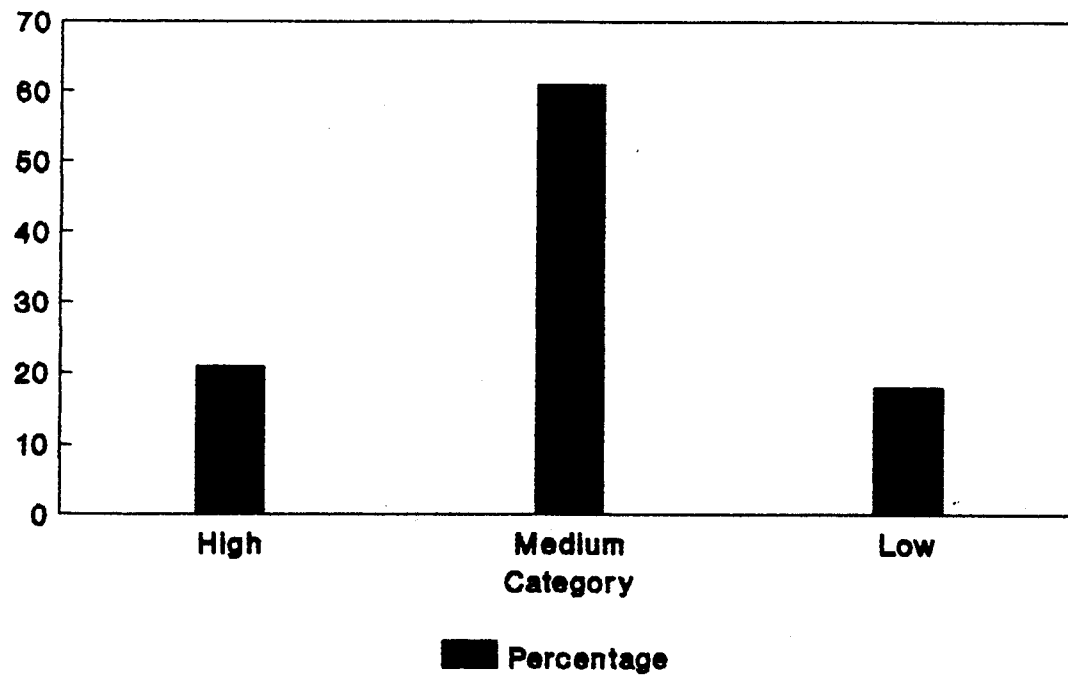


Table 25. Distribution of respondents based on age and adoption index.

	Adoption index					
	Husbands			Wives		
	High	Medium	Low	High	Medium	Low
Young	2	9	8	3	9	7
Middle aged	17	44	6	15	44	8
Old	2	8	4	3	8	3

Husbands $\chi^2 = 12.2316^*$
df = 4

Wives $\chi^2 = 6.7315$ NS

* = Significant at 5% level

NS = Non-significant

The chi-square test showed significant association between age and adoption index in the case of husbands only.

Educational status:

The distribution of respondents according to educational status and adoption index is given in table 26.

Table 26. Distribution of respondents based on educational status and adoption index.

Educational status	Adoption index					
	Husbands			Wives		
	High	Medium	Low	High	Medium	Low
Without formal education	1	2	1	1	7	1
Lower Primary School	5	5	5	5	10	2
Upper Primary School	8	41	8	10	35	11
High School	6	12	3	5	9	3
College	1	1	1	0	0	1
Husbands	$\chi^2 = 9.8484$ NS			$\chi^2 = 7.6934$ NS		
	df = 8					

NS = Non-significant

The chi-square test revealed no significant relationship between educational status and adoption index in either cases.

Occupation:

The distribution of respondents considering occupation and adoption index is shown in table 27.

Table 27. Distribution of respondents on the basis of occupation and adoption index.

Occupation	Adoption index					
	Husbands			Wives		
	High	Medium	Low	High	Medium	Low
Agricultural and other labourers	3	13	5	1	6	1
Agriculture and allied activities	16	46	13	13	44	13
Self employment	0	2	0	0	0	0
Private employment	0	0	0	0	0	0
Govt. employment	2	0	0	0	0	0
Housewife	0	0	0	7	11	4
Husbands	$\chi^2 = 9.6737$ NS df = 6			Wives $\chi^2 = 12.2521$ NS df = 4		

NS = Non-significant

The chi-square test revealed that occupation was not significantly associated with adoption indices of husbands and wives.

Land holding:

The distribution of respondents based on their land holding and adoption index is given the table 28.

Table 28 Distribution of respondents based on land holding and adoption index.

Land holding	Adoption index		
	High	Medium	Low
Below 10 cents	1	1	1
10 cents to 1 ha	11	40	12
1 to 2 ha	6	16	4
Above 2 ha	3	4	1

$$\chi^2 = 15.1999^*$$

df = 6

* Significant at 5% level

The chi-square test showed that land holding and adoption were significantly related.

Herd size:

The distribution of respondents based on herd size and adoption index is shown in table 29.



Table 29. Distribution of respondents based on herd size and adoption index.

Herd size	Adoption index		
	High	Medium	Low
Large	0	4	0
Medium	19	49	17
Small	2	8	1

$$\chi^2 = 18.9515^{**}$$

$$df = 4$$

** Significant at 1% level

The chi-square test showed that herd size and adoption were highly significantly related.

Annual income:

The distribution of respondents on the basis of annual income and adoption is shown in table 30.

Table 30. Distribution of respondents based on annual income and adoption index.

Annual income	Adoption index		
	High	Medium	Low
Large	5	14	1
Medium	16	39	17
Small	0	8	0

$\chi^2 = 9.4576$ NS
 df = 4
 NS Non-significant

Chi-square test revealed no significant relationship between annual income and adoption.

Family size:

The distribution of respondents based on family size and adoption is given in table 31.

Table 31. Distribution of respondents based on family size and adoption index.

Family size	Adoption index		
	High	Medium	Low
Large	1	7	2
Medium	14	35	11
Small	6	19	5

$\chi^2 = 1.0310$ NS
 df = 4
 NS Non-significant

The chi-square test revealed that family size and adoption index were not significantly related.

Social participation:

Based on social participation and adoption index of the respondents the distribution is as shown in table 32.

Table 32. Distribution of respondents based on social participation and adoption index.

Social participation	Adoption index					
	Husbands			Wives		
	High	Medium	Low	High	Medium	Low
High	2	2	3	0	6	0
Medium	16	50	12	17	29	11
Low	3	9	3	4	26	7
Husbands	$\chi^2 = 4.3223$ NS df = 4			Wives $\chi^2 = 9.3284$ NS		

NS = Non-significant

The chi-square test revealed that social participation and adoption index were not significantly related.

Experience in dairying:

Based on the experience in dairying and adoption index of the respondents the distribution is as shown in table 33.

Table 33. Distribution of respondents based on experience in dairying and adoption index.

Experience in dairying	Adoption index					
	Husbands			Wives		
	High	Medium	Low	High	Medium	Low
Above 10 years	18	50	13	18	50	14
5-10 years	1	6	2	1	6	2
Less than 5 years	2	5	3	2	5	2

Husbands $\chi^2 = 1.0746$ NS

Wives $\chi^2 = 1.2833$ NS

df = 4

NS = Non-significant

The chi-square test showed that experience in dairying and adoption were not significantly related.

Contact with extension agencies:

The respondents' distribution based on contact with extension agencies and adoption index is shown in table 34.

Table 34. Distribution of respondents based on contact with extension agencies and adoption index.

Contact with extension agencies	Adoption index					
	Husbands			Wives		
	High	Medium	Low	High	Medium	Low
High	1	3	2	2	7	2
Medium	6	30	6	5	4	0
Low	14	28	10	14	50	16

Husbands $\chi^2 = 8.9053$ NS

Wives $\chi^2 = 7.8701$ NS

df = 4

NS = Non-significant

The chi-square test showed that contact with extension agencies and adoption index were not significantly related.

Availability of professional help at farmers' premises:

The distribution of respondents based on availability of professional help at farmers' premises and adoption is shown in table 35.

Table 35. Distribution of respondents based on availability of professional help at farmers' premises and adoption index.

Availability of professional help at farmers' premises	Adoption index		
	High	Medium	Low
High	0	1	1
Medium	17	49	12
Low	4	11	5

$$\chi^2 = 2.6259 \text{ NS}$$

$$df = 4$$

NS = Non significant

Chi-square test showed that availability of professional help at farmers' premises and adoption were not significantly related.

Availability of inputs:

The distribution of respondents based on availability of inputs and adoption is given in table 36.

Table 36. Distribution of respondents based on availability of inputs and adoption index.

Availability of inputs	Adoption index		
	High	Medium	Low
High	3	9	1
Medium	2	7	3
Low	16	45	14

$$X^2 = 1.4211 \text{ NS}$$

$$df = 4$$

NS = Non-significant

It was seen that availability of inputs and adoption index were not significantly related.

Socio-economic status:

The distribution of respondents based on socio-economic status and adoption index is shown in table 37.

Table 37. Distribution of respondents on the basis of socio-economic status and adoption index.

Socio-economic status	Adoption index					
	Husbands			Wives		
	High	Medium	Low	High	Medium	Low
High	3	6	3	1	9	2
Medium	15	40	11	16	38	13
Low	3	15	4	4	14	3

Husbands $\chi^2 = 3.4363$ NS

Wives $\chi^2 = 7.5830$ NS

df = 4

NS = Non-significant

The chi-square test revealed that socio-economic status and adoption index were not significantly related.

Correlation between independent variables and the dependent variable:

The correlation coefficients computed between each independent variable and adoption of each of the selected aspects are shown in tables 38 and 39. A pictorial representation of this is given in plate V.

Table 38. The values of correlation coefficients between the selected socio-economic factors and the extent of adoption of selected practices (Husbands).

	Age	Educational status	Occupation	Land holding	Herd size	Annual income	Family size	Social participation	Experience in dairying	Contact with extn. agencies	Availability of professional help	Availability of inputs	Socio-economic status
Selection	0.120	-0.021	-0.068	-0.029	0.119	0.129	0.058	0.030	0.204*	0.089	0.014	0.150	0.029
Housing	0.066	-0.004	-0.109	0.220*	-0.057	0.039	-0.139	-0.041	-0.089	-0.055	-0.213*	-0.056	0.034
Feeding	0.152	0.087	-0.286**	0.141	-0.019	0.086	0.087	-0.055	0.124	-0.075	0.033	0.076	0.064
Milking	-	-	-	-	-	-	-	-	-	-	-	-	-
Breeding	-0.018	0.040	-0.069	0.001	0.102	0.137	0.019	-0.017	0.122	0.094	0.084	-0.019	0.065
Treatment	-0.095	0.086	-0.059	0.008	-0.042	-0.011	0.085	-0.104	0.119	-0.141	0.361**	0.120	-0.050
Total	0.074	0.071	-0.223*	0.153	0.029	0.142	0.016	-0.078	0.156	-0.039	0.084	0.080	0.056

* -Significant at 5% level

** -Significant at 1% level

Table 39. The values of correlation coefficients between the selected socio-economic factors and the extent of adoption of selected practices (Wives).

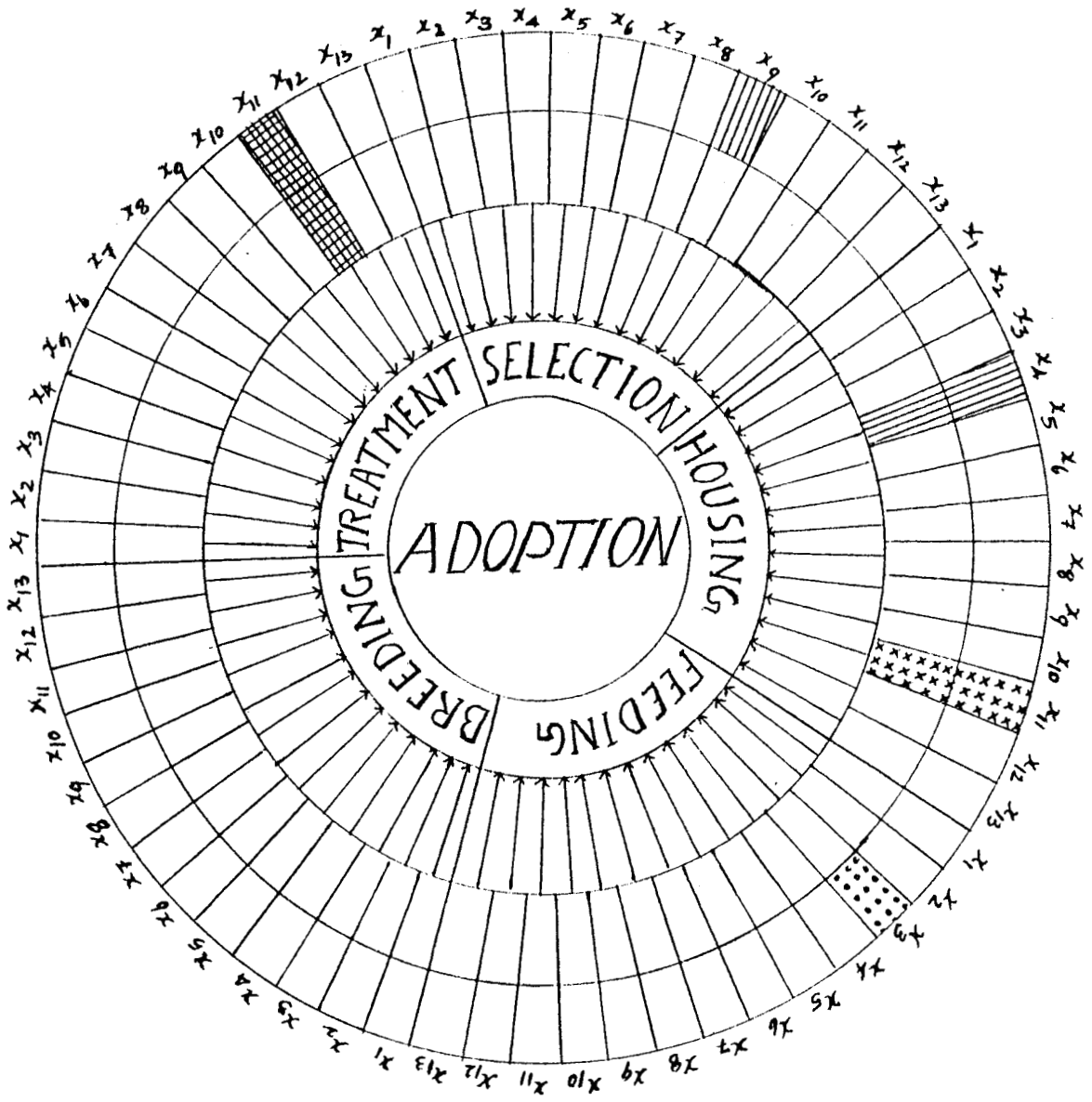
	Age	Educational status	Occupation	Land holding	Herd size	Annual income	Family size	Social participation	Experience in dairying	Contact with extn. agencies	Availability of professional help	Availability of inputs	Socio-economic status
Selection	0.127	-0.152	0.015	-0.029	0.119	0.129	0.058	-0.025	0.163	0.132	0.014	0.150	-0.040
Housing	0.112	-0.118	-0.076	0.220*	-0.057	0.039	-0.139	-0.032	-0.116	-0.015	-0.213*	-0.056	-0.045
Feeding	0.174	-0.095	-0.039	0.141	-0.019	0.086	0.087	-0.030	0.088	-0.042	0.033	0.076	-0.021
Milking	-	-	-	-	-	-	-	-	-	-	-	-	-
Breeding	0.026	-0.028	0.117	0.001	0.102	0.137	0.019	-0.146	0.105	-0.002	0.084	-0.019	-0.045
Treatment	-0.089	0.124	-0.031	0.008	-0.042	-0.011	0.085	-0.072	0.139	0.003	0.361**	0.120	-0.044
Total	0.128	-0.101	-0.007	0.153	0.029	0.142	0.016	-0.126	0.119	0.018	0.084	0.080	-0.079

* -Significant at 5% level

** -Significant at 1% level

PLATE V

Association between selected socio-economic factors and adoption

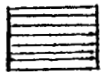


Outer circle - Husbands; Inner circle - Wives

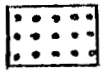
X₁ X₁₃ - Selected socio-economic factors



Positive, highly significant



Positive, significant



Negative, highly significant



Negative, significant

A perusal of table 38 reveals that in the case of husbands a significant positive correlation existed between experience in dairying and adoption of scientific selection. So also between land holding and adoption of scientific housing. Availability of professional help at farmers' premises and adoption of scientific housing were significantly and negatively correlated. A highly significant but negative correlation existed between adoption of scientific feeding and occupation. Adoption of scientific treatment and availability of professional help at farmers' premises were positively correlated with high significance. The total adoption score has shown significant correlation only with occupation which was negative. Other independent variables were not having any significant relationship with adoption of selected aspects in the case of husbands.

From table 39 it can be seen that in the case of wives land holding and adoption of scientific housing were positively and significantly related. Whereas availability of professional help at farmers' premises was significantly and negatively correlated with adoption of scientific housing. Availability of professional help at farmers' premises and adoption of scientific treatment showed positive correlation which was highly significant.

A multiple linear regression of the independent variables on the extent of adoption indicated overall non-significance both in

the case of husbands and wives as shown by analysis of variance (Table 40 and 41).

Table 40. Table showing the results of analysis of variance in the case of husbands.

Source	Sum of squares	d.f.	M.S.S.	F
Regression	20.509628	13	1.57766	0.62 NS
Residual	220.240372	86	2.56093	
Total	240.75000	99		

NS = Non-significant

Table 41. Table showing the results of analysis of variance in the case of wives.

Source	Sum of squares	d.f.	M.S.S.	F
Regression	24.057119	13	1.85055	0.73 NS
Residual	216.692881	86	2.51968	
Total	240.75000	99		

NS = Non-significant

The regression equation fitted in the case of husbands was;

$$\begin{aligned}
 y = & 19.2974 + 0.001989x_1 + 0.1827x_2 - 0.5956x_3 \\
 & + 0.4886x_4 + 0.2590x_5 + 0.000003646x_6 \\
 & - 0.03888x_7 + 0.1862x_8 + 0.3557x_9 \\
 & - 0.08538x_{10} - 0.006248x_{11} - 0.02701x_{12} \\
 & - 0.2146x_{13} + e
 \end{aligned}$$

The coefficient of determination (R^2) was 0.085.

The regression equation fitted in the case of wives was;

$$\begin{aligned}
 y = & 14.9872 + 0.008373x_1 + 0.3253x_2 + 0.1856x_3 \\
 & + 0.9189x_4 + 0.5884x_5 + 0.00004134x_6 \\
 & - 0.02072x_7 + 0.4124x_8 + 0.2357x_9 \\
 & + 0.01234x_{10} + 0.02645x_{11} - 0.03738x_{12} \\
 & - 0.5107x_{13} + e
 \end{aligned}$$

The coefficient of determination (R^2) was 0.100.

7. Reasons for non-adoption/partial adoption of selected aspects in dairying

Major constraints as pointed out by the respondents in the adoption of scientific selection are given in table 42.

Table 42. Constraints in the adoption of scientific selection.

Reasons	Frequency
1. Lack of money	28
2. High cost of cow	3
3. Lack of availability of good quality cow	1

From table 42 it can be seen that the major constraint in the adoption of scientific selection of cows was the financial stringency of the respondents.

The reasons for non-adoption of scientific housing as pointed out by the respondents are given in table 43.

Table 43. Reasons for non-adoption of scientific housing

Non adoption of	Reasons	Frequency
Pucca shed	1. Lack of money	7
	2. Lack of land	1
	3. Limited number of animals	1
Provision for minimum facilities	1. Lack of money	20
Provision for sufficient space for manager	1. Lack of money	11
	2. Lack of land	1

A perusal of table 43 reveals that the major reason for non-adoption of scientific housing was lack of money.

The major constraints faced by the farmers in adopting scientific feeding practices are given in table 44.

Table 44. Constraints in the adoption of scientific feeding.

Reasons	Frequency
1. Less milk production potential of animals	34
2. High cost of feed	30
3. Lack of money	2

Table 44 shows that the major reasons for non-adoption of scientific feeding were low milk production potential of animals and the high cost of feed.

The difficulties faced by the farmers in adopting scientific breeding practices are given in table 45.

Table 45. Constraints faced by farmers in adopting scientific breeding practices.

Reasons	Frequency
1. Animals not conceiving by Artificial insemination	35
2. Easy availability of breeding bull	3
3. Lack of staff in the Artificial Insemination Centre when required	2

Table 45 reveals that the major difficulty faced by farmers in adopting scientific breeding practice was the non-conception of animals by artificial insemination.

The reasons pointed out for partial adoption of scientific treatment are given in table 46.

Table 46. Reasons for partial adoption of scientific treatment.

Partial adoption of	Reasons	Frequency
Scientific treatment to animals	1. Easy availability of local medicines	8
	2. Lack of persons to go and seek veterinary aid	2
Deworming of calves	1. Non availability of drugs in the society	9
	2. Lack of persons to go and purchase drugs	3

From table 46 it can be seen that the major reason for partial adoption of scientific treatment to animals was the easy availability of local medicines. Non availability of deworming drugs was the major reason for partial adoption of deworming practice.

Discussion

DISCUSSION

Based on the objectives and observations of the study, the results are discussed under the following sections.

1. Knowledge level of the respondents about improved practices in dairying.
2. Extent of physical involvement of respondents in dairying.
3. Extent of involvement of respondents in decision-taking about dairying.
4. Extent of adoption of improved practices in dairying by the respondents.
5. Association between independent variables and the dependent variable - extent of adoption of improved practices in dairying.
6. Reasons for non-adoption/partial adoption of selected aspects in dairying.

The majority of the respondents studied (75 per cent of husbands and 70 per cent of wives) were engaged in agriculture and allied activities. Most of them belonged to the middle age group (67 per cent of husbands and wives). Regarding their educational status, 57 per cent of the husbands and 56 per cent of wives had upper primary level and 21 per cent of husbands and 17 per cent of wives had high school level of education. Only three husbands and one of the wives had collegiate level of

education. The rest belonged to the level of lower primary and below. Majority of the respondents (63 per cent) were having land holding of 10 cents to one hectare. Twenty six per cent were having one to two hectares, eight per cent having above two hectares and only three per cent were having below 10 cents of land. Among the respondents 85 per cent were having medium herd size of two to four, 11 per cent small herd size of one and only four per cent were having large herd size of five and above. The annual income of 72 per cent of the respondents was medium (Rs 1524 to 8161), 20 per cent was high (above Rs 8162) and eight per cent with low income of below Rs 1523. Sixty per cent of the respondents were having medium family size (5 to 8), 30 per cent small family (upto 4) and only 10 respondents were having large family size of nine and above. While 78 per cent of husbands and 57 per cent of wives were having medium social participation, 15 per cent of husbands and 37 per cent of wives were having low social participation and only seven per cent of husbands and six per cent of wives were having high social participation. Regarding the experience in dairying a good number of the respondents (81 per cent of husbands and 82 per cent of wives) were having above 10 years of experience, whereas nine per cent each of the husbands and wives were having five to 10 years of experience and 10 per cent of husbands and nine per cent of wives were having less than five years of experience. The extension contact was generally poor as 52 per cent of the husbands and 80

per cent of the wives had only low extension contact followed by 42 per cent of the husbands and nine per cent of the wives with medium contact and six per cent of husbands and 11 per cent of wives having high extension contact. As far as the professional help available to the respondents at their premises was concerned, 78 per cent were having medium availability, 20 per cent were having low availability and only two per cent were having high availability. Based on the availability of inputs which is the essential pre-requisite for dairying the categorisation of respondents showed the following profile. Seventy five per cent belonged to low category followed by 13 per cent high and 12 per cent medium category. Majority of the respondents (66 per cent of husbands and 67 per cent of wives) belonged to the medium category of socio-economic status followed by 22 per cent of husbands and 21 per cent of wives with low socio-economic status and 12 per cent each of husbands and wives having high socio-economic status. The influence of the above characteristics on the adoption of improved practices in dairying is discussed in detail under the respective sections.

1. Knowledge level of respondents about improved practices in dairying

The knowledge level of the respondents about the selected aspects in general was average which can be understood from table 16. Sixty two per cent of the husbands and 70 per cent of the

wives were having medium knowledge level while 10 per cent of the husbands and nine per cent of wives were having high knowledge level, only 28 per cent of the husbands and 21 per cent of the wives were having low level of knowledge about the selected aspects in dairying. The knowledge level of the husbands in general was found to be significantly high when compared with that of wives (Table 17). As far as the selected aspects were concerned individually, in the aspects of selection, housing and treatment, the knowledge level of husbands was significantly higher than that of the wives. But in the case of feeding, milking and breeding there was no significant difference in the knowledge levels between the husbands and wives.

In the study of Gill and Singh (1977) it was found that the knowledge level of respondents differs in various aspects of livestock rearing. In the same year Surendran and Pushkaran concluded that people have above average level of knowledge about livestock rearing. Sohal and Tyagi (1978) reported that the level of knowledge of the respondents in non-I.C.D.P. area was very low as compared to that of I.C.D.P. areas. Similarly Pachori and Tripathi (1983) found that contact farmers of all age groups in intensive agricultural extension and research programme had higher knowledge level as compared to non-contact farmers. As far as the state of Kerala is concerned more efforts were taken to publicise the recommended practices among the farmers during the

70s As such the study of Surendran and Pushkaran (1977) revealed an above average knowledge level among the respondents. The trend of increasing knowledge level about dairy husbandry practices among the farmers in other states also during these periods is evidenced by the studies of Sohal and Tyagi (1978) and Pachori and Tripathi (1983), which showed higher knowledge levels among contact farmers. At the same time Rathore and Shaktawat (1990) noted 61.66 per cent of farm women had only low knowledge level and 38.33 per cent had high knowledge level about innovations in bajra cultivation. Similarly due to the extension efforts during 70s the farmers started the adoption of the recommended practices and they were having fairly satisfactory knowledge about the practices as shown by Surendran and Pushkaran (1977). As a result of continued adoption through the subsequent years it has already become a part of their dairy management practices (adoption behaviour). Somasundaram and Singh (1978) concluded that adopter small farmers had more knowledge level than non-adopter small farmers. Similarly Prabhu and Kandan (1990) noted that the mean knowledge score of adopters was higher than that of non-adopters. As a result of continuous and repeated adoption of the practices from 70s by majority of the respondents of the study area the average rate of adoption became higher. This is evident from the mean of adoption index of the respondents (Table 24) leaving little difference between the high adopters and low adopters. As such, even though the average

adoption was high their knowledge about the practices was medium and below in the case of majority of the respondents, which is against the findings of Somasundaram and Singh (1978) and Prabhu and Kandan (1990).

Vijayaraghavan and Somasundaram (1979) noted that majority of the respondents had low knowledge level and Sharma and Sharma (1988) revealed that majority of the contact farmers possessed low to medium level of knowledge about recommended practices. The present study agrees with the above studies to this respect.

From the studies of Sohal and Tyagi (1978) and Pachori and Tripathi (1983), it is evident that the extension contact increases the knowledge level of the farmers. The present study agrees with the above findings as the extension contact of the majority were medium and below with a knowledge level of similar profile. But the mean adoption index of the respondents was fairly high indicating that these practices have already become a part of their daily work irrespective of the awareness about these practices.

The educational status of the respondents (both husbands and wives) shows a more or less similar profile and has not shown any significant association with the adoption of these practices. Even though no analysis has been done to know the influence of

educational status on the knowledge level of the respondents about the selected aspects, it can be understood that the educational status had not contributed significantly for the knowledge levels of the respondents.

While examining the knowledge levels of the husbands and wives (Table 17), it was found that the knowledge level of husbands (Mean 19.2) was significant when compared with the knowledge level of wives (Mean 16.8). While considering the individual selected aspects in dairying, the knowledge level of husbands was found to be significant in the aspects of selection, housing and treatment. In the other aspects selected for the study (feeding, milking and breeding) there was no significant difference. Though the experience in dairying is more or less similar for the husbands and wives, this significant difference in the knowledge level of husbands is explained by their social participation and extension contact. While 57 per cent of the wives were having medium social participation, 37 per cent were having only low social participation compared to 78 per cent of the husbands with medium and only 15 per cent with low social participation. Among the wives 80 per cent were having only low extension contact, whereas only 52 per cent of the husbands belonged to this category. Among the rest, 42 per cent of the husbands and nine per cent of wives were having medium extension contact while six per cent of the husbands and 11 per

cent of wives were having high extension contact. Further, among the wives 22 per cent were full time house wives with less possibility for the above contacts. These variables jointly contributed for the significant difference in the level of knowledge of the husbands compared to that of wives.

As such, it can be concluded that during 70s the people were having above average level of knowledge about the practices and they started adoption of these practices, which was gradually accepted by all the farmers in the area. Since then it has become a routine in their daily life ignoring the various informations about these practices and hence the low average knowledge level in spite of the higher adoption.

2. Extent of physical involvement of the respondents in dairying

Unlike the agricultural operations, dairying requires frequent daily physical involvement for carrying out the scientific practices. As far as the present study is concerned, out of the 100 respondents, 75 per cent of the husbands and 70 per cent of the wives (Table 3) were engaged in agriculture and allied activities. Twenty one per cent of the husbands and eight per cent of the wives were agricultural labourers. Among the husbands two per cent were self employed and another two per cent having government employment. Twenty two per cent of the

wives were completely engaged in household chores. Regarding their physical involvement, 71 per cent each of the husbands and wives were having medium physical involvement, 18 per cent of the husbands and 19 per cent of the wives having low involvement and 11 per cent of husbands and 10 per cent of wives having high physical involvement as far as the aspects in general are concerned. Though not much difference could be noticed in the distribution of the involvement categories (Table 18), a significant involvement was shown in general by the husbands.

Devadas (1975) reported that looking after the milch animals and poultry keeping were entirely the jobs of farm women. Achanta (1982) also reported that the entire management of livestock was done by women. Dineshkumar and Singh (1983) revealed that per capita employment of women (in days per year) in livestock activities was 79, whereas that of male was 51. Singh and Chander (1983) stated that women played a key role in performing various tasks related to cattle management. Venkatachalam (1983) observed that cattle were being looked after by women in rural areas. Azad et al. (1985) found that the scheduled caste females besides working as wage earners were also engaged in maintenance of their milch cattle and procurement of fodder and grains for their animals. Singh et al. (1987) noted that on an average rural home makers spent 3.04 hours per day on animal care activities. George et al. (1990) revealed that

females supplied 62 per cent of the labour used in cattle keeping. Sangwan et al. (1990) stated that men were the planners and women implemented the activities as far as the farm operations were concerned. Mazumdar (1975) and Sithalakshmi (1975) revealed that majority of the agricultural operations were being done by women. Ghosh (1985) found that an overwhelming majority of women among scheduled caste house holds in the village were engaged in multiple activities including animal care. All the above studies reveal that there is an appreciable contribution of women through their physical involvement in animal rearing. In the present study the physical involvement of the husbands was found to be significant eventhough there was a sizable contribution by the wives (Table 19). While examining their contribution in individual aspects selected for the study, it could be seen that in the aspects of selection, breeding and treatment, the involvement of husbands was significantly high, whereas in the case of housing and feeding the involvement of wives was significantly high. But in the case of milking there was no significant difference in the physical involvement of husbands and wives. This indicates that the involvement of wives is more in practices which are adopted within the households except milking where there was an equal contribution. For the proper adoption of the other three aspects, outside contacts are required for which the husbands contributed more. Vinodkumar et al. (1985) noted that employment of women workers

in maintenance of cattle was only 12.7 per cent, which does not fully agree with this study.

While considering the physical involvement of husbands and wives in the individual aspects selected for the study, it could be seen that there is an aspect wise variation between husbands and wives. Table 19 reveals that in the aspect of selection the mean score of involvement of husbands was 3.8 and that of wives 1.3. The male children also were involved in the selection in two instances. The involvement of husbands in this aspect was found to be significant at one per cent level. Nagpal (1989) found that women play a great role in proper selection and purchase of animals during cattle fairs. This finding does not agree with that of the present study. This may be due to the fact that during cattle fairs, the family members may be going together for selection and purchase of animals while in the study area such cattle fairs are seldom as far as milch animals are concerned. As such, more often it will be the male members who will examine the animals to be purchased from the selling households.

As far as the aspect of housing is concerned, the mean scores were 1.4 and 3.3 for the husbands and wives respectively in which the involvement of wives was found to be significant at one per cent level. Besides this, an involvement of male

children and female children in two and seven cases respectively was also noticed (Table 20). The works done by Achanta (1982), Bhatnagar (1982), Sisodia (1985), Nagpal (1989), Shashikala et al. (1990) and George et al. (1990) revealed that the involvement of women in practices connected with this aspect was more which is in accordance with the findings of the present study. During the day time wives will be present at home more than the husbands and as such their physical contribution in adopting practices connected with housing became more explaining the above phenomenon.

The practices under the aspect of feeding were also mainly done by the wives compared to the husbands which was found to be significant at one per cent level. This finding agrees with the findings of Bhatnagar (1982), Nagpal (1989) and Shashikala et al. (1990). Besides, involvement of male children and female children was also noticed in six cases each.

In the aspect of milking there was no significant difference in the physical involvement of husbands and wives. In 13 cases and eight cases the involvement of male children and female children respectively were noticed. In the studies of Bhatnagar (1982), Nagpal (1989) and Shashikala et al. (1990) the practices relating to this aspect were found to be done by the women, which is in partial agreement with the findings of the present study.

In the aspect of breeding the involvement of husbands was found to be significant at one per cent level. Involvement of male children was noticed in 10 cases. Similarly the involvement of husbands was significant at one per cent level in the aspect of treatment. In 15 cases the involvement of male children was noticed. These two aspects have not been included in any of the studies reviewed.

Though the combined involvement of husbands and wives as well as the involvement of children are noticed in few instances, the significance could be given only for the individual contributions of the husbands and wives in carrying out the various practices. Since the practices relating to housing and feeding are usually distributed throughout the day, the involvement of wives became significant in these two aspects as the husbands may not be available in the home throughout the day time. In the case of milking, as the milk has to be taken to the society immediately after milking, which is usually done by the husbands, their involvement became more or less equal.

As such it can be concluded that in the case individual practices, which are adopted within the household, a fairly good involvement of wives is noticed. For the other aspects which require outside contact, the involvement of husbands was more and for the practices in general the involvement of husbands was significantly higher.

3. Extent of involvement of respondents in decision-taking about dairying

In the present study it was observed that majority of the husbands and wives (61 per cent and 54 per cent respectively) were showing medium involvement, whereas 21 per cent of the husbands and 32 per cent of the wives showed low involvement and 18 per cent of husbands and 14 per cent of wives showed high involvement in decision-taking in the aspects in general (Table 21). A perusal of table 22 reveals that the husbands had significantly higher involvement in decision-taking about selection, housing, breeding and treatment, as well as the aspects in general. Though the mean scores of wives were higher for feeding and milking aspects, the values were not significant.

Badiger (1979) found that the participation of women in decision-making was high in the case of animal management. Hiranad and Kumar (1980) and Sadhu and Renuka (1982) showed that women had a significant role in decision-making regarding purchase and sale of animals. Sisodia (1985) stated that women had a significant role in decision-taking in farm practice operations. Ahilan and Selvaraj (1991) reported that fisher women were having an important role in house hold and social decision-making, but as far as financial decisions were concerned, only the earning women had active participation. Dubey et al. (1982)

found that majority of farm women had high participation in decision-making on aspects like number of milch animals to be kept and the quantity and type of green fodder to be fed to the milch animals. The present study partly agrees with the above finding in the case of feeding and milking, eventhough the contribution of wives was not significant when compared with that of husbands. But in the aspects of selection and housing the present study disagrees with the above findings.

Malik (1979) noted that women were also taking part in decision-making process about improved agricultural practices. In the present study also it could be seen that wives were involved in decision-taking in all the aspects with varying degrees compared to the husbands even though the overall significance was in favour of husbands. The findings of Bhagat (1980) stated that employed rural women played a dominant role in decision-making process especially on money and management of family. The findings of the present study do not agree with the above study as the wives' involvement in decision-taking in dairying was not significant compared to that of husbands in general, even though great majority of the wives were engaged in agriculture and allied activities as well as agricultural labour.

Kaur et al. (1988) showed that husbands played a dominant role in farm related decisions in small and medium size categories whereas in large farm size category husbands and wives

were participating in farm related decision like purchase of animals. In the present study even though the wives were involved in decision-taking in all the aspects of dairying, the overall significance was in favour of husbands and hence agrees with the above study.

In a few families the male children were always involved in decision-taking in selection, housing, feeding, milking, breeding and treatment in the case of two, five, three, eight, seven and six families respectively (Table 23). Their occasional involvement was noticed in the case of selection, feeding, milking and breeding in four, one, one and four house holds. The female children always showed participation in housing, feeding, milking, breeding and treatment in one, four, eight, one and one families respectively. Their occasional involvement was noticed in feeding and milking in the case of six and three houses respectively. Though the involvement of male and female children are not significant compared to the total households studied, it should be considered as important as far as the respective households are concerned.

Nandapurkar (1982) defined decision-making as the degree to which an individual justifies by selection of most efficient means from among the available alternatives on the basis of scientific criteria for achieving maximum economic profit. In

the case of dairy husbandry operations the most scientific methods will only provide the anticipated profit. Under such circumstances if an individual has to take decisions he must have a minimum knowledge about the various aspects in dairying. As such the knowledge level of the individuals in the selected aspects of study can be an influencing factor to give such a profile in the decision-taking patterns, which can be seen from the following.

While considering the involvement in decision-taking in individual aspects selected for the study, the aspect of selection showed a mean score of 3.7 and 1.2 for the husbands and wives respectively (Table 22). The mean scores of knowledge levels for husbands and wives for this aspect were 3.14 and 2.8 respectively (Table 17). Both were significant in the case of husbands. Further, the decision on selecting the animals are usually taken at the place of purchase while examining the animals which will usually be done by the husbands. These two factors jointly contributed for the higher involvement of husbands in selection aspect.

For the aspect of housing the mean scores for involvement in decision-taking were 2.5 and 1.2 for the husbands and wives respectively in which the husbands' contribution was found significant. While examining the mean knowledge scores for the

husbands and wives (Table 17) it can be seen that the scores were 1.66 and 1.3 for the husbands and wives respectively, in which the husbands' knowledge was found significant. The great majority of the respondents (72 per cent) belonged to the medium category based on the annual income (Table 6) and their monetary resources combined with the knowledge level of the husbands have contributed for their significant role in decision-taking in this aspect.

In the aspect of feeding there was no significant difference between the scores of husbands and wives (2.04 and 2.4 respectively) and a similar phenomenon can be seen in the knowledge levels also (4.4 and 4.3 for husbands and wives respectively), which was also non-significant. As such knowledge factor has not contributed much for the decisions on this aspect. As majority of the respondents belonged to the middle and low income groups they were not able to provide better feeds sufficiently to the animals. Whatever feed is available in hand will be fed, the decision of which showed a similar profile in the case of husbands and wives.

In the aspect of milking even though the mean score of wives was 2.2 and husbands 1.8, there was not much significant difference. Similarly the knowledge levels of husbands and wives were 2.9 and 2.8 (non-significant). Since the practices related

to the aspect of milking were fully adopted uniformly by all the respondents it is clearly evident that they were practising it as a routine and hence the profile of decisions were more or less similar in the case of husbands and wives.

In the aspect of breeding, the significant contribution was seen from the husbands (mean values 2.7 and 1.3 for husbands and wives respectively). The knowledge levels for the husbands and wives were the same (2.5 each) which was non-significant. Though the knowledge levels were the same for breeding practice, the animals will have to be taken to places where the facilities for breeding were easily available and considering the various constraints the decisions were taken by the husbands then and there and hence the significance for husbands' contribution.

Regarding the treatment aspect there was a significant difference in involvement in decision-taking between the husbands and wives (mean scores 2.4 and 1.5 respectively), which has been contributed by the significant knowledge level of the husbands compared to that of wives (4.24 and 3.2 respectively). Another factor contributing to this is the contact with the professional people and the sources of required medicines, which will be easier for the husbands compared to the wives.

While considering the overall role in decision-taking, the husbands had a total mean score of 15.03 and wives 9.6 giving a significant involvement of the husbands. This is explained to a great extent by their significant difference in knowledge level (total mean score of 19.2 and 16.8 respectively) when compared with that of wives. The other factor which has contributed is the necessity of the individuals to make contacts with members outside the family for meeting the requirements for which the chances of husbands are more. In the case of respondents who were old enough, the role of male children in decision-taking was seen in few cases. Compared to the total number of respondents, since these instances were few, they cannot be considered as significant, even though, as far as those house holds are concerned their role in decision-taking is valid. Similarly the female children also had participated in decision-taking in a limited number of cases, which is not worth saying compared to the total respondents as well as the role of male children.

4. Extent of adoption of improved practices in dairying by the respondents

In general, the adoption of improved practices in dairying by the respondents was found to be high. From table 24 it could be seen that the mean adoption index was 86.037 and the great majority of the respondents belonged to the medium and high adoption categories with a minimum adoption index of 76. Only 18

per cent of the respondents were having low adoption indices of below 76.

The study conducted by Jothiraj (1974) revealed that 90 per cent of the respondents were adopting 50 per cent and above of the recommended practices in dairying. Subhadra (1979) also reported that 79 per cent of the respondents were adopting more than 50 per cent and above of the recommended dairy husbandry practices. Sohi and Kherde (1980) in their study also found that 53.33 per cent were medium adopters and 25 per cent high adopters of dairy innovations. In the study of Somasekharan Nair (1980) the mean value of extent of adoption of the dairying practices was found to be 74.64. Out of the four practices selected for the study, Kakoty and Sharma (1986) found 94 per cent and 83 per cent of the respondents adopted improved disease control and breeding practices respectively. While the improved feeding and management practices were adopted only by 27 per cent and 15 per cent of the respondents respectively. Talawar and Hirevenkanagoudar (1989) found majority of farmers were high adopters of poultry management practices. The studies conducted by Saini et al. (1977) and Raju (1981) revealed that the mean adoption scores were 52.32 and 53.75 respectively, while the study of Saxena et al. (1990) found only 17.6 per cent of the wheat farmers of rain fed area adopted the practices in full, 49.6 per cent partially and 32.8 per cent at minimum level.

While examining the studies of Jothiraj (1974), Subhadra (1979), Sohi and Kherde (1980), Somasekharan Nair (1980) and Kakoty and Sharma (1986) it could be seen that there was an increasing trend in the rate of adoption of the selected practices. Some of the practices were showing low rate of adoption, which may be due to the constraints faced by the respondents in the adoption of those practices. The respondents of the present study have started the adoption of recommended practices from 70s and the farm advisory service of Kerala Agricultural University, which was functioning in the study area till the middle of 80s, had influenced to increase the rate of adoption. Since then they have been adopting the recommended practices continuously through out the years which became a habit. Since 1985, the chances of extension contact became less as a result of discontinuance of the farm advisory service. So the chances of the respondents for getting informations on the practices became meagre which is evident from the mean knowledge scores of the husbands and wives as well as the low extension contact profile. Some of the recommended practices were not adopted or partially adopted by few respondents due to the constraints they were facing while adopting them and hence the low adoption in the case of few individuals. In general, the extent of adoption of improved practices in dairying by the respondents was satisfactory, which is evident from the mean adoption index of 86.037. Though the extension contact was

generally poor, the social participation of the respondents helps in maintaining the adoption index at a higher level. Since the influence of knowledge level on adoption was not included in the objectives of the study, no analysis on this was done and as such the influence could not be ascertained.

Influence of women in the adoption of practices

From table 26, it is evident that there was no significant difference in contribution by the educational status of the husbands and wives on the adoption index. Similarly, even though great majority of the husbands and wives were engaged in agriculture and allied activities and agricultural labour (Table 27), there was no significant difference in the contribution. The experience in dairying also shows an equal profile in the case of husbands and wives. The knowledge levels of the husbands and wives were 19.2 and 16.8 respectively in which the husbands' knowledge level was found to be significant (Table 17). As far as the physical involvement of the husbands and wives were concerned though there was a more or less equal involvement, the husbands' involvement was found significant (Table 19). In the case of adoption of practices related to the selected aspects of housing, feeding and milking, the mean scores of physical involvement of wives were higher than those of husbands. Among these, the involvement of wives in the case of

housing and feeding was found to be significant and in milking non-significant. In the case of decision-taking on dairying, the mean scores of husbands and wives were 15.03 and 9.6 respectively in which also the involvement of husbands was significant (Table 22). From the above findings, it could be seen that there is a fairly good influence, though not significant, from the part of women in decision-taking as well as physical involvement in the adoption of improved practices in dairying.

5. **Association between independent variables and the dependent variable - extent of adoption of improved practices in dairying**

Age Vs. adoption

The distribution of adopter categories both for husbands and wives based on their age groups is given in Table 24. The chi-square test revealed a significant influence of the age at five per cent level on adoption in the case of husbands, whereas there was no significant influence of age groups on adoption in the case of wives. The correlation worked out showed negative correlation for husbands in adopting the breeding and treatment aspects and in the case of wives, a negative correlation in the case of treatment aspect, all of which were non-significant. The adoption in general did not show any significant relationship with age of the husbands or wives.

In the studies by Prakash (1980), Sanoria and Sharma (1983), Yadav and Jain (1984), Singh et al. (1985), Katarya (1989), Talawar and Hirevenkanagoudar (1989), Singh and Rajendra (1990) and Sheoran and Ramkumar (1988), the age of the respondents was found to be positively and significantly correlated with adoption and in the studies by Jothiraj (1974), Sinha et al. (1974) Chandrakandan and Subramanian (1975), Saini et al. (1977), Bhaskaran (1978), Subhadra (1979), Sohi and Kherde (1980), Somasekharan Nair (1980), Ogunfiditimi (1981), Singh (1983), Kakoty and Sharma (1986), Ramkumar (1987) Upadhyaya and Gupta (1987), Ingole et al. (1988) and Sasikumar (1990), no significant correlation was found between age and adoption.

In the present study, eventhough there was no significant association, some of the aspects showed a negative correlation which can be due to the following reasons.

From table 24, it could be seen that the minimum and maximum adoption index for the medium category was 76 and 97 and for the high category 98 and 100 with a standard deviation of 11.097. This indicates that there was not much difference in the pattern of adoption of the improved practices by the respondents. Though non-significant, the negative correlation found in the case of husbands for the aspects of breeding and treatment must be due to the fact that as age increases there will be difficulty

to go out for getting help for adopting the practices related to the above aspects. In such instances there is every possibility that the work is being entrusted to other members of the family especially to the male children. Same may be the reason in the case of wives for showing the negative correlation in the aspect of treatment even though it was also non-significant.

Educational status Vs. adoption

In the present study, it was observed that there was no significant relationship between educational status and adoption of improved practices in dairying both in the case of husbands and wives. This result was consistent with the findings of Sinha et al. (1974), Saini et al. (1977), Bhaskaran (1978), Singh et al. (1979), Subhadra (1979), Balasubramaniam and Kaul (1982), Ramkumar (1987) and Kunzru et al. (1989). Jothiraj (1974) also observed that there was no relationship between educational status and adoption of artificial breeding practices.

While the result of the present study agrees with the above findings, it disagrees with the studies of Sohi and Kherde (1980), Somasekharan Nair (1980), Sanoria and Sharma (1983), Singh (1983), Yadav and Jain (1984), Kologi and Usha Anand (1985), Prasannan (1987), Ingole et al. (1988), Reddy and Reddy (1988), Sheoran and Ramkumar (1988), Katarya (1989), Talawar and

Hirevenkanagoudar (1989), Saxena et al. (1990) and Singh and Rajendra (1990).

Jothiraj (1974) in the same study found that education and adoption of practices like use of commercial cattle feed, preventive vaccinations and regular breeding were not related. Since the greater majority of the respondents (82 per cent) belonged to the medium and above adoption categories with the minimum adoption index of 76 irrespective of their educational status, there was no influence on adoption both in the case of husbands and wives. The correlation test revealed a negative correlation of the educational status and the individual aspects of selection and housing in the case of husbands, which was non-significant. The adoption in general was also non-significant. In the case of wives a negative relationship was shown with the aspects of selection, housing, feeding and breeding as well as the aspects in general. But all were non-significant.

The educational status could not show any significant influence on the adoption of the recommended practices as those practices were being adopted by the respondents since some years.

Occupation Vs. adoption

The distribution of the respondents considering their occupation and adoption index is given in table 27. It reveals that a great majority of the respondents (75 per cent of husbands and 70 per cent of wives) were engaged in agriculture and allied activities. Another 21 per cent of husbands and eight per cent of wives were agricultural and other labourers. Only two per cent each of the husbands were having self employment and government employment. Among the wives all the rest (22 per cent) were full time house wives. There was no significant difference between the husbands and wives with regard to the adoption pattern, but the correlation showed a highly significant negative correlation in the case of husbands in the aspect of feeding and non-significant negative correlation in the aspect of selection, housing, breeding and treatment. As far as the adoption in general was concerned, the correlation was negatively significant. In the case of wives, a non-significant negative correlation was noticed in the aspects of housing, feeding and treatment as well as the aspects in general and a positive non-significant correlation in the case of selection and breeding.

In the studies of Tyagi and Sohal (1984), Singh et al. (1985), Venkataprabhu (1988) and Kunzru et al. (1989) a significant positive correlation was found between occupation and adoption which was against the findings of the present study.

Bhaskaran (1978), Singh and Dubey (1978), Balasubramaniam and Kaul (1982), Ratinasabapathi (1987), Upadhyay and Gupta (1987), Krishnamoorthi (1988), and Katarya (1989) in their studies found no correlation between occupation and adoption. From table 27, it can be seen that the greater majority of the respondents (both husbands and wives) belonged to the medium and high adopter categories with occupation of agriculture and allied activities and agricultural labour. Since greater majority of the respondents are engaged in agriculture and allied activities and agricultural labour, they usually get less time to look after their animals and hence the negative relationship. The occupation of majority of the respondents resulting in middle and low annual income along with inadequate time available for purchasing and feeding concentrates and roughages explains the negative relationship with the aspect of feeding. Since 70 per cent of wives are engaged in agriculture and allied activities in their own land, they could find out some time for adopting practices related to selection and breeding which are only occasional, as in the case of house wives without any other occupation, which explains the positive non-significant relationship in these aspects.

Land holding Vs. Adoption

The distribution of respondents based on land holding and adoption index is given in table 28. This independent variable

will be the same for the husbands and wives. Hence there will not be any difference between the husbands and wives in the pattern of adoption. The chi-square test showed that land holding and adoption were significantly related. But the correlation worked out showed that it had significant positive correlation only with adoption of practices related to the aspect of housing (Table 38). Land holding was negatively and non-significantly correlated with adoption of practices related to selection. The rest of the correlations were positive but non-significant. Similarly land holding was positively and non-significantly correlated with adoption when all the aspects were taken together.

Sohi and Kherde (1980), Singh et al. (1985) and Sheoran and Ramkumar (1988) found that land holding is positively associated with adoption of animal husbandry practices. Similarly Sanoria and Sharma (1983), Singh and Ray (1985), Reddy and Reddy (1988), Bevalatti and Sundaraswamy (1990), Singh (1983), Saxena et al. (1990) and Singh and Rajendra (1990) found that land holding was positively associated with adoption of agricultural practices. But Ingole et al. (1988) found that land holding was not significantly related to adoption of improved animal husbandry practices. Kunzru et al. (1989) found a negative and significant correlation between land holding and adoption of green fodder production by livestock owners. Talawar and Hirevenkanagoudar

(1989) found no significant relation between land holding and adoption of poultry management practices.

In the present study, out of the 97 respondents having land above 10 cents, majority fall in the medium adopter category (60 respondents) and 20 respondents in the high adopter category and the rest 17 respondents in low adopter category. This adoption pattern of the respondents with land holding of 10 cents and above explains the significant influence on adoption at five per cent level. Seventy five per cent of the husbands and 70 per cent of the wives were engaged in agriculture and allied activities in their own and as such the cattle manure will be of much value for them and all of them have provided minimum facility for proper housing for the animals besides adopting the other practices related to this aspect. This explains for the significant positive correlation of the land holding and the practice under the aspect of housing. In the case of cattle owners having more land the animals get more grazing facility and in such cases the tendency of the owners is to bring up their own female calves thereby avoiding new purchases whereas all the other practices are unavoidable. This can be the reason for the negative correlation, though not significant, shown between land holding and the practice under selection.

Herd size Vs. adoption

The distribution of respondents based on herd size and adoption index is shown in table 29. It could be seen that majority of the respondents (85 per cent) had medium sized herd. Since this variable is common for husband and wives there is no difference in the influence on adoption in the case of husbands and wives. Eleven per cent of the respondents had small sized herd, and only four per cent had large sized herd. The chi-square test showed that herd size and adoption index were correlated with high significance. But the correlation coefficients showed that there was no significant relationship (Table 38). It was found that herd size was positively and non-significantly correlated with adoption of practices in the aspects of selection and breeding and negatively and non-significantly with practices in the aspects of housing, feeding and treatment. When all the aspects were considered together the relationship was positive but non-significant. The middle and low annual income based on their occupation influences indirectly on the negative correlation between the herd size and the aspects of housing, feeding and treatment. Even if the herd size increases as a result of calving or purchase, whatever housing facilities are available will only be utilized without any expansion or modification. Similarly even if the number of heads increases the total feed available in the house will be divided among the animals leading to insufficient feeding. When the herd size

increases, even if one of the animals requires some treatment there will be a tendency to wait and see for two days before getting the required treatment. The above facts explain the negative relationship with these aspects.

The finding of the present study is consistent with the findings of Sinha et al. (1974), Saini et al. (1977), Singh and Dubey (1978), Subhadra (1979) and Kakoty and Sharma (1986). The result of present study disagrees with that of the studies conducted by Jothiraj (1974), Sohi and Kherde (1980), Somasekharan Nair (1980), Raju (1981), Kologgi and Usha Anand (1985), Singh et al. (1985), Sheoran and Ramkumar (1988), Kunzru et al. (1989) and Talawar and Hirevenkanagoudar (1989).

Annual income Vs. Adoption

The distribution of respondents based on annual income and adoption index is given in table 30. Since this variable is commonly applicable for husbands and wives there will not be any difference in the influence on the adoption of practices. The chi-square test revealed that there was no significant relationship between annual income and adoption index. The correlation coefficients worked out showed that these two variables were not related significantly (Table 38). Annual income had a non-significant but negative relationship with

adoption of practices related to the aspect of treatment. The rest of the correlations though non-significant were positive. When all the aspects were considered together annual income was positively and non-significantly correlated with adoption.

The finding of the present study is in accordance with the findings of Somasekharan Nair (1980), Balasubramaniam and Kaul (1982) and Ramkumar (1987) and it disagrees with the findings of Balasubramaniam and Kaul (1985), Kologi and Usha Anand (1985), Singh et al. (1985), Satwant and Surinder (1986), Katarya (1989), Kunzru et al. (1989) and Talawar and Hirevenkanagoudar (1989). In the studies of Jothiraj (1974) annual income was found to have some influence on adoption of commercial cattle feed and regular breeding and in the study of Subhadra (1979) gross income had influence on individual practices like artificial breeding, deworming of calves and timely veterinary aid while the other practices were not having any correlation. This indicates that practices involving some monetary expense are being adopted by individuals who can afford to it.

From table 30 it can be seen that only 16 respondents of medium income group and five respondents of large income group belong to the high adopter category. Out of the rest, 61 belong to the medium adopter category and only 18 respondents belong to the low adopter category. This profile explains the

non-significant influence on the adoption of improved practices. The medium and small income of the great majority of the respondents along with their personal inconveniences to call upon veterinary aid and the distance to be covered for getting the professional help explains the negative correlation though not significant for the adoption of practices relating to the aspect of treatment. Since great majority of the respondents are engaged in agriculture and allied activities and agricultural labour they belong to the medium and low income group. As such, as the income increases the practices relating to all aspects are adopted more, whereas the aspect of treatment, which requires immediate high expenditure, is delayed or not adopted if avoidable. The cattle insurance scheme prevalent in the area is also another factor responsible for this trend.

Family size Vs. Adoption

The adoption profile based on the family size of the respondents is given in table 31. Since this variable is common for the husbands and wives there will not be any difference in the influence on the adoption pattern between the husbands and wives. The chi-square test was found to be non-significant. In the correlation test, a negative influence though not significant is shown in the aspect of housing, while all the other aspects including the aspects in general showed a positive but non-significant correlation.

The studies conducted by Sohi and Kherde (1980), Sanoria and Sharma (1983) and Singh et al. (1985) revealed positive correlation between family size and adoption behaviour. The present study also agrees with the above studies except in the case of housing, though the influence is not significant. In the studies of Saini et al. (1977) and Kunzru et al. (1989) a significant negative correlation was found between family size and adoption of dairying practices, while the study of Kakoty and Sharma (1986) showed no significant relation with adoption of dairy innovations.

As the number of members in the family increases the total family expenditure will also increase. As such the tendency among the farmers will be to continue the existing minimum required facilities for the housing, which explains the negative but non-significant correlation between the family size and the aspect of housing. As the number of members in the family increases they could find out some time, besides the agricultural and household chores, to adopt the minimum recommended practices in all aspects as a routine, which explains the non-significant positive correlation between these two variables.

Social participation Vs. Adoption

In table 32 the distribution of respondents based on social participation and adoption index is given. This distribution

profile explains why there was no significant difference by the chi-square test between the two groups. The correlation showed non-significant negative influence in the case of husbands and wives for the aspects in general as well as for the individual aspects except in the case of husbands for the aspect of selection, which was positive but non-significant.

In the studies of Sohi and Kherde (1980), Somasekharan Nair (1980), Singh (1983), Kologi and Usha Anand (1985), Singh et al. (1985), Talawar and Hirevenkanagoudar (1989), and Singh and Rajendra (1990), the social participation was found to have significant positive correlation with adoption which was not in accordance with the present study. Saini et al. (1977), Bhaskaran (1978), Subhadra (1979) and Sheoran and Ramkumar (1988) found no significant relation between social participation and adoption, while the present study shows a negative correlation though not significant.

From table 24 it could be seen that the mean adoption index of the respondents was 86.037 which indicates a fairly high rate of adoption of the selected husbandry practices even though the great majority of husbands (93 per cent) and wives (94 per cent) belong to the medium and low social participation group explains the negative correlation in general and the individual aspects in the case of husbands and wives. The knowledge level of husbands

is significantly high in the aspect of selection. The social participation increases their awareness about what others were doing while selecting animals. These two factors explain the positive relationship and the rare occasions for adoption of the above aspects explain the non-significance. Though the mean score of social participation of wives was 4.49 (Table 8) compared to that of 7.24 of husbands, the mean adoption score of 86.037, which was fairly high, explains the negative but non-significant relationship of these variables in the case of wives.

Experience in dairying Vs. adoption

Table 33 illustrates the distribution of respondents based on experience in dairying and adoption index. The chi-square test revealed a non-significant relationship between experience in dairying and adoption index. Table 38 shows that there was significant positive correlation between experience in dairying and the adoption of practice related to the aspect of selection in the case of husbands. The correlations with adoption of rest of the aspects including the aspects in general were positive but non-significant except in the case of practices related to the aspect of housing, where it was negative and non-significant. In the case of wives (Table 39) all the correlations including that with the aspects in general were positive and non-significant except in the case of practices related to aspect of housing, where it was negative and non-significant.

The result of the present study is in accordance with the findings of Subhadra (1979), Balasubramaniam and Kaul (1982), Ratinasabapathi (1987) and Sasikumar (1990) except for the practices related to the aspects of selection and housing in the case of husbands. Katarya (1989) reported that farming experience was negatively and significantly associated with adoption score of wheat farmers. In the present study, though the practices relating to the aspect of housing was found to have negative influence both in the case of husbands and wives, it was not significant whereas in the aspect of selection the experience showed a significant positive correlation in the case of husbands, which is not in accordance with the above study.

Since 81 per cent of the husbands and 82 per cent of the wives were having more than 10 years of experience in dairying and nine per cent each of the husbands and of wives having five to 10 years of experience with a mean adoption score of 86.037, there was no significant difference in the influence of experience on adoption between husbands and wives as far as the aspects in general is concerned. The practices in the aspect of selection were mainly done by husbands rather than the wives and their significantly high experience, explains the significant positive influence at five per cent level. As far as the aspect of housing is concerned, even though the experience has an increasing trend, whatever housing facilities available are being

continued without much modifications as it involves monetary investments which the majority of medium income and low income group could not afford. This explains the negative correlation, though not significant, in the case of husbands and wives as far as the above aspect in dairying is concerned.

Contact with extension agencies Vs. Adoption

Table 34 shows the categorisation of respondents, based on contact with extension agencies and adoption index. The chi-square test revealed a non-significant relationship between contact with extension agencies and adoption index. Table 38 reveals that contact with extension agencies had no significant relationship with adoption of practices related to any of the aspects selected for the study in the case of husbands. The correlations were negative in the case of aspects of housing, feeding and treatment. A similar correlation was also observed when all the aspects were taken together. But in the aspects of selection and breeding the correlations were positive. Table 39 shows the correlations between these two variables in the case of wives. In aspects like housing, feeding and breeding, the correlations were negative and non-significant and in the case of selection and treatment the correlations were positive and non-significant as in the case of aspects in general.

The present result agrees with the findings of Raju (1981) and Katarya(1989). In the studies of Saini et al. (1977), Singh et al. (1979), Singh (1983), Reddy and Reddy (1988), Gogoi and Gogoi(1989), Talawar and Hirevenkanagoudar (1989) and Singh and Rajendra (1990) significant positive correlation was found between extension contact and adoption which is not in accordance with the findings of the present study. In the study of Sheoran and Ramkumar (1988) a negative and highly significant correlation was found between extension contact and adoption, which partly agrees with the present study as the adoption of individual aspects of housing, feeding and treatment and the aspects in general in the case of husbands and the individual aspects of housing, feeding and breeding in the case of wives were negatively and non-significantly correlated with extension contact.

Great majority of the husbands (94 per cent) and wives (89 per cent) belong to the medium and low categories of extension contact. Whereas the mean adoption index of 86.037 of the respondents in general explains the negative correlation though not significant. The positive non-significant correlation in the aspects of selection and breeding is explained by the below medium extension contact and below medium adoption profile of the majority of the respondents as evidenced by table 34. The similar profile shown by the wives explains the positive non-significant correlation in the case of aspects in general.

Availability of professional help at farmers' premises Vs. Adoption

This variable was common for the husbands and wives. The chi-square test showed no significant relationship between these variables (table 35). But the Correlations worked out showed that this variable had non-significant positive correlation with adoption of practices related to aspects of selection, feeding and breeding. A similar relationship was shown when the aspects were taken together. But significant negative correlation existed between this variable and the adoption of practices in the aspect of housing and a highly significant positive correlation in the aspect of treatment.

No literature could be collected regarding this variable and hence no comparison could be made.

Except two respondents with high availability of professional help, majority (78 per cent) belong to the medium category. (table 35). Among the respondents only 21 were high adopters. Out of the rest, 61 were medium and 18 low adopters. This distribution of respondents explains the positive correlation between the availability of professional help and adoption of practices related to the aspects in general, though not significant. Though the availability of professional help for

great majority was medium and low, the respondents were providing the same housing facilities for the animals due to their financial problems even if they are advised by the professional people to provide better facilities and this explains the negative and significant correlation of this variable with housing. At the time of treatments the respondents will be advised by the professionals to follow scientific practices which they will be adopting always and this explains the highly significant positive correlation between this variable and the aspect of treatment.

Availability of inputs Vs. Adoption

Table 36 shows the distribution of the respondents based on availability of inputs and adoption of the recommended practices. Since this variable was also common for both the husband and wife there was no difference in the influence on adoption between the husbands and wives. The chi-square test showed that these two variables were not significantly related (Table 36). Table 38 shows that this variable was positively and non-significantly related to adoption of practices in the aspects of selection, feeding and treatment. So also when all the aspects were taken together. But it was negatively and non-significantly correlated to adoption of practices related to the aspects of housing and breeding.

The finding of the present study disagrees with that of Katarya (1989) and Kunzru et al. (1989).

From table 36 it can be seen that great majority of the respondents (87 per cent) had only medium or low availability of inputs and 79 per cent of the respondents belonged to the medium and low adopter categories. As such when the availability of inputs is low the practices in total will not be adopted properly. Hence the positive correlation though not significant for the practices in general. Irrespective of the availability of inputs the housing facility and related practices will be the same which is the reason for the negative non-significant correlation. Similarly, the breeding practices will not be affected by the scarcity of inputs and hence the negative non-significant correlation.

Socio-economic status Vs. Adoption

Table 37 shows that majority of the respondents (66 per cent of husbands and 67 per cent of wives) had medium socio-economic status. Twenty two per cent of the husbands and 21 per cent of wives had low socio-economic status while 12 per cent each of the husbands and wives had high socio-economic status. The chi-square test revealed a non-significant relationship between these two variables both in the case of husbands and wives. In

the case of husbands the correlations of this variable with the adoption of practices related to the aspects in general as well as individual were positive but non-significant except in the case of treatment where it was negative and non-significant (Table 38). In the case of wives all those correlations were negative and non-significant (Table 39).

The present result agrees with the findings of Sudha (1987) and Anitha Vijayan (1989). The studies of Prakash (1980), Sinha and Sinha (1980), Singh (1983) and Yadav and Jain (1984) showed a positive and significant correlation between socio-economic status and adoption. In the present study it was seen that in the case of husbands there was a positive non-significant correlation for the aspects in general as well as for all the individual aspects except treatment which showed a negative non-significant correlation as in the case of the wives for the individual aspects as well as the aspects in general. In the Study of Sushama Kumari et al. (1981) a significant correlation was seen between these two variables in more developed areas whereas a non-significant relationship was shown in less developed areas. The present study shows a non-significant relationship between these two variables.

Among the components contributing to the socio-economic status, the land holding and herd size were common for husbands

and wives. The educational status was also more or less similar. The occupation has contributed negatively for both husbands and wives. As such it was the difference in the social participation which showed a positive but non-significant correlation with the aspects in general. The influence of low social participation on the socio-economic status of the wives contributed for the negative non-significant correlation. In the case of husbands as the socio-economic status increases there will be a tendency to participate in maximum number of common functions which reduces the time they have to utilize for getting treatment for animals with outside professional help which explains the negative non-significant correlation in the aspect of treatment.

The regression analysis points out that in the case of husbands all the independent variables together explain a variation only upto 8.5 per cent, where as in the case of wives the independent variables explain a 10 per cent variation. Since these values are not significant the regression analysis does not show much influence of the independent variables on adoption.

6. Reasons for non- adoption/partial adoption of selected aspects in dairying

From table 42 it can be seen that the major constraint in the adoption of scientific selection was the financial difficulties faced by the farmers. Table 6 reveals that majority

of the respondents (72 per cent) belonged to the medium category of annual income. It is also to be noted that majority of the respondents (60 per cent) had five to eight members in the family (table 7). From the above facts it can be well understood that the poor farmer may not be able to spend much money for purchasing a good cow.

In the case of housing also the major constraint was the same (Table 43).

In the case of scientific feeding the major constraints were poor milk production potential of the animals and high cost of feed (Table 44). As in the above cases the poor farmer may not be able to spend much money for purchasing high yielding animals, so also the costly commercial cattle feeds available regularly from the market. The above findings are in accordance with the findings of Jothiraj (1974), Sohi and Kherde (1980), Singh and Rajendra (1990) and Balasubramaniam and Knight (1982) in the case of adoption of practices involving higher expenditure. The major difficulty faced by the farmers in adopting scientific breeding practices was the non-conception of animals by artificial insemination. The repeat breeding may be due to lack of timely detection of heat as well as untimely insemination services coupled with the lack of staff in the artificial insemination centre. This is in accordance with the findings of Balasubramaniam and Knight (1982).

The major reason for partial adoption of scientific treatment was the easy availability of local medicines and for partial adoption of deworming of calves was the non-availability of drugs in the society. This is in partial agreement with the findings of Balasubramaniam and Knight (1982). The high cost of modern medicines and the non-availability of medicines in the immediate locality coupled with the expenses involved in seeking veterinary aid may be other possible reasons for partial adoption of scientific treatment. Farmers were depending on the society for the supply of deworming drugs as there was no medical shop in the study area which explains the partial adoption of deworming of calves.

Summary

SUMMARY

The present study had the following specific objectives.

1. To study the extent of involvement of men and women in dairy management practices.
2. To assess the role played by men and women in decision-taking in dairying.
3. To probe into the influence of women in the adoption of practices.
4. To find out the extent of adoption of selected aspects in dairying, the reasons for non-adoption/partial adoption of the practices if any, and the influence of selected socio-economic factors on the adoption of selected dairy husbandry practices.
5. To reveal the knowledge level of men and women about selected aspects in dairying.

The study will be useful in formulating the future plan of action in dairy development by providing authentic data regarding the physical and intellectual involvement of the women folk in dairying. The study was carried out in the area of milk producers' co-operative society, Vilanganoor. From among the current milk producers of the society, 100 members were selected at random forming the sample of study. The data were collected through personal interview using pre-tested interview schedule from the husbands and wives separately.

The aspects of dairying were selected based on package of practices recommendations and discussion with scientists. The aspects thus included were selection, housing, feeding, milking, breeding and treatment. The independent variables were selected based on review of relevant literature and discussion with extension experts. The age, educational status, occupation, land holding, herd size, annual income, family size, social participation, experience in dairying, contact with extension agencies, availability of professional help at farmers' premises, availability of inputs, socio-economic status and marketing facilities were the independent variables selected which were measured using appropriate scales. The dependent variable, extent of adoption was measured using the adoption index developed by Sengupta (1967) and modified by Jothiraj (1974) with required modifications. The knowledge level of men and women, their physical involvement in dairying and involvement in decision - taking in dairying were also measured using appropriate scales. The respondents were categorised based on the scores obtained.

The observations were quantified and subjected to percentage analysis, chi-square test, "t" test, correlation and regression analysis and the results revealed the following facts.

In general, majority of the respondents belonged to middle income group with upper primary level of education and engaged in agriculture and allied activities. Most of them were having medium family size and a land holding of 10 cents to one hectare with medium herd size and above 10 years of experience in dairying.

As far as the extent of adoption was concerned majority of respondents (82 per cent) belonged to the medium and above categories with a minimum adoption index of 76 and mean adoption index of 86.037.

The observations on knowledge level of husbands and wives revealed that the husbands had significantly higher knowledge level than the wives in the aspects of selection, housing, treatment and in the aspects in general. In the other aspects there was no significant difference. The results also revealed that the percentage of respondents with low knowledge level was not negligible indicating the necessity for further extension work. Similarly, the husbands had significantly higher physical involvement scores in the aspects of selection, breeding, treatment and the aspects in general. In the aspects of housing and feeding wives had significantly higher scores and in the case of milking there was more or less equal involvement. So also in the case of decision-taking in dairying, husbands had

significantly higher role in the case of selection, housing, breeding, treatment and in general. In feeding and milking the scores of wives were higher, though not significant. The above results point out the significant involvement of the women in the households in dairying. In the case of few households male children and female children showed involvement in adoption of the practices as well as decision-taking in dairying.

The chi-square test revealed a significant relationship between age and adoption in the case of husbands. Similarly land holding and herd size were significantly related to adoption, where the latter was highly significant.

The correlation coefficients revealed the following profile. In case of husbands highly significant correlation was shown in adoption of practices related to treatment and availability of professional help. A positive significant correlation was shown by experience in dairying and the aspect of selection. A similar correlation was seen between land holding and the aspect of housing. The occupation and the aspect of feeding showed a highly significant negative relationship. The aspect of housing had a significant negative relationship with availability of professional help as in the case of aspects in general and occupation. All the rest were non-significant.

In the case of wives highly significant correlation was seen between availability of professional help and treatment. A significant relationship was noticed between land holding and housing. Availability of professional help and housing were significantly and negatively related. All the rest were non-significant.

Since the multiple regression analysis revealed low values for the coefficients of determination (R^2), further analysis was not done.

From the above findings, it can be concluded that the recommended practices are being adopted at a higher rate by great majority (82 per cent of respondents with a mean adoption index of 86.037) as a result of continued adoption over 10 years due to the extension work done by the Kerala Agricultural University during later 70s.

Eventhough the husbands were having significant physical involvement when compared with wives in general, the contribution of wives in the adoption of practices relating to housing, feeding and milking was appreciable. In the case of decision-taking also the significant contribution was from the husbands. But the wives' contribution in the aspects of feeding and milking, though not significant, cannot be ignored. Similarly,

the physical involvement and the involvement in the decision-taking by children noticed in few cases had an important role as far as those families were concerned.

The physical involvement and involvement in decision-taking by the women clearly indicate that they have an appreciable influence in the adoption of recommended practices in dairying.

It could also be noted that the major constraint faced by the farmers in adopting scientific selection, housing and feeding was the financial stringency. Non-conception of animals by artificial insemination was the important constraint in adopting scientific breeding. Non availability of medicines in the immediate locality coupled with easy availability of local medicines was responsible for the partial adoption of scientific treatment.

References

REFERENCES

- Achanta, L.D. (1982). Role of rural women in agricultural development. Kurukshetra 31(2): 15-20.
- Ahilan, B. and Selvaraj P. (1991). Role of fisher women in decision making. Social Welfare, 38(2): 16.
- Anitha Vijayan (1989). Adoption of technology for cultivation of Banana Var. Nendran in Trichur district. Unpublished M.Sc.(Ag.) Thesis, Department of Agricultural Extension, College of Horticulture, Vellanikkara, Kerala Agricultural University.
- Azad, M.P., Prasad, M. Yadav, R.N. and Bhartia (1985). Extent of participation of women in Agriculture and allied enterprises. Indian J. agric. Econ., XL(3): 275-276.
- *Badiger, C.L. (1979). A study on the participation of farm women in decision making on farm and home aspects in Dharwad district of Karnataka State. M.Sc. (Ag.) Thesis (unpublished), UAS, Dharwad.
- Balasubramaniam, R. and Knight, A.J. (1982). Bottlenecks in modern dairying. Indian J. Extn. Edn. 18(1&2): 102-105.
- Balasubramaniam, S. and Kaul, P.N. (1982). Adoption of improved fish curing practices. Indian J. Extn. Edn. 18(3&4): 44-50.
- Balasubramaniam, S. and Kaul, P.N. (1985). Adoption of improved practices by traditional fishermen in Kerala. Indian J. Extn. Edn., 21(3&4): 80-87.
- Bavalatti, V.G. and Sundaraswamy, B. (1990). Adoption of dry land farming practices by the farmers of Bijapur district. Indian J. Extn. Edn. 26(3&4): 67-69.
- Bhagat, R. (1980). Family life of working rural women - A few cases. Indian J. Extn. Edn., 16(3&4): 67.

- Bhaskaran, S. (1978). To study the impact of institutional credit and its influence in the behaviour of farmers in adopting high yielding varieties of paddy cultivation. Unpublished M.Sc.(Ag.) Thesis, Department of Agricultural Extension, Faculty of Agriculture, Kerala Agricultural University.
- Bhatnagar, S. (1982). A day in the life of a rural woman. Kurukshetra 30(13): 10-11.
- Chandrakandan, K. and Subramanyan, V.S. (1975). Note on Socio-personal factors of farmers in relation to adoption. Madras Agric. J. 62(10-12): 855-857.
- Devadas, P.R. (1975). Role of women in modern agriculture. Indian Fmg., 25(8): 15-17.
- Dineshmumar and Singh, A.K. (1983). Role of women in rural economy. Kurukshetra 31(7): 13-14.
- Dubey, V.K., Singh, S.B. and Khera, J.K. (1982). Role of rural women in decision making with respect to animal husbandry. Ind. J. Home Sci., 14(2): 18-20.
- George, P.S., Nair, K.N., Strebels, B., Unnithan, N.R. and Walty, S. (1990). Policy options for cattle development in Kerala. Kerala Livestock Development Board, Trivandrum, 44-46.
- Ghosh, M.G. (1985). Pattern of employment of rural women. A study in West Bengal. Indian J. agric. Econ., XL(3): 275.
- Gill, S.S. and Singh, P. (1977). Professional knowledge of dairy farmers of Ludhiana district. Indian J. Extn. Edn. 13(3&4): 77-79.
- Gogoi, S.K. and Gogoi, D.K. (1989). Adoption of recommended plant protection practices in rice: A multivariate analysis. Indian J. Extn. Edn., 25 (1&2): 26-29.

- Hiranad and Kumar, K. (1980). Role of farm women of dairy farming tract in decision making. Indian Co-operative review. 17(1): 105-106.
- Ingole, N.P., Saigaonkar, P.B. and Kothekar, M.D. (1988). Adoption of improved animal husbandry practices by owners of cross bred cattle under I.C.D.P. Indian J. Extn. Edn., 14(3&4): 59-62.
- Jothiraj, S. (1974). An Ex-post-Facto study on the extent of adoption of selected husbandry practices by dairyman. Unpublished M.Sc. (Ag) Thesis, Department of Agricultural Extension, Agricultural College and Research Institute, Coimbatore.
- *Kakoty, H.N. and Sharma, P.N. (1986). Characteristics associated with adoption of dairy production innovations. Dairy Guide, 8(3): 12-14.
- Katarya, J.S. (1989). Association of farmers' characteristics with adoption of wheat technology. Indian J. Extn. Edn., 25 (3&4): 117-120.
- Kaur, S., Oberoi, K., Aujla, P., Dyal, A. and Usha Rani, (1988). Role of rural women and children of different socio-economic status in decision making. J.Res. Punjab agric. Univ. 25(4): 655-663.
- *Kologi, S.D. and Usha Anand (1985). Adoption of dairying innovations among selected Tibetan refugees of Karnataka. Dairy Guide, 7(6): 37-41.
- *Krishnamoorthy, K.S. (1988). Study on knowledge and extent of adoption of seed treatment practices among irrigated cotton and millet growers. Unpublished M.Sc.(Ag.) Thesis, Department of Agricultural Extension, Agricultural College and Research Institute, Coimbatore.
- Kunzru, O.N., Sagar, R.L., Mandape, M.K., Kanbid, B.R. and Singh, P. (1989). Adoption of green fodder production as related to some characteristics of livestock owners. Indian J. Extn. Edn., 25(1&2): 85-88.

- Malik, R. (1979). The decision making by farm women regarding improved agricultural practices. Indian J. Extn. Edn. 15(3&4): 64-69.
- Mazumdar, V. (1975). Women in agriculture. Indian Fmg., 25(3): 6.
- Nagpal, M. (1989). Technology for women in Kulu district. Social Welfare, 35(11): 20-23.
- *Nandapurkar, G. G. (1982). Small Farmers. A study on their entrepreneurial behaviours., Metropolitan book Co., (Pvt.) Ltd., New Delhi.
- Ogunfiditimi, T.O. (1981). Adoption of improved farm practices: A choice under uncertainty. Indian J. Extn. Edn., 17(1&2): 36-41.
- Pachori, R.S. and Tripathi, S.G. (1983). Impact of intensive agricultural extension and research programme on the farmers' knowledge of technology. Indian J. Extn. Edn. 19(3&4): 72-73.
- Prabhu, M.K.K.R. and Kandan, K.C. (1990). A study on knowledge level of farmers towards soil conservation practices. Indian J. Extn. Edn. 26(3&4): 86-88.
- Prakash, R. (1980). Study on the impact of Agricultural Development programme among the tribes of Kerala. Unpublished M.Sc. (Ag.) Thesis, Department of Agricultural Extension, Faculty of Agriculture, College of Agriculture, Vellayani, Kerala Agricultural University.
- Prasannan, K.M. (1987). Extent of adoption of messages by contact farmers in T & V system. Unpublished M.Sc. (Ag) Thesis, Department of Agricultural Extension, Faculty of Agriculture, Vellayani, Kerala Agricultural University.

- Raju, V. (1981). Role of financial assistance and incentives in farmer motivation in dairying. Unpublished M.V.Sc. Thesis, Department of Extension, Faculty of Veterinary and Animal Sciences, Mannuthy, Kerala Agricultural University.
- Ramkumar, S. (1987). Impact of correspondence course in dairying and adoption of improved dairy practices. Unpublished M.V.Sc. Thesis. Department of Extension, Faculty of Veterinary and Animal Sciences, Mannuthy, Kerala Agricultural University.
- Rathore, K.S. and Shaktawat, G.S. (1990). Knowledge of farm women towards agricultural innovations of hybrid bajra cultivation. Indian J. Extn. Edn. 26(3&4): 105-106.
- *Ratinasabapathi, S. (1987). A study on the knowledge and extent of adoption of integrated pest management for cotton. Unpublished M.Sc.(Ag.) Thesis. Department of Agricultural Extension, Agricultural College and Research Institute, Coimbatore.
- Reddy, M.V. and Reddy, S.V. (1988). Relationships between selected characteristics of contact farmers and their knowledge and adoption of improved paddy cultivation practices. Indian J. Extn. Edn. 34(3&4): 39-42.
- Sadhu, N.S. and Renuka, (1982). Changing role of farmers' wives in decision making in the context of technological breakthrough in agriculture. Ind. J. Home Sci., 14(3): 18-20.
- Saini, S.P.S., Shukla, A.N. and Khurana, G.S. (1977). Attributes of potential adopters of recommended dairy production innovations. Indian J. Extn. Edn. 13(3&4):56-58.
- Sangwan, V., Munjal, S. and Punia, R.K. (1990). Participation of women in farm activities. Indian J. Extn. Edn., 26(1&2): 112-114.
- Sanoria, Y.C. and Sharma, D.K. (1983). Comparative analysis of adoption behaviour of beneficiaries of farm development programme. Indian J. Extn. Edn., 19(1&2): 84-86.

- Sasikumar, P.K. (1990). Extent of adoption of scientific practices in prawn farming. Unpublished M.F.Sc. Thesis, Department of Management Studies, Faculty of Fisheries and Department of Extension, College of Veterinary and Animal Sciences, Kerala Agricultural University.
- Satwant, B. and Surinder, P.K. (1986). Adoption of improved household practices by farm women as a function of socio-economic factors. J. Res. Punjab Agric. Univ. 23(1): 155-160.
- Saxena, K.K., Jain, N.C. and Pandya, S.C. (1990). Transfer of rainfed wheat technology and its adoption by farmers in Malwa region. Indian J. Extn. Edn. 26(3&4): 70-73.
- Sengupta, T. (1967). A simple adoption scale for selection of farmers for high yielding varieties programme on rice. Indian J. Extn. Edn., 3(3): 107-115.
- Sharma, R.K. and Sharma, D.D. (1988). Relationship between contact farmers' socio-personal traits and knowledge of wheat production practices. Indian J. Extn. Edn. 24(3&4): 67-70.
- Shashikala, S., Sundaraswamy, B. and Shankaramurthy, H.G. (1990). Activities performed and time spent by farm women of rainfed and irrigated areas. Indian J. Extn. Edn., 26(3&4): 59-63.
- Sheoran, V.K. and Ramkumar (1988). Correlates of adoption of dairy innovations of I.R.D.P. beneficiaries. Indian J. Extn. Edn., 25(3&4): 117-120.
- Singh, A.K. and Ray, G.L. (1985). Variables contributing to the level of fertilizer use of the farmers. Indian J. Extn. Edn. 21(3&4): 1-10.
- Singh, B., Mahipal and Tyagi, K.C. (1985). Some selected socio-personal economic characteristics of the farmers of progressive and non progressive dairy villages. Indian J. Extn. Edn., 21(3&4): 101-103.

- Singh, J.N., Sinha, B.P. and Verma, A.K. (1979). Factors affecting adoption of artificial insemination in cows. Indian J. Extn. Edn. 15(1&2): 55-62.
- Singh, K. and Chander, S. (1983). Involvement of rural women in farm credit. Agric. Banker, 5(4): 22-25.
- Singh, R. (1983). Selected characteristics of farmers in relation to their adoption of farm mechanisation. Indian J. Extn. Edn., 19(3&4): 11-17.
- Singh, R., Gandhi S. and Pati, C. (1987). Time utilization pattern of home makers in rural Haryana. Indian J. Extn. Edn., 23(3&4): 91-92.
- Singh, S. and Dubey, V.K. (1978). Adoption of scientific feeding practices by cattle owners of I.C.D.P., Karnal. Indian J. Extn. Edn., 14(1&2): 70-72.
- Singh, S.P. and Rajendra (1990). A study on adoption of improved sugarcane variety. Indian J. Extn. Edn., 26(1&2): 110-111.
- Sinha, H.S.P. and Sinha, S.K. (1980). Adoption of high yielding varieties of maize by the farmers of Sikkim. Indian J. Extn. Edn. 16(1&2): 46-48.
- Sinha, M.N., Sinha, P.R.R. and Sohal, T.S. (1974). Attributes of potential adopters of cattle feed mixture. Indian J. Extn. 10(3&4): 46-47.
- Sisodia, J.S. (1985). Role of farm women in agriculture: A study of Chambal command area of Madhya Pradesh. Indian J. agric. Econ., XL (3): 223-230.
- Sithalakshmi (1975). Role of women in agriculture. Ind. J. Home Sci., 9(1): 27-29.
- Snedecor, G.L. and Cochran, W.G. (1967). Statistical Methods. Oxford and IBH Publishing Co., New Delhi, 6th ed. pp. 391-406.

- Sohal, T.S. and Tyagi, K.C. (1978). Role of knowledge in adoption of dairy innovations. Indian J. Extn. Edn. 14(3&4): 16-25.
- Sohi, J.S. and Kherde, R.L. (1980). A study of dairy adoption behaviour of small and marginal farmers in Punjab. Indian J. Extn. Edn., 16(1&2): 84-86.
- Somasundaram, D. and Singh, S.N. (1978). Factors affecting the knowledge of adopter and non-adopter small farmers. Indian J. Extn. Edn. 14(1&2): 30-34.
- Somasekharan Nair, A.P. (1980). Factors influencing adoption of selected husbandry practices by milk producers. Unpublished M.V.Sc. Thesis, Department of Extension, Faculty of Veterinary and Animal Sciences, Mannuthy, Kerala Agricultural University.
- Subhadra, M.R. (1979). Comparative effectiveness of extension communication media used under the dairy development programme and extent of adoption of improved dairy husbandry practices by members of milk co-operatives in Trichur Taluk. Unpublished M.V.Sc. Thesis, Department of Extension, Faculty of Veterinary and Animal Sciences, Mannuthy, Kerala Agricultural University.
- Sudha, V.K. (1987). A study of the impact of lab-to-land programme on tribal and non-tribal participants in Kerala Agricultural University. Unpublished M.Sc. (Ag.) Thesis, Department of Agricultural Extension, College of Horticulture, Vellanikkara, Kerala Agricultural University.
- Surendran, P.U. and Pushkaran, P.S. (1977). "A Report of a Survey of outlook of the people of Trichur Taluk on Animal Husbandry". College of Veterinary and Animal Sciences, Kerala Agricultural University, K.A.U. Press, Mannuthy.
- Sushama Kumari, N.P., Menon, A.G.G. and Bhaskaran, C. (1981). Adoption behaviour of selected tribes of Kerala. Indian J. Extn. Edn., 18(1&2): 71-76.

- Talawar, S. and Hirevenkanagoudar, L.V. (1989). Factors of adoption of poultry management practices. India J. Extn. Edn., 25(3&4): 67-73.
- Tyagi, K.C. and Sohal, T.S.(1984). Factors associated with adoption of dairy innovations. Indian J. Extn. Edn. 20(3&4): 1-8.
- Upadhyay, M. and Gupta, P. (1987). Adoption of selected home making practices by rural women. Indian J. Extn. Edn. 23(1&2): 76-78.
- Venkatachalam, S. (1983). Training of rural women - Must for sound dairy extension programmes. The Tamilnadu J. of Co-operation 74(8-9): 475.
- *Venkataprabhu, J. (1988). A study on the knowledge and adoption of water management practices of paddy, sugarcane and turmeric. Unpublished M.Sc. (Ag.) Thesis. Department of Agricultural Extension, Agricultural College and Research Institute, Coimbatore.
- Vijayaraghavan, P. and Somasundaram, D. (1979). Factors associated with knowledge of high yielding varieties of paddy by marginal farmers. Indian J. Extn. Edn. 15(1&2): 77-81.
- Vinodkumar, T.R., Singh, S.R., Yadav and Singh, R.P. (1985). Employment and income pattern of women labour in modern agriculture in district Meerut (U.P.). Indian J. Agric. Econ. XL(3): 276-277.
- Yadav, K.D. and Jain, N.C. (1984). Socio-economic factors influencing the adoption and non-adoption of hybrid cattle in western Madhya Pradesh. Indian J. Extn. Edn. 20(1&2): 71-72.

* Originals not seen

Appendices

APPENDIX

Respondent No.

PART I

1. Name, Address :
2. Age : Husband Wife
3. Educational status (Husband, Wife) : Without formal education/LPS|
UPS/HS/College
4. Occupation (Husband, Wife) : 1. Govt. employment
2. Private employment
3. Self employment
4. Agriculture and allied activities
5. Agricultural and other labourers
6. House wives
5. Land holding : 1. Below 10 cents
2. 10 cents to 1 ha
3. 1 to 2 ha
4. Above 2 ha
(1 ha = 2.5 A)

6. Herd size

Species	Category	Cross-bred	Local	Total
Cow	1. Milch			
	2. Dry			
	3. Young			
Buffalo	1. Milch			
	2. Dry			
	3. Young			
Goat	1. Milch			
	2. Dry			
	3. Young			

7. Annual income : 1. Occupation
 2. Dairying
 3. Other sources
 4. Total

8. Family size : Male Female
 1. Adult
 2. Children
 3. Total

9. Social participation
(Husband, Wife)

Are you a member/office
bearer in organisations
like milk society, other
societies, farmers' club,
religious & political
organisations?

M	OB

H	
W	

9.a. How often do you attend
the meetings of the
above organisations?
(Husband, Wife)

: Regularly/Occasionally/
Never

9.b. How often do you attend
the following?

-----		Regularly		Occasionally		Never	
-----		H	W	H	W	H	W

Marriages

Religious functions

Family functions

10. Experience in dairying

- : 1. Below 5 years
2. 5 to 10 years
3. Above 10 years

11. Contact with extension agencies
(Husband, Wife)

Once in a month		Once in 6 m		Once in a year		Never	
H	W	H	W	H	W	H	W

C.I.A.

Dairy farm Instructor

V.E.O.

Vet. Surgeon

KAU staff

Gram Savikas

Health workers

12. How often the services of the following officials are available at your premises?

Once in a month	Once in 3 m	Once in 6 month	Once in a year	As and when required
-----------------	-------------	-----------------	----------------	----------------------

Vet. Surgeon
(MILMA)

C.I.A.

Dairy farm
Instructors

KAU Staff

L.I.

Vet. Surgeon
(DRDA)

13. Are you getting the cattle feed from the society? : Yes/No
- 13a. Is the supply regular? : Yes/No
14. What is your source of water for dairying? : Pumpset/others
- 14a. If pumpset is used whether the power supply is regular? : Yes/No
15. Is there any scarcity of water during summer? : Yes/No
16. Have you experienced any difficulty in selling out the milk? : Yes/No
- 16a. Are you getting the sale price of milk regularly? : Yes/No
- 16b. Any difficulty in disposing old and unwanted animals : Yes/No

PART II

SELECTION OF COWS

1. While purchasing cows who use to select the cow?
- | | Always | Often | Sometimes |
|---|--------|-------|-----------|
| H | | | |
| W | | | |
| M | | | |
| C | | | |
| F | | | |

2. Who decides the qualities for the cows to be selected? -----
 Always Often Sometimes

 H
 W
 M
 C
 F

3. On what basis do you decide the qualities for the cow? : (Pedigree/body wt./daily yield/dairy characters/any other)
4. If body weight is considered what should be the minimum? : 100 kg/200 kg/300 kg/400 kg
5. If yield is considered what should be the minimum? : Below 6 L/6 to 8 L/above 8 L
6. Have you considered the above aspects while selecting the cow? : Always/sometimes/never
7. If not, why? :

HOUSING

1. Have you constructed a pucca-shed for your animals? : Yes/No
2. If not why? :
3. If yes, have you provided the minimum facilities required? : Yes/No

4. If not, why? :
5. Have you provided sufficient space for manger? : Yes/No
6. If not, why? :
7. Who took the decision to construct the pucca-house/ temporary shed with available facilities? -----
 Always Often Sometimes

 H
 W
 M
 C
 F

8. What should be the optimum length of standing? : 1.5 to 1.7 m/1.7 to 2 m/
 2 to 2.2 m
9. What should be the optimum width of standing? : 1 to 1.2 m/1.2 to 1.4 m/
 1.4 to 1.6 m
10. Who use to clean the shed daily? -----
 Always Often Sometimes

 H
 W
 M
 C
 F

- 8. Is colostrum feeding required for new born calf? : Yes/No
- 9. If yes, at what rate? : 1/5th, 1/10, 1/15 of body weight

MILKING

- 1. Who use to milk the animals daily?

	Always Often Sometimes

	H
	W
	M
	C
	F

- 2. Are you following scientific/hygienic milking practices? : Yes/No
- 3. If not, why?
- 4. Who use to decide on various activities involved in hygienic milking practice?

	Always Often Sometimes

	H
	W
	M
	C
	F

- 5. After letting down, within how much time milking should be completed? : 5 to 6 mts/15 mts/30 mts

6. Which is the best method of milking? : (Full hand method/thumbing/ stripping)
7. What is the ideal frequency of milking for high-yielding cows? : (2/3/more than 3)

BREEDING

1. How often do you adopt AI for breeding your animals? : Always/sometimes/never
2. If not, why?
3. Who takes the decision on this? -----
 Always Often Sometimes

 H
 W
 M
 C
 F

4. Who use to arrange for breeding the animals? -----
 Always Often Sometimes

 H
 W
 M
 C
 F

5. After the onset of heat when they should be bred? : (Then and there/After 6 hrs/ after 12 hrs/after 24 hrs)

- 6. Are you giving dry period for your cows? : Yes/No
- 7. If not, why? :
- 8. If yes, how long? :
- 9. How long you can wait after the delivery for expulsion of placenta? : (2 to 6 hrs/6 to 12 hrs/12 to 24 hrs)

TREATMENT

- 1. How often do you provide timely treatment to the animals when they are diseased? : Always/Sometimes/never
- 2. If not, why? :
- 3. Who takes the decision for this? -----

Always	Often	Sometimes
H		
W		
M		
C		
F		

4. Who makes arrangements for this? -----
 Always Often Sometimes

 H
 W
 M
 C
 F

5. Can you name some of the diseases in cattle that can be prevented by vaccinations? : FMD/RP/Anthrax/HS/BQ/Rabies/Brucellosis
6. How often do you deworm the calves? : Regular/at times/never
7. If not, why? :
8. If practising from what age onwards? : (1st wk/3rd wk/3rd month)
9. Can you name some of the zoonotic diseases? : TB/Rabies/Cowpox/Brucellosis/Anthrax/Hydatid cyst

RELATIVE INVOLVEMENT OF MEN AND WOMEN IN DAIRYING

By

S. S. ANIL

ABSTRACT OF A THESIS

Submitted in partial fulfilment of the
requirement for the degree

Master of Veterinary Science

Faculty of Veterinary and Animal Sciences
Kerala Agricultural University

Department of Extension
COLLEGE OF VETERINARY AND ANIMAL SCIENCES
Mannuthy - Thrissur

1992

ABSTRACT

The objectives of the study were, to assess the extent of physical involvement and involvement in decision-taking by men and women in dairy management practices, to probe into the influence of women in the adoption of practices, to study the extent of adoption of selected aspects in dairying, the reasons for non-adoption/partial adoption of the practices, if any, to study the influence of selected socio-economic factors on adoption and to reveal the knowledge level of men and women about dairy management practices.

The study was conducted among the members of the milk producers' co-operative society, Vilanganoor. The data were collected through personal interview using pre-tested interview schedule. Variables were measured using appropriate scales and suitable statistical tools were used for analysing the data.

The study revealed that majority of husbands and wives had medium knowledge level. Husbands had significantly higher knowledge than wives in general even though there was no significant difference in the aspects of feeding, milking and breeding.

In the ^{case} aspects of housing and feeding the physical involvement of wives was significantly higher. In all the other aspects husbands' scores were significantly higher except in the case of milking where there was not much difference.

In decision-taking, the husbands had significantly higher involvement in all aspects except feeding and milking. It was also noted that the children had important role in these two aspects in few households.

There was a high rate of adoption of practices related to the selected aspects in dairying among the respondents (mean adoption index - 86.037). The physical involvement of women in the adoption and their involvement in decision-taking though not significant in general indicate their fairly good influence in the adoption of dairy husbandry practices.

The correlation coefficients worked out revealed that out of the 13 socio-economic factors included in the study, only the land holding, experience in dairying, availability of professional help at farmers' premises and occupation had significant association with adoption. Experience in dairying had significant positive correlation with adoption of scientific selection in the case of husbands. Similarly land holding was positively and

significantly associated with adoption of scientific housing. Availability of professional help at farmers' premises was significantly and negatively correlated with adoption of scientific housing, while it had highly significant positive correlation with adoption of scientific treatment. Occupation of husbands and adoption of practices in the aspect of feeding were highly significantly and negatively correlated. Occupation had significant negative correlation with adoption of aspects in general in the case of husbands. Since the value of multiple regression analysis was low no further analysis was done.

The major constraints faced by farmers in the adoption of scientific practices were lack of money, high cost of feed, repeat breeding and non-availability of medicines.

