

**IMPACT OF CALF FEED SUBSIDY SCHEME
ON
FARM WOMEN**

**By
REEJA GEORGE PULINILKUNNATHIL**

THESIS

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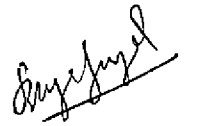
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DECLARATION

I hereby declare that this thesis entitled “**Impact of calf feed subsidy scheme on farm women**” 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.

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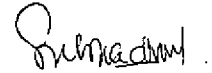


REEJA GEORGE PULINILKUNNATHIL

CERTIFICATE

Certified that this thesis entitled “**Impact of calf feed subsidy scheme on farm women**” is a record of research work done independently by **Smt. Reeja George Pulinilkunnathil** under my guidance and supervision and that it has not previously formed the basis for the award of any degree, fellowship or associateship to her.

Mannuthy,
27.12.1999.



Dr. M.R. Subhadra

(Chairperson, Advisory Committee)
Assistant Professor (Sel. Gr.)
Department of Extension
College of Veterinary & Animal
Sciences, Mannuthy
Kerala Agricultural University

*I remember the house where I was born
The little window where the sun came
peeping through at morn
It never came a wink too soon
Nor brought too long a day*

Dedicated to my parents

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REEJA GEORGE PULINILKUNNATHIL

ABBREVIATIONS

| | | |
|----------------|----|---|
| <i>AI</i> | -- | <i>Artificial insemination</i> |
| <i>F.M.D.</i> | -- | <i>Foot and Mouth Disease</i> |
| <i>H.S.</i> | -- | <i>Haemorrhagic Septicaemia</i> |
| <i>R.P.</i> | -- | <i>Rinderpest</i> |
| <i>I.C.D.P</i> | -- | <i>Intensive Cattle Development Project</i> |
| <i>S.D</i> | -- | <i>Standard Deviation</i> |
| <i>m.s.</i> | -- | <i>mean score</i> |
| <i>f</i> | -- | <i>frequency</i> |

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INTRODUCTION

INTRODUCTION

The contribution of the livestock sector to the economy of Kerala is significant. As a result of successful cattle development programmes over the last three decades, substantial increase in the share of GDP from animal husbandry and dairying was achieved. The share of GDP rose from 5.92 per cent in 1986-87 to 10.27 per cent in 1995-96. As per the recent livestock census (1996) the number of cattle in Kerala has decreased from 34.24 lakh in 1987 to 33.96 lakh in 1996. However, there was an increase in the number of total adult females from 17.01 lakh to 17.96 lakh during the same period.

Kerala was one of the first few states to implement crossbreeding of cattle at full swing. Presently 67.33 per cent of cattle in the state are crossbred. Notwithstanding these glaring achievements, the average milk production of crossbred cattle in Kerala remains lower than the average yield of crossbred cows in major milk producing centres of the country. The Government of Kerala recognised the deficiencies in rearing calves and the probable consequences this could have on early maturity and production potential of animals. Success of dairy farming depends to a very large extent upon rearing calves to breedable age at a fast rate and with minimum mortality. The initial growth of an animal is the most important phase of its life because it has immense bearing on early maturity and production. Scientific management and adequate feeding of young stock is very important in dairy farming since they form the

basic units for future stock within the limits set by genetic factors. The government could pinpoint lack of knowledge of feeding and management coupled with inadequate resources of the farmer as the major constraints for not obtaining proper production. In this context, the calf feed subsidy scheme was launched in 1976. Under this scheme, crossbred female calves belonging to economically weaker sections of society are selected and given special care and attention until 32 months or calving whichever is earlier.

The calf feed subsidy scheme is being implemented through its offices in Alapuzha, Kollam, Kottayam, Kozhikode and Palakkad districts. In Thiruvananthapuram, Thrissur and Kannur it is being implemented through the office of the Special Livestock Breeding Programme. In Idukki, Wayanad, Malappuram, Pathanamthitta and Kasargod districts, as there is no separate staff for implementing the scheme, it is being implemented through the office of the District Animal Husbandry Officers concerned. In Ernakulam district, the services of the Project Officer, I.C.D.P. are used to implement the calf feed subsidy scheme.

For implementation of the scheme, suitable milk producer's societies are identified and secretaries there execute a bond with the district level implementing officer, duly forwarding the details of calves with a certificate of birth from the Livestock Inspector/Veterinary Surgeon of the locality wherever possible. Beneficiaries identified should not have a total family income exceeding Rs.11, 000. Due

representation is being given to schedule caste/schedule tribe and women. Enrolment of calves is carried out by the Field Level implementing officer (Veterinary Surgeon) and Livestock Inspector of the locality in consultation with the President and Secretary of the concerned milk society, after taking into account factors like body weight of the calf, ear tagging, vaccination against F.M.D., deworming and insurance. The beneficiary is required to execute an agreement on stamp paper. Once enrolled, calves are issued with passbooks containing details of the calf. Beneficiaries are given training in scientific calf feeding and management. Regular deworming and vaccination against foot and mouth disease is envisaged as part of the scheme. The reproductive status of the animal is ascertained at 24 months of age by the concerned veterinary surgeon.

The calf feed subsidy scheme was set up with the primary objective of augmenting milk production through effective feeding and management of young stock. Though it has been functioning since 1976, there has not been any research effort to study the impact of this scheme. This study was therefore undertaken with the following objectives:

1. To study the impact of calf feed subsidy scheme on farm women in terms of its functions of extension educational importance.
2. To identify problem areas and suggest remedial measures where needed.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

In this chapter, studies related to the current research are reviewed and presented. There was paucity of similar researches especially those pertaining to women. The available studies however, have been reviewed and are presented under the following headings.

2.1 Knowledge of improved practices.

2.2 Attitude towards improved practices.

2.3 Extent of adoption of improved practices.

2.4 Animal breeding parameters.

Although many findings related to the above aspects are available only few of them are specific to women. Similarly studies conducted in Kerala on the topic are also limited.

2.1 KNOWLEDGE OF IMPROVED PRACTICES.

Gill and Singh (1977) studied the professional knowledge of dairy farmers of Ludhiana district, Punjab. They found that most of the farmers had low knowledge of breeding, feeding, housing and animal health. The knowledge of these farmers in marketing and management was nevertheless medium.

Sohal and Tyagi (1978) investigated the knowledge of respondents in the operational area of I.C.D.P. Karnal, and non- I.C.D.P. areas. They reported low knowledge among respondents of non-I.C.D.P. areas as compared to I.C.D.P. areas.

Somasundaram and Singh (1978) studied the knowledge level with regard to high yielding varieties of paddy among small farmers. They concluded that adopter farmers had higher knowledge levels than non-adopters.

Pathak *et.al.* (1979) investigated the impact of National Demonstration in 24 Parganas and Hoogly districts of West Bengal. They found that the difference between scores of participant and non-participant farmers in relation to improved practices of jute and wheat were highly significant. But there was no significant difference between them with regard to knowledge of paddy cultivation.

Singh *et.al.* (1979) studied the knowledge level of farmers of six villages in the operational area of the Regional Artificial Insemination Centre, Panipat. The study revealed that among adopters of AI, 68.33 per cent had high knowledge of AI while the remaining 31.67 per cent had medium knowledge. None of the adopters had low knowledge of AI. In contrast, majority of the non-adopters of AI had either low (20 %) or medium (70%) knowledge and only a few of them (10 %) had high knowledge of AI.

Vijayaraghavan and Somasundaram (1979) investigated the knowledge of high yielding varieties of paddy among marginal farmers of six villages where the Small Farmers Development Agency was in operation in Coimbatore district of Tamil Nadu. The study revealed that majority of the respondents had low level of knowledge regarding high yielding varieties of paddy.

Kamarudeen (1981) studied the impact of National Demonstration on paddy cultivation in Thrissur district of Kerala and concluded that knowledge was positively and significantly associated with adoption of improved practices.

Agarwal and Singh (1983) studied the knowledge of prescribed nutritional recommendations among women and concluded that mothers of high income group had sufficient knowledge whereas urban cum low income group mothers had insufficient knowledge of these recommendations.

Channegowda (1983) in a study of farmers of Bangalore district, Karnataka, found that 34.5 per cent and 17 per cent respectively had low and high knowledge of research findings evolved in the research stations at Hebbal and GKVK campuses of University of Agricultural Sciences.

Pachori and Tripathi (1983) reported that all the groups of contact farmers of the Intensive Agricultural Extension and Research Programme had higher knowledge as compared to non-contact farmers.

Sanoria and Sharma (1983), compared the behaviour of target beneficiaries of the Training and Visit system and Lab to Land Programme in Sehore district, Madhya Pradesh. They found technical knowledge to be associated with adoption of improved practices by beneficiaries of both programmes, whereas no such association was observed in the control group.

In a study on the relationship between some selected socio-economic psychological and situational variables, with extent of adoption of improved practices in the operational area of I.C.D.P, Kamal, Tyagi and Sohal (1984) inferred that knowledge of technology was significantly related to adoption. They opined that increase in knowledge of dairy innovations led to higher adoption of these innovations.

Kherde *et. al.* (1986) analysed the knowledge of dairy farming practices among different categories of cattle owners of eleven districts of Haryana. They concluded that the urban cattle owners had an edge over their rural counterparts.

Nataraju and Channegowda (1986) studied the knowledge of dairy farming among dairymen of Bangalore district, Karnataka. They reported that majority of dairymen had medium knowledge, 19.4 per cent high and 13.3 per cent low knowledge of dairy farming.

Parshad (1987) investigated the knowledge of the technology of sodic soil reclamation among farmers of Karnal district of Haryana. A large percentage of farmers had either low or medium knowledge of this technology.

Reddy and Reddy (1988) studied paddy farmers of Guntur district of Andhra Pradesh. Their studies revealed that farmers' knowledge and adoption of improved methods of paddy cultivation were significantly and positively related to factors like farm size, contact with extension agency, scientific and achievement orientation.

Ingole *et. al.*(1988), studied crossbred cattle owners of Nagpur to evaluate the ICDP in respect of diffusion of improved animal husbandry practices and their adoption. Most of the cattle owners had correct knowledge of oestrous cycle and optimum time of insemination. The authors concluded that the ICDP had succeeded in diffusing this important information.

Kher and Halyal (1988) investigated the knowledge of sugarcane growers of Kodinar taluk, Gujarat. They found that extension participation, localite cosmopolite behaviour, value orientation, education, social participation, farm mechanisation index and innovation proneness were significantly associated with knowledge of cane growers.

Sharma and Sharma (1988) studied the impact of Training and Visit system on knowledge of recommended practices for wheat production in Haryana. Their study revealed that majority of contact farmers possessed low to medium level of knowledge of recommended practices and thus the training and visit system had only little impact in increasing knowledge of contact farmers.

Verma *et. al.* (1988) observed the positive impact of the Lab to Land Programme of the Indian Institute of Sugar Cane research, Lucknow, on knowledge and adoption pattern of farmers.

Buttar and Goyal (1989) investigated the level of knowledge related to nutrition, of rural homemakers of Ludhiana, Punjab. Of the respondents studied, 48.5 per cent and 43.5 per cent had medium and low knowledge levels respectively, while a negligible percentage possessed high levels of knowledge. Further they concluded that knowledge was significantly related to attitude.

Sadat and Srivastava (1989) studied the knowledge of sheep breeders of Chhotanagpur and Kashmir. They found that majority of farmers in Chhotanagpur had low levels of knowledge while in Kashmir, the majority of farmers had medium levels of knowledge about improved practices.

Talwar and Hirevenkanagoudar (1989) studied poultry farmers of Dharwad district of Karnataka in an attempt to delineate those variables which explain adoption. Among the variables studied, knowledge emerged to be the most important factor influencing the level of adoption.

Juliana *et.al.* (1991) in a study on the adoption of pest management practices, found that most of the marginal farmers and small farmers possessed only medium levels of knowledge of these practices. More than half of the big farmers possessed high knowledge levels.

Narwal *et.al.* (1991) studied the association between farmers' characteristics and attitude and knowledge of buffalo management practices. The study, conducted in Hissar, in both adopter and non adopter villages, revealed that factors such as material possession, radio listening, extension contact were positively and significantly associated with knowledge.

Ratnakar and Reddy (1991) made a study of knowledge of recommended farm practices among tribal farmers. They investigated the knowledge of beneficiaries and non-beneficiaries of the Integrated Tribal Development Agency in Khammam district of Andhra Pradesh. The study revealed that 84.4 and 15.6 per cent of beneficiaries had low and medium knowledge levels respectively where as 90.6 and 9.4 per cent of non- beneficiaries had low and high knowledge levels respectively.

Alexander and Kumaran (1992) studied the knowledge of farmers in three areas of the Indo-Gangetic belt. Respondents' knowledge of various domains of agriculture and animal husbandry, as well as elementary technical knowledge and skill were studied. The study revealed that the overall knowledge of respondents in three of the five domains was low.

Anil (1992) studied the knowledge of men and women about dairy management practices. The study, undertaken in a village in Kerala, and revealed that majority of men and women had medium knowledge of dairy management.

Intodia and Sharma (1993) investigated the technological knowledge of tribal farmers in the Modified Area Development Approach Programme. They found that only 5 to 20 per cent of tribal farmers possessed knowledge of high yielding crops

cultivated. The study further revealed that more than 75 per cent of tribal farmers had no knowledge of the seven important agricultural practices studied.

Rajkamal (1993) studied the knowledge of dairy farming among tribal dairy men and women of Trivandrum and Kollam districts of Kerala . The study revealed that majority of the dairy farmers had medium knowledge of dairy farming.

Rangnekar *et.al.* (1994) studied the knowledge and awareness of animal husbandry among rural women of Baroda, Ahmedabad and Udaipur districts. Their study revealed that the majority of women were aware of the need for better quality feed in order to achieve high production and they knew something about clean milk production, fat and solid not fat content of milk. But quite a few had no knowledge of artificial insemination or cross- breeding and the usefulness of vaccination. Most women were not aware of the importance of feeding colostrum to calves soon after birth. The majority could differentiate between good and bad quality fodder, although cultivation of green fodder was never seriously considered.

Shreeshailaja and Veerabhadraiah (1994) measured knowledge and adoption level of farm women with regard to improved practices of dairy farming. The study undertaken in Devanahally taluk of Bangalore district revealed that almost equal percentage of farm women had high, medium and low knowledge of improved practices.

Singh and Sharma (1995) investigated the characteristics that discriminated adopters of dairy farming practices from non-adopters, in Bijnor district of Uttar Pradesh. They concluded that knowledge of dairy farming as a profession was an important characteristic, which differentiated adopters from non-adopters of dairy farming practices.

Tripathi *et.al.* (1995) studied the knowledge of dairy farming technologies among farm women of Bareilly district, Uttar Pradesh. The farm women were either members or non-members of co-operatives. The study revealed that majority of them in both systems had medium level of knowledge about the technologies studied. The study further revealed that adoption of all the dairy farm technologies were highly associated with knowledge of these technologies.

Nisha and Subramanian (1997) studied the knowledge of dairy farming and dairy co-operatives among farm women of Periyar district, Tamil Nadu. They concluded that 78 per cent of the respondents had medium to high knowledge of dairy farming while 56 per cent had low knowledge of dairy co-operatives.

Tharaneatharan *et.al.* reported that more than one-third of agro-forestry beneficiaries had high knowledge of agro-forestry followed by 33.04 per cent low and 30.77 per cent high knowledge of agro- forestry.

2.2 ATTITUDE TOWARDS IMPROVED PRACTICES.

Reddy and Reddy (1977), studied the attitude of farmers in Hyderabad towards the crop loan system. Of the respondents studied, 21.7 and 10.29 per cent had high and low attitude scores respectively. The researchers opined that attitude of farmers towards crop loan system was an important factor for implementing the schemes

Pathak *et.al.* (1979), investigated the impact of National Demonstration on knowledge, attitude and adoption levels of farmers of 24 Parganas and Hoogly districts of West Bengal. The study showed that the differences in attitude scores of National Demonstration farmers were highly significant

Singh *et al.* (1979) investigated the factors affecting adoption of artificial insemination in cows by farmers of six villages in Panipat Regional Artificial Insemination Centre. They concluded that 97 per cent of adopters and 5 per cent of

non-adopters had favourable attitude towards artificial insemination, while 82 per cent of non-adopters and 2 per cent of adopters had unfavourable attitude towards artificial insemination.

Singh and Kunzru (1985) studied sheep and goat farmers of Mathura district of Uttar Pradesh. Majority of the respondents had a favourable attitude towards sheep and goat farming.

Mathiyazhagan and Singh (1986) analysed the attitude of farmers of Andanallur and Thiruverumbur blocks of Trichirapalli district of TamilNadu towards banana cultivation. They found that 70 per cent of the respondents under study had favourable attitude towards banana cultivation. They attributed this favourable attitude to the better income from banana cultivation.

Srinath (1988) studied prawn farmers of Cochin, Kerala and found that owner farmers had better attitudes towards prawn farming than lessee farmers.

Buttar and Goyal (1989) studied the attitude of rural home-makers of Ludhiana, Punjab, towards nutritional recommendations. They concluded that knowledge was significantly and positively related to attitude.

Katarya (1989) investigated the relationship between the attitude of wheat farmers of Gurgaon and Karnal districts of Haryana and their post training adoption scores. The study revealed a positive and significant association between attitude and post training adoption scores.

Singh and Israel (1989) analysed the impact of Training and Visit system on the attitude of beneficiaries. As the mean attitude score of contact farmers was slightly higher than that of non contact farmers, they concluded that contact farmers had more favourable attitude than non contact farmers. They further opined that as attitude of farmers became favourable towards any programme, it was natural that they tried and adopted it again.

Narwal *et.al.* (1991) investigated the attitude of farmers toward buffalo management practices. They found that certain factors such as material possession, size of holding, radio listening and extension contact were significantly correlated with attitude of farmers towards improved management practices in both adopted and non adopted villages.

Goswami (1993) in a study on the attitude of hill farmers towards shifting

cultivation found that 34 per cent of farmers had less favourable attitude , 43 per cent favourable and 23 per cent most favourable attitude towards shifting cultivation. He concluded that this indicated farmers' knowledge of the ill effects of shifting cultivation.

Rajkamal (1993) studied the attitude of tribal men and women of Thiruvananthapuram and Kollam districts , Kerala, towards dairy farming. He observed that majority of them had medium level of favourable attitude towards dairy farming.

Sinha *et. al.* (1994) studied the attitude of farmers of Chottanagpur towards soil conservation programme. They found that amongst adopters of this technology, 50 per cent did not care to maintain the structures after they were constructed and concluded that this indicated the indifferent attitude of majority of the farmers which might be responsible for the failure of the project.

Tripathi *et.al.* (1995) studied dairy farm women of Barielly district Uttar Pradesh. They found that attitude towards dairy farming to be positively and highly correlated with knowledge of dairy farming.

2.3. EXTENT OF ADOPTION OF IMPROVED PRACTICES

Jothiraj (1974) investigated the adoption of selected animal husbandry practices by dairymen. He found that 11 per cent of the respondents had adopted all the four practices studied, 18 per cent adopted three practices, 61 per cent adopted two practices, 8 per cent one practice and 2 per cent of the respondents did not adopt even a single recommended practice.

Subhadra (1979) studied the extent of adoption of improved dairy husbandry practices by members of milk co-operatives in Trichur district of Kerala. She observed that only 5 per cent of the respondents had an adoption quotient of 90, while 1 per cent had an adoption quotient of 10. The remaining 94 per cent had adoption quotients ranging from 20 to 80.

Pathak *et. al.* (1979) studied that impact of National Demonstration on knowledge, attitude and adoption levels among farmers in West Bengal. The study revealed highly significant differences in the adoption scores of National Demonstration and non National Demonstration farmers.

Sohi and Kherde (1980) investigated the dairy adoption behaviour of small and marginal farmers of Punjab. They concluded that out of 120 respondents, 21.67 per cent were low adopters, 53.33 per cent medium adopters and 25 per cent high adopters.

Nair (1980) studied dairy farmers of Trichur district of Kerala. His study revealed that the mean value of extent of adoption of selected animal husbandry practices was 74.64. He also found that 49, 33 and 16 per cent of respondents respectively belonged to high, medium and low adopter categories.

Kulhari (1981) pointed out that the level of adoption of recommended practices of paddy and wheat crops by farmers covered under the Training and Visit system was significantly higher than that of non-beneficiary farmers of this system.

Ravichandran (1981) reported that more than three fourth of the farm families under the Lab to Land Programme used improved fertilisers.

Reddy and Babu (1982) investigated the impact of national demonstration on adoption behaviour of participant and non-participant farmers in the Rangareddi District of Andhra Pradesh. He concluded that National Demonstration had a positive impact on participant farmers in increasing the extent of adoption of package of practices concerning paddy cultivation.

Hirevenkanagoudar *et.al.*(1985) investigated the impact of dairy development programmes of Karnataka Dairy Development Co-operation

(K.D.D.C.) on various categories of dairy farmers in Bangalore district. They inferred that there was a significant difference in adoption of selected improved management practices between K.D.D.C. and non- K.D.D.C. farmers.

Mishra and Jha (1985) analysed the impact of the Lab to Land Programme in increasing adoption of farmers of North Bihar. The percentage of farmers having adoption scores ranging from 51 to 75 was 56.92 in adopted villages as compared to 26.16 per cent in non adopted villages.

In a study on adoption of dairy innovation Singh *et.al.* (1985) stated that the adoption of the same were significantly higher in villages those are progressive regarding dairying than in non-progressive villages.

Kakoty and Sharma (1986) investigated the characteristics associated with adoption of dairy production innovations. They 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 of respondents adopted feeding and management practices respectively.

Ingole *et.al.* (1988) studied cross-bred cattle owners of Nagpur to evaluate the ICDP in respect of adoption of improved animal husbandry practices. Adoption of animal nutrition practices was found to be very low. Only 18 per cent of the owners ligated and treated the navel cord with iodine. More than 62 per cent did not

practice weaning of calves at all. Only 12 per cent fed proper quantity of balanced ration to growing calves. About 87 per cent fed colostrum three times a day for five days to cross-bred calves. Preventive measures against parasitic infestations was practiced by 80 per cent of the respondents.

Mahipal and Kherde (1989) investigated the adoption of dairy farming technologies among farmers of Operation Research Project. They observed that majority of the dairy farmers were medium adopters of various dairy farming technologies.

Sharma *et.al.* (1989) studied the extent of adoption of crop husbandry technology transferred through Lab to Land Programme in adopted and non adopted villages. In the adopted villages, 34 per cent of farmers were high adopters, 54 per cent medium adopters and the remaining low adopters. On the other hand nearly 98 per cent of farmers in non adopted villages were low to medium adopters.

Anil (1992) studied the adoption of selected dairy husbandry practices by farmers in a village in Kerala. He reported a high level of adoption of the practices by the respondents.

Sharma and Riyazuddin (1993) conducted an investigation about the adoption of improved sheep production technologies in Rajasthan. Hardly one fourth of the respondents adopted cross-breeding in the adopted villages whereas in the non adopted villages not even a single respondent adopted cross-breeding. Most

of the adopted villagers fed concentrates to breeding rams and had adopted deworming and vaccination.

Sharma (1994) studied the adoption of milk marketing practices by dairy farmers in the vicinity of ICDP, Gurgaon. He found that almost 64.4 per cent and 33.3 per cent of respondents were low and medium level adopters of these practices. High level adoption was observed among 2.2 per cent of farmers.

Shreeshailaja and Veerabhadraiah (1994) studied the adoption of improved dairy practices by farm women of Devanahally taluk, Bangalore district. The study revealed that thirty five per cent of the women were medium level adopters followed by low level adopters and high level adopters in that order.

Naika and Nagabhushanam (1997) studied the extent of adoption of crop technology in Eastern Dry Zone of Karnataka. The study revealed that most of the farmers adopted improved crop technologies recommended for ragi cultivation to a greater extent than tomato or potato cultivation.

Rathakrishnan *et.al.* (1997) studied the adoption of green gram cultivation practices among farmers of Thirumangalam agricultural division in Madurai district of Tamil Nadu . They found that nearly three fourth farmers followed the

recommended spacing for green gram while one third adopted chemical control of pests.

Tharaneatharam *et al.* (1998) studied the adoption level of agro-beneficiaries of Kamarajar district in Tamil Nadu. They observed that little more than two fifths of respondents were low adopters followed by medium (29.23%) and high (26.9%) adopters of agro-forestry.

2.4. BREEDING PARAMETERS.

Scientific research has specified the ideal breeding parameters of cattle. For instance, Arthur *et al.* (1989) has suggested that the age at first oestrus of cow is on an average 10 months. However, under field conditions these are seldom achieved. Studies have been conducted in various states of India to understand the field level realities in this regard. To quote examples, Saika and Sharma (1977) reported that the average age at puberty in Jersey F₁ and F₂ crosses was 16.1 and 16.2 months respectively.

Rajan (1980) reported the age at first oestrus to be 548 days for crossbred heifers.

Balakrishnan *et.al.* reported that the average age at first oestrus in Zebu x Holstein Friesian crosses was 679 days.

Nair (1973) made an assessment of evolutionary cross-breeding as a basis for cattle development in Kerala. He studied cross bred cattle of the Indo Swiss project Kerala and observed that the age at first calving was 38.5 ± 6.4 months.

Patel *et.al.*(1976), investigated the economics of cross-bred cattle in Kerala. They reported that crossbred cattle calved for the first time between 49.7 and 58.1 months.

Girija (1980) reported that the age at first calving for Brown Swiss crosses in farms under Kerala Agricultural University was 43.2 ± 2.06 months.

Gincy *et. al.* (1988), reported that the crossbred cattle in Kerala calved for the first time between 30 and 72 months.

METHODOLOGY

METHODOLOGY

This chapter deals with the research methods and procedures followed. Therefore, the methods and procedures of area, household and respondent selection their operationalisation and empirical measurements, data collection and statistical tests are described under four major headings as follows.

3.1 Sampling design.

3.2 Theoretical orientation

3.3 Data collection.

3.4 Statistical analysis.

3.1 SAMPLING DESIGN.

3.1.1 Selection of study area.

The calf feed subsidy scheme of the Animal Husbandry Department is being implemented in all fourteen districts of the state and among these, Thrissur district was purposively selected for this study for reasons of convenience, as the institution from which this study was undertaken was located in this district.

3.1.2 Sampling design.

A multistage random sampling procedure was used to select the respondents. The Animal Husbandry Department has grouped the milk co-operatives

in each district into circles considering their physical proximity and administrative convenience for the implementation of the scheme. Accordingly the circles constituted in the district were the following:

1. Anthikad circle.
2. Amballoor circle.
3. Chalakudy circle.
4. Cherpu circle.
5. Irinjalakuda circle.
6. Kodungalloor circle.
7. Kunnankulam circle.
8. Mala circle.
9. Mullassery circle.
10. Panancherry circle.
11. Thiroor circle.

From these eleven circles, four circles were selected randomly and these circles were Kodungalloor, Irinjalakuda, Cherpu and Thiroor. In the next stage, the milk co-operative societies having the largest number of beneficiaries were selected from each circle. The societies thus selected were, Konnathukunnu (Kodungalloor circle), Kalparambu (Irinjalakuda circle), Thrikkur (Cherpu circle) and Kumbalakode (Thiroor circle). From the list of beneficiaries in each society, a proportionate random sample was selected. Similarly, a list of non-beneficiary members of each society was also prepared and a proportionate random sample was selected. Thus, a total of seventy- five beneficiary and non-beneficiary houses

were chosen and the housewives there were studied. So much so, women were the unit of study and in all, 150 of them constituted the sample.

3.2 THEORETICAL ORIENTATION.

This section dealt with the operationalisation and measurement of variables. Based upon the scope and objectives, variables were identified and included in the study.

The impact of the calf feed subsidy scheme on farm women was assessed in terms of their knowledge and adoption of selected management practices, attitude towards dairy farming and certain breeding parameters. Women of beneficiary houses and non-beneficiary houses were taken as experimental and control groups respectively. Hence a static group comparison design of research was applied.

3.2.1 Variables and their measurement.

The comprehensive list of variables studied is presented in Table 1. The technique of measurement is also shown against each of them.

Knowledge

Knowledge as defined in this study, included those behaviours and test situations which emphasised the remembering either by recognition or recall of ideas, material or phenomena (Bloom *et. al.*, 1956).

Table 1
The variables selected and the techniques of measurement

| Variable | Measurement |
|--|-----------------------------------|
| Knowledge | |
| X ₁ Knowledge of calf rearing | Test developed |
| X ₂ Knowledge of dairy farming | Knowledge test (Goswami, 1987) |
| Attitude | |
| X ₃ Attitude towards scientific calf rearing | Scale developed |
| X ₄ Attitude towards dairy farming | Attitude scale Goswami, (1987) |
| Adoption | |
| X ₅ Extent of adoption of scientific calf Rearing technologies | Scale developed |
| X ₆ Extent of adoption of dairy farming technologies | Scale developed |
| Breeding parameters | |
| X ₇ Age at first insemination/oestrus | Structured schedule |
| X ₈ Age at first calving | -do- |
| X ₉ Calving to conception interval | -do- |
| X ₁₀ Age at second calving | -do- |
| X ₁₁ Intercalving period | -do- |

FIGURE 1: CONCEPTUAL MODEL OF THE STUDY

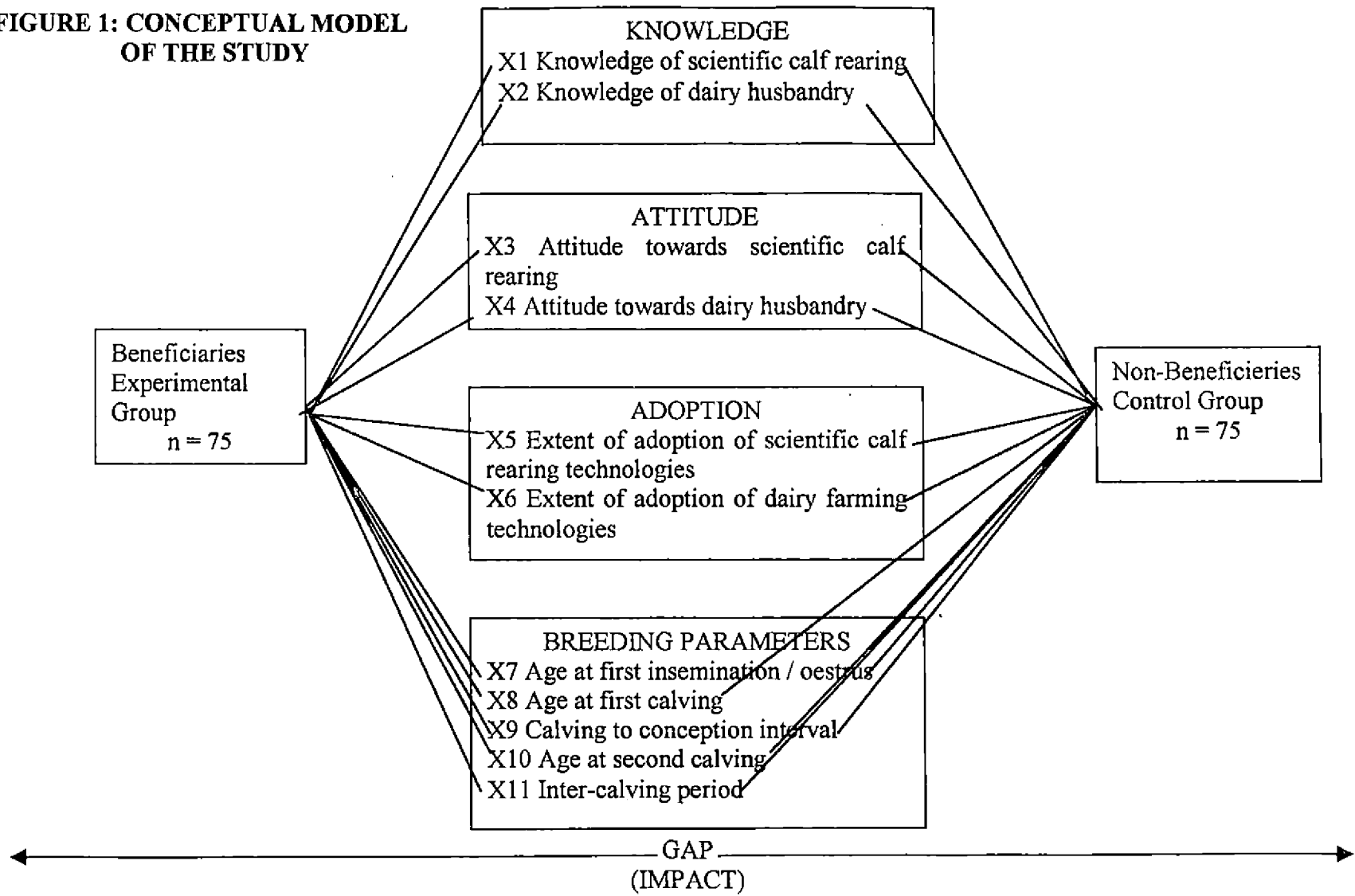
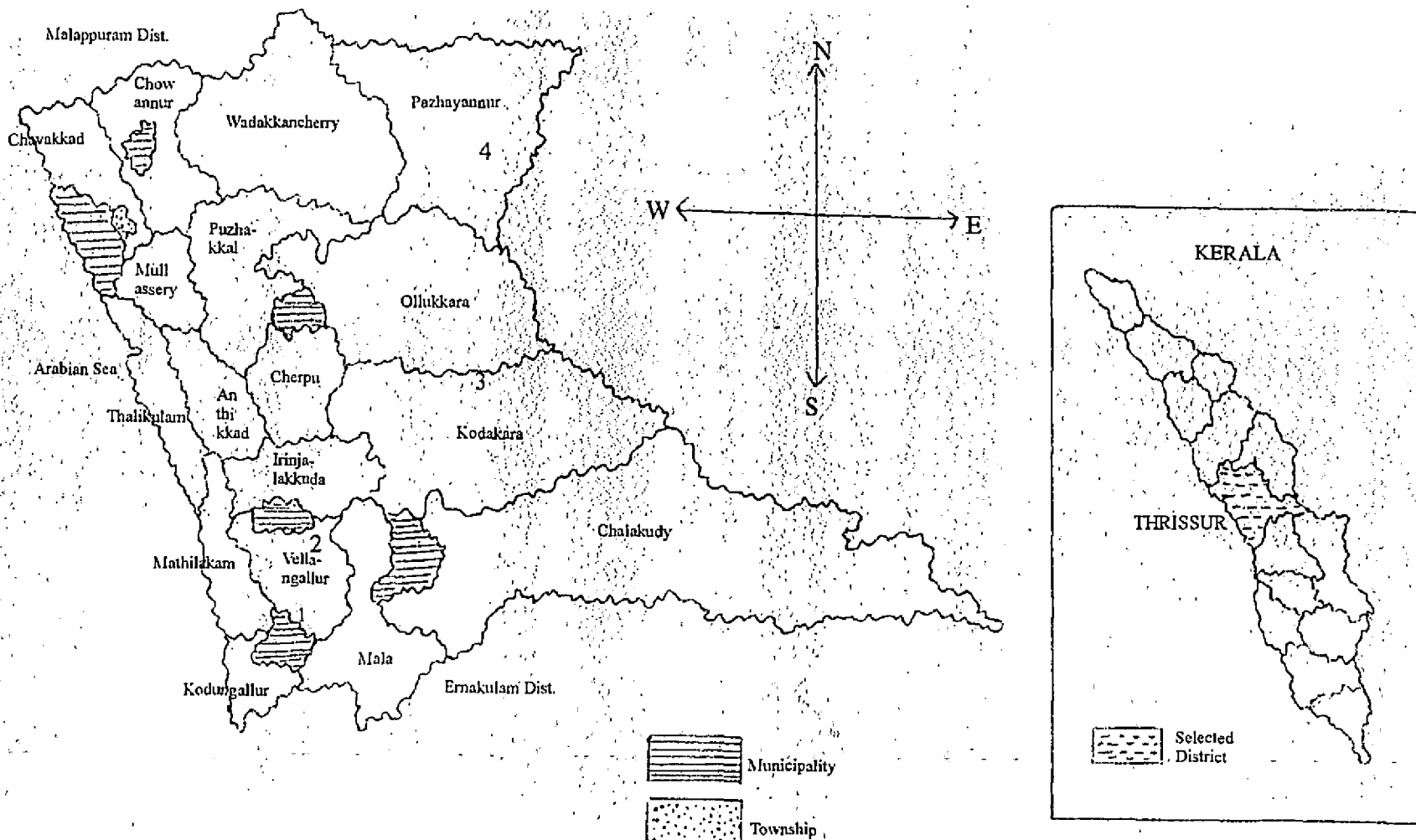


Figure 2a
THRISSUR DISTRICT
MAP SHOWING COMMUNITY DEVELOPMENT BLOCKS
AND CO-OPERATIVE SOCIETIES SELECTED FOR THE STUDY

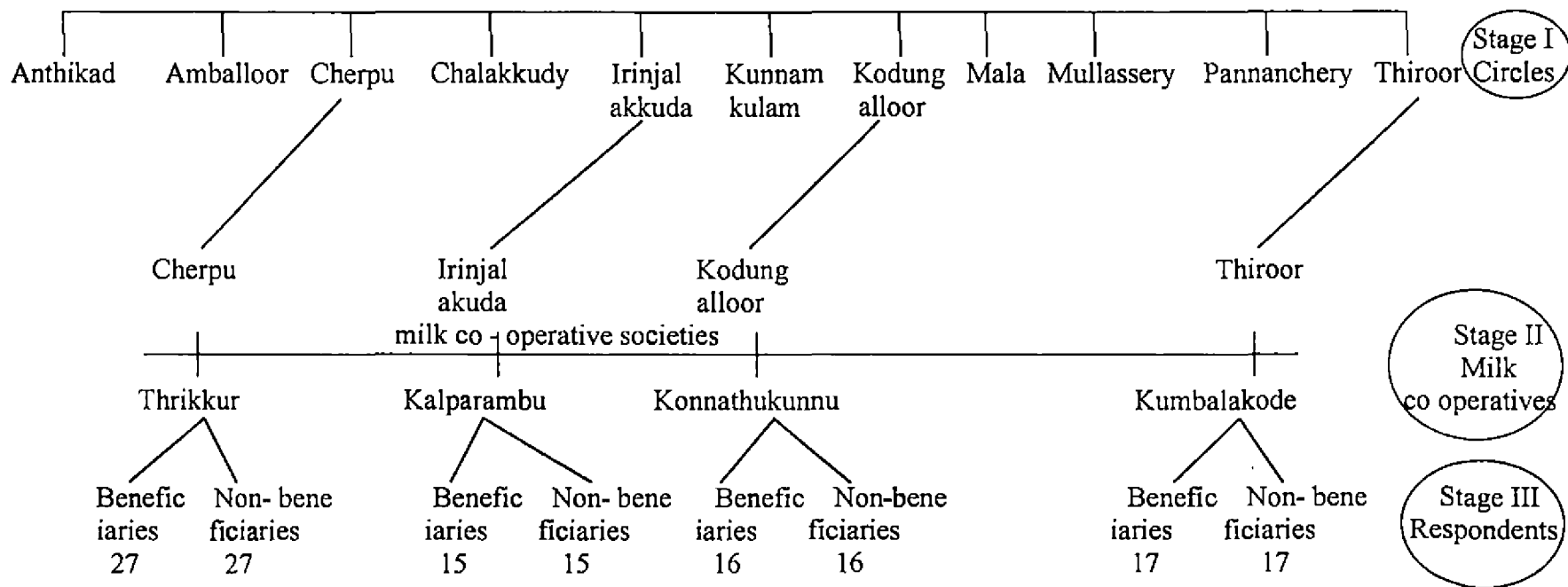


MILK CO-OPERATIVE SOCIETIES SELECTED

1. KONNATHUKUNNU (Kodungallur circle)
2. KALPARAMBU (Irinjalakuda circle)
3. THRIKKUR (Cherpu circle)
4. KUMBLACODE (Thiroor circle)

**FIGURE 2B
MULTISTAGE RANDOM SAMPLING
THRISSUR DISTRICT**

Milk co-operative society circles.



X₁ Knowledge of calf rearing

To measure knowledge of calf rearing, a knowledge test was developed, based on the dual criteria of item difficulty and item discrimination. The knowledge test consisted of a total of 47 items drawn from the domains of calf management, feeding, disease control, housing and selection. Based on the scores, the respondents were categorised into three groups applying Delinious and Hodges method as high, medium, and low.

X₂ Knowledge of dairy farming

To measure the knowledge of dairy farming practices, the knowledge test developed by Goswami (1987) and modified by Rajkamal (1993) was used. The modified knowledge test comprised of five components: 12 items about artificial insemination; 28 items about vaccination against H.S., F.M.D., and R.P.; 8 items about deworming; 6 items about feeding of green fodder; 20 items about feeding of concentrates, totalling 74 items. On the basis of scores obtained by the respondents, they were categorised as high, medium, and low using Delinious and Hodges method.

Procedure followed for developing knowledge test.

A knowledge test to measure the knowledge about scientific calf rearing was developed. The methodology is presented below:

Item collection.

The content of the knowledge test battery was composed of question (items). Items for the test were collected from different sources such as literature,

field extension personnel and subject matter specialists in animal health, management and nutrition. The questions were designed to test the level of knowledge of farmers in scientific calf rearing.

Initial selection of items.

The selection of items was done on the basis of the following criteria

- i. It should promote thinking rather than rote memorisation.
- ii. It should differentiate the well-informed dairy farmers from the poorly informed ones and should have a certain difficulty value.

The procedure followed in the selection of test items was on the lines used by Lindquist (1951), Jaiswal (1965), Moulik (1965) Jha and Singh (1970) Sagar (1983) and Goswami (1987). Based on the above two criteria, 123 items were initially constructed.

Preliminary administration of the test/ pre testing:

The items were checked and then administered to a group of seventy-two respondents. They consisted of randomly selected dairy farmers all together different from those to be chosen for the final study. Each respondent was given a score 1 or 0 for each item according to whether the answer was right or wrong. The total number of correct answers given by a dairy farmer out of 123 items was the knowledge score secured by him/her. The range of obtainable scores was from zero to 123. After calculating the scores of the 72 dairy farmers, the scores were arranged in descending order. These 72 dairy farmers were divided into 6 equal

groups of (G1.....G6) 12 farmers each. Farmers' scores in each group were arranged in descending order according to the total score obtained by each one of them. For item analysis only four extreme groups (G1 and G2, G5 and G6) with high and low scores were considered. The data pertaining to the correct responses from the items in respect of the four sub-groups were tabulated and are shown in Appendix II.

Item analysis.

Guilford (1958) pointed out that item analysis of a test usually yields two kinds of information. It provides an index of item difficulty and an index of item discrimination. Item difficulty index tells us how difficult an item is, whereas the index of item discrimination indicates how well the item discriminates the well informed individuals from poorly informed ones.

Item difficulty index.

The difficulty index of an item was defined as the proportion of dairy farmers giving correct answers to that particular item. This was calculated by using the formula,

$$P_i = \frac{n_i}{N_i} \times 100$$

P_i = Difficulty index in percentage of i^{th} item.

n_i = Number of dairy farmers giving correct answers to i^{th} item

N_i = Total number of dairy farmers to whom i^{th} item
was administered

The difficulty index of all the items included for the pre-test of the knowledge test on calf rearing were calculated separately.

Calculation of the difficulty index of item no 1 (Appendix II) of the knowledge test about scientific calf rearing is shown below as an example:

$$\begin{aligned} P_i &= \frac{n_i}{N_i} \times 100 \\ &= \frac{45}{72} \times 100 \\ &= 62.5 \end{aligned}$$

Item discrimination index.

The item discrimination index can be calculated by using the Phi - coefficient as formulated by Perry and Michael (1951). However, Metha (1958) in using the $E_{1/3}$ method to find out the item discrimination emphasised that the method was analogous to, and hence a convenient substitute for the Phi-coefficient. The method suggested by Metha (1958) was adopted for the study. The formula by which item discrimination index was calculated is given below,

$$E_{1/3} = \frac{(S1 + S2) - (S5 + S6)}{N/3}$$

Where,

S1, S2, S5 and S6 are the frequencies of correct answers in G1, G2, G5, and G6 groups respectively.

N = total number of dairy farmers in the sample of item analysis.

Discrimination index of item no 1 (Appendix II) knowledge towards scientific calf rearing is shown below.

$$E_{1/3} = \frac{(S1 + S2) - (S5 + S6)}{N/3}$$

$$= \frac{24 - 21}{24} = 0.125$$

Selection of items for final test.

The two criteria viz. item difficulty and item discrimination indices were considered for selecting items in the final format of the knowledge test. In the present study, items with difficulty index ranging from 30 to 80 and discrimination index ranging from 0.30 to 0.55 were included in the final knowledge test, which fulfilled both criteria. A total of 42 such items were selected. Mean scores for each item in the final format of the knowledge test was calculated using the formula

$$\text{Mean score} = \frac{\text{Number of correct responses}}{\text{Number of respondents}}$$

Mean score for each domain was calculated using the formula

$$\text{Mean score of a domain} = \frac{\text{Total score}}{\text{Number of respondents} \times \text{number of statements}}$$

Content validity of the knowledge test

The content validity of the knowledge test was ensured by choosing items in consultation with the various subject matter specialists.

Attitude scales.

Thurstone (1946) defined attitude as the positive or negative affect associated with a psychological object. For the purpose of the present study, attitude is conceptualised as an important psychological determinant of the respondents' behaviour in accepting dairy farming technologies.

X₃ Attitude toward scientific calf rearing.

The method of summated ratings as proposed by Likert (1932) was followed in developing a scale to measure the attitude of farmers towards scientific calf rearing. The final scale constituted of 16 statements out of which 5 were positive and 11 were negative which were scored on a three point continuum viz. 3 (agree), 2 (undecided) and 1 (disagree) for positive statements and in the reverse order for negative statements. The maximum and minimum achievable scores for a respondent were 48 and 16 respectively. According to the scores obtained the respondents were grouped into three groups, high, medium and low using Delinious and Hodges method.

X₄ Attitude towards dairy farming.

In order to measure this variable, the attitude scale developed by Goswami (1987) was used. The scale consisted of 8 statements. Out of the eight statements, 4 were positive which were scored as 3, 2 and 1 for agree, undecided and disagree respectively and 4 were negative, which were scored in the reverse order. The achievable scores of an individual ranged from 8 to 24. The respondents were categorised into three groups viz high medium and low using Delinious and Hodges method.

Procedure followed for developing attitude scales.

An attitude scale to measure attitude towards scientific calf rearing was developed as per the methodology of summated ratings (Likert 1932).

Collection of attitude statements.

A total of thirty four statements reflecting the attitude of dairy farmers towards scientific calf rearing was prepared after reviewing literature, discussing with subject matter specialists and experienced field veterinarians. Due care was taken to cover all the relevant aspects of scientific calf rearing.

Editing of statements.

The statements were edited based on the fourteen criteria suggested by Edwards and Kilpatrick (1946).

Item analysis.

All the statements were administered to a group of 32 dairy farmers. The group consisted of randomly selected members and were altogether different from those chosen for the final study. These farmers were asked to indicate their degree of favourableness or unfavourableness towards each statement on a three point continuum viz. agree, undecided, and disagree. The scores assigned in the case of positive statements were 3, 2, and 1 respectively for agree, undecided, and disagree and the scoring pattern was reversed in the case of negative statements. The attitude score for each respondent was obtained by summing up the weightage given for each statement.

Determining the directionality.

The attitude statements included both positive and negative statements and the direction of the statements were checked by using the procedure of normal deviate weightings.

The scores of various respondents were arranged in descending order. Twenty- five per cent of the respondents with the highest scores and twenty- five per cent of the respondents with the lowest scores were taken for calculating 't' values. These two groups formed the criterion groups designated as high group and low group respectively, and formed the basis for evaluating the individual statements. "t" values were calculated using the formula

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

where,

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

and ,

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

The 't' value indicated the extent to which a given statement differentiated between the high and low groups. These 't' values were arranged in descending order and 16 statements with the highest 't' values were included in the final scale. The 't' values of all 34 statements are given in Appendix III b. The final format of the scale consisted of sixteen statements.

Reliability of the scale.

Reliability is the precision or accuracy of a measuring instrument. It is the frequency with which a scale produces consistent results with a sample. Reliability of the scale was tested by using the split-half method and applying Rulon's formula.

$$r = \sigma^2 d / \sigma^2 t$$

A reliability coefficient of 0.8945 was obtained. This indicated a high internal consistency of the instrument testifying that it was having high reliability.

Table 2 Attitude towards scientific calf rearing

| Sl. No. | Statement | Agree | Undecided | Disagree |
|---------|--|-------|-----------|----------|
| 1 | I feel scientific calf rearing is labour intensive and not worth the efforts. | 1 | 2 | 3 |
| 2 | I would prefer modern medicines in place of indigenous medicines. | 3 | 2 | 1 |
| 3 | If there is an opportunity I shall cultivate green fodder and feed the calf enough of it. | 3 | 2 | 1 |
| 4 | Cleanliness of the calf shed has no meaning as animals withstand dirty conditions and so is the calf. | 1 | 2 | 3 |
| 5 | Calves can be reared even in an open yard or under the shade of a tree without much protection from sun rain and wind. | 1 | 2 | 3 |
| 6 | Even if the drinking water is unclean it cannot harm the calf. | 1 | 2 | 3 |
| 7 | Scientific calf rearing is a promising endeavour as it will bring more returns to the farmer. | 3 | 2 | 1 |
| 8 | I do not prefer rearing calves as the climate here is not suitable for calves. | 1 | 2 | 3 |
| 9 | One should periodically examine the dung of calves at the Veterinary Hospital for any worm infestation. | 3 | 2 | 1 |
| 10 | Better not to house the calf separately, leave it with its mother, the natural way. | 1 | 2 | 3 |
| 11 | Bringing up calves is difficult as mothers may contract mastitis. | 1 | 2 | 3 |
| 12 | Colostrum has to be fed to new- born calves as it builds up immunity. | 3 | 2 | 1 |
| 13 | I dare not keep calves as mortality due to diseases is high. | 1 | 2 | 3 |
| 14 | Vitamins and minerals are important to humans and not to calves. | 1 | 2 | 3 |
| 15 | Let the calf suckle whatever is left after milking. | 1 | 2 | 3 |
| 16 | I shall not advise my friend to keep calves as these cross-breds are susceptible to many a disease. | 1 | 2 | 3 |

Extent of adoption

Extent of adoption of scientific calf rearing technologies and dairy farming technologies were measured in terms of

i. the respondents' total score over all the selected technologies – respondent based.

ii. the percentage of respondents who continued to adopt, discontinued, and not adopted for each practice – practice based.

X₅ Extent of adoption of scientific calf rearing technologies.

In order to measure this variable, a scale was developed on similar lines as Sharma and Sohal (1987) with slight modification. The scale that was developed consisted of 20 practices or technologies related to scientific calf rearing. The achievable scores of an individual ranged from 20 to 60. The respondents were categorised as high, medium and low applying Delinious and Hodges method.

X₆ Extent of adoption of dairy farming technologies.

In order to measure the extent of adoption of dairy farming technologies, a scale was developed on the lines followed by Sharma and Sohal (1987) with slight modification. The scale that was developed consisted of 28 practices or technologies related to dairy farming. The achievable score of an individual ranged from 28 to 84. The respondents were classified as high, medium, and low applying Delinious and Hodges method.

Procedure followed for developing the scale to measure extent of adoption.

Two scales to measure extent of adoption of scientific calf rearing and dairy farming technologies were developed as follows.

Preliminary selection of technologies.

This selection was done after consulting subject matter specialists, field veterinarians and the package of practice recommendations pertaining to dairy husbandry of Kerala Agricultural University. A preliminary selection of 44 and 38 technologies pertaining to dairy farming and scientific calf rearing respectively was done. Each of these technologies was written down as statements. The statements under dairy farming were then grouped under six major domains viz. breeding, nutrition, management, diseases and their control housing and marketing and numbering 5,6,6,5,3 and 3 respectively. Similarly, the statements under scientific calf rearing were grouped under 5 major domains viz. Nutrition, management, diseases and their control, housing and marketing and numbering 5,4,5,4 and 2 respectively. After through editing on the criteria laid down by Edwards and Kilpatrick (1969) these were referred to 30 selected judges who were specialists in the field of dairy husbandry to judge the relevancy of these technologies or statements in measuring the extent of adoption by dairy farmers against a Likert's three point continuum viz. very important, important and not so important, with corresponding weightages of 3, 2, and 1. The judgement of 25 judges were considered since five judges were placing more than 30 statements in a single point

in the three point continuum and in view of the criteria proposed by Edwards and Kilpatrick (1969).

Now the scores obtained on the basis of responses of 25 judges about a technology was added to obtain the total score of that particular technology. The total score for a technology thus obtained was divided by 25, the number of judges, to arrive at the mean score (Table 5). Similarly mean score of all 44 technologies related to dairy farming and 38 technologies related to scientific calf rearing were arrived at (Appendix V and VI). Later, overall mean scores for all the 44 technologies related to dairy farming and 38 technologies related to scientific calf rearing were calculated by dividing the total score by the number of judges. Thus the overall mean scores arrived at for dairy farming was 2.42 and for scientific calf rearing 2.21. This overall mean score was taken as the cut off point and those statements with individual mean scores above this cut off point were included in the final scale.

Thus ultimately 28 and 20 technologies related to dairy farming and scientific calf rearing respectively were selected to study adoption. The responses to the above selected statements were obtained from the respondents of the study on a three point continuum viz. continued adoption, discontinued, and not adopted with corresponding scores of 3, 2, and 1.

Now total score of each respondent against 28 statements related to dairy farming and 20 statements related to scientific calf rearing were calculated. The maximum and minimum scores thus a respondent could obtain in the case of dairy farming were 84 and 28 and in the case of scientific calf rearing were 60 and 20 respectively.

Subsequently applying Delinious and Hodges method three categories of respondents were drawn viz. whose extent of adoption was high, medium and low.

Table 3

Summary of responses obtained for practice No 1 (Appendix V)

| | | | |
|---------------------------------|----|---|---|
| Response category continuum (X) | 3 | 2 | 1 |
| Frequency (f) | 24 | 1 | 0 |
| f X | 72 | 2 | |
| ΣfX | 74 | | |

$$\text{Mean score for practice No 1} = \frac{\Sigma fX}{\text{number of judges}}$$

$$= \frac{74}{25}$$

$$= 2.96$$

Animal breeding parameters

X₇ Age at first insemination / oestrus

The age at first insemination was operationalised as the age in months at which a heifer exhibited oestrus for the first time, as evidenced from external signs of heat, as observed by the respondent. This parameter was studied with respect to 59 and 52 heifers of beneficiary and non-beneficiary houses respectively.

The age at first insemination was operationalised as the age in months at which the heifer was artificially inseminated for the first time as recalled by the respondent. This parameter was studied with respect to 59 and 52 heifers of beneficiaries and non-beneficiaries respectively.

X₈ Age at first calving

The age at first calving was operationalised as the age in months at which the animal calved for the first time. This parameter was studied with respect to 59 and 52 heifers of beneficiaries and non-beneficiaries. In both cases, animals born in the incumbents' house alone were considered about which they could recall the date of birth of the dam as well as the date first of calving respectively.

X₉ Post calving insemination period

Post calving insemination period was operationalised as the number of days from first calving to subsequent insemination which resulted in pregnancy. This parameter was studied with respect to 40 and 39 cows of beneficiary and non-beneficiary houses respectively.

X₁₀ Age at second calving

The age at second calving was operationalised as the age in months at which the animal calved for the second time. This parameter was studied with respect to 32 and 30 cows of beneficiaries and non-beneficiaries respectively.

X₁₁ Intercalving period

The intercalving period was operationalised as the number of months between the first and second calvings. This parameter was studied with respect to 32 and 30 cows of beneficiaries and non-beneficiaries respectively.

3.3 DATA COLLECTION**3.3.1 Tools and techniques.**

Commensurate with the objectives of the study a draft interview schedule was prepared incorporating the tools and techniques of measurement of various variables. The final format of the schedule is placed in Appendix I.

The data was collected during January, February, March and April 1999.

3.3.2 Unit of study.

The unit of this study was the house- wife.

3.4 STATISTICAL ANALYSIS.

The data were compiled and tabulated. Frequency and simple percentages were calculated. In the present study the following statistical methods were used in analysing data using standard formulae.

- I frequency
- II percentage
- III mean
- IV standard deviation
- V 't' test
- VI Delinious and Hodges cumulative root f method.

Having arranged the scores into ascending or descending order, several arbitrary classes were formed depending on the number of classes to be finally opened.

$$U = l + \frac{(Nk - m) \times c}{f}$$

U = upper limit of the new class

K = quantile number

$$N = \sqrt{f}$$

l = lower limit of quantile class

n = cumulative \sqrt{f} below the quantile class

f = frequency of quantile class

c = class interval of the arbitrary class

RESULTS

RESULTS

4.1. KNOWLEDGE LEVEL OF VARIOUS ANIMAL HUSBANDRY TECHNOLOGIES

4.1.1. Knowledge of various dairy husbandry technologies.

4.1.1.1. Artificial insemination

Data in Table 4 revealed that among beneficiary women, 48 per cent had high level of knowledge while 24 per cent had only low level of knowledge of artificial insemination. Among non-beneficiaries, when 30.66 per cent had high level of knowledge, 34.66 per cent had low level of knowledge. Twenty eight per cent of beneficiaries and 34.66 per cent of non-beneficiaries had medium level of knowledge. Beneficiaries and non-beneficiaries differed significantly ($P < 0.05$) on their knowledge of artificial insemination.

Table 4
Distribution of respondents based on knowledge of AI

| Beneficiary group (n=75) | | | Non-beneficiary group (n=75) | | | t value |
|--------------------------|----|----|------------------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High > 9 | 36 | 48 | High >8 | 23 | 30.66 | 3.85* |
| Medium 6.1-9.0 | 21 | 28 | Medium 5.1-8.0 | 26 | 34.66 | |
| Low 0-6.0 | 18 | 24 | Low 0-5.0 | 26 | 34.66 | |
| Mean: 8.68 SD: 2.95 | | | Mean: 6.87 SD: 2.78 | | | |

•
 $P < 0.05$

4.1.1.2. H.S., F.M.D., R.P., and vaccination against them.

Fig.3 DISTRIBUTION OF RESPONDENTS BASED ON KNOWLEDGE OF AI

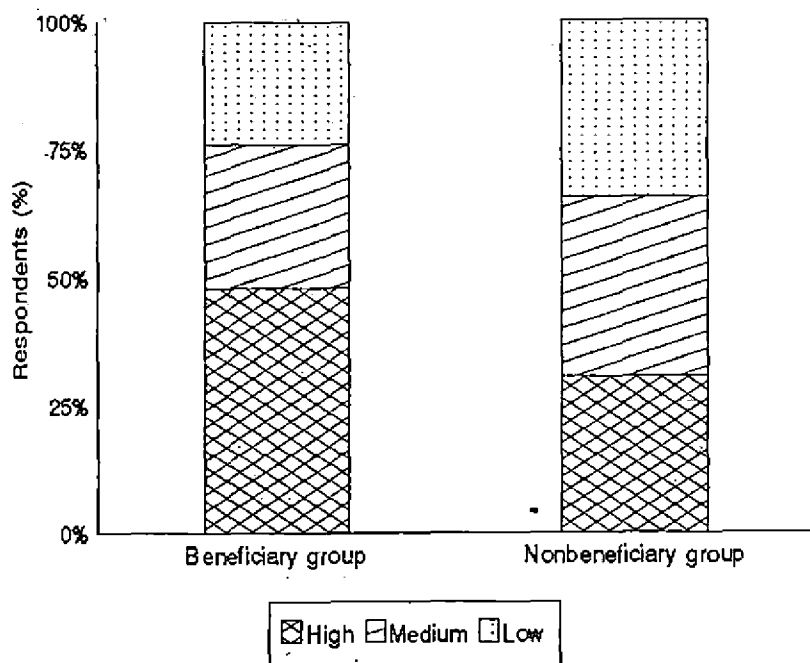


Fig.4 DISTRIBUTION OF RESPONDENTS BASED ON KNOWLEDGE OF H.S., R.P, F.M.D. AND VACCINATION AGAINST THEM

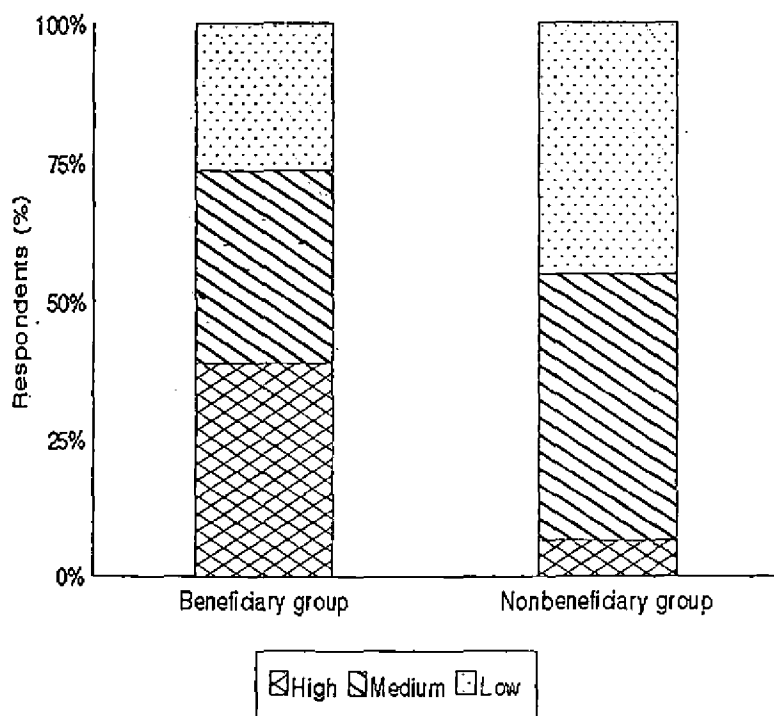


Table 5 indicated that 38.6 per cent of beneficiaries and 6.66 per cent of non-beneficiaries had high level of knowledge about vaccination of animals against F.M.D, R.P., and H.S. Non-beneficiary and beneficiary women who had medium level of

Table 5
Distribution of respondents based on knowledge of H.S.,R.P.,F.M.D.,and vaccination against them

| Beneficiary group n = 75 | | | Non-beneficiary group n = 75 | | | t value |
|--------------------------|----|------|------------------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High >7.0 | 29 | 38.6 | High >8 | 5 | 6.66 | 3.7* |
| Medium 4.1-7.0 | 26 | 34.6 | Medium 4.1-8.0 | 36 | 48.0 | |
| Low 0-4.0 | 20 | 26.6 | Low 1.0-4.0 | 34 | 45.33 | |
| Mean: 6.31 SD: 2.54 | | | Mean: 4.83 SD: 2.36 | | | |

P<0.05

knowledge were respectively 48 per cent and 38.4 percent. Knowledge level of 26.6 per cent of beneficiaries and 45.33 per cent of non-beneficiaries were found to be low. It was revealed through t' test that beneficiary women had significantly (P<0.05) higher knowledge than non- beneficiary women about diseases and vaccination.

4.1.1.3. Deworming.

Table 6 indicated that there were more beneficiary women (49.30 %) of high knowledge than of low knowledge (26.6%), while 24 per cent of them had medium knowledge. Table 6 further revealed that 21.33 per cent of non-beneficiaries had high knowledge whereas 41.33 per cent had medium knowledge and 37.33 per cent

Fig.5 DISTRIBUTION OF RESPONDENTS BASED ON KNOWLEDGE OF DEWORMING

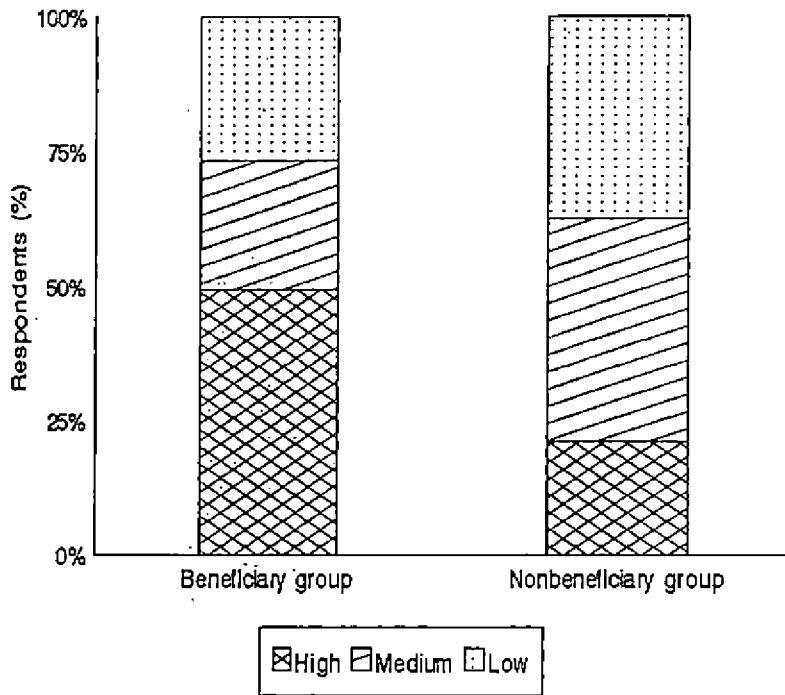


Fig.6 DISTRIBUTION OF RESPONDENTS BASED ON KNOWLEDGE OF FEEDING OF GREEN FODDER

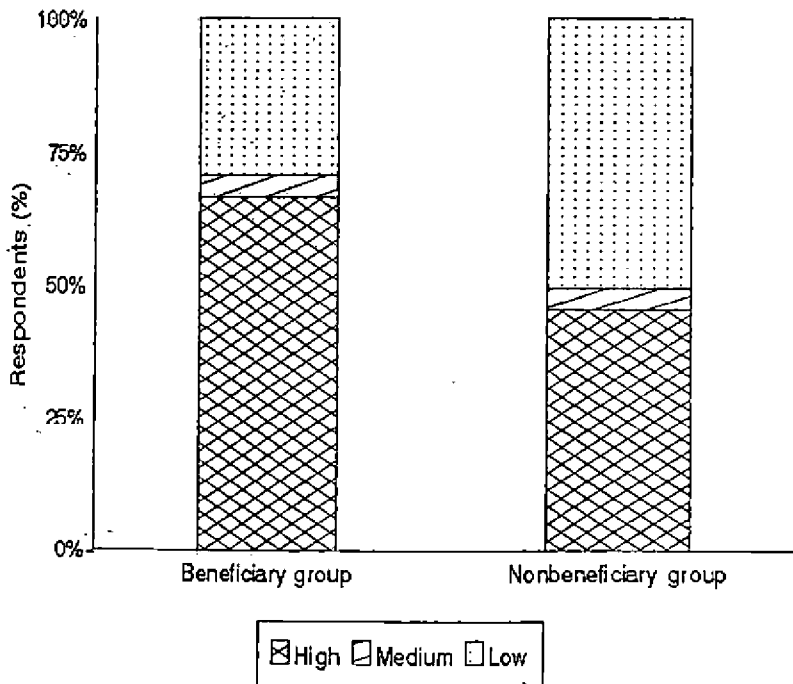


Table 6
Distribution of respondents based on knowledge of deworming

| Beneficiary Group | | | Non-beneficiary Group | | | t value |
|-----------------------------------|----|------|------------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High >4 | 37 | 49.3 | High >4 | 16 | 21.33 | 4.08* |
| Medium 3.1-4.0 | 18 | 24 | Medium 2.1-4.0 | 31 | 41.33 | |
| Low 0-3.0 | 20 | 26.6 | Low 0-2.0 | 28 | 37.33 | |
| Mean: 4.12 SD: 1.55 *p<0.05 | | | Mean: 3.08 SD: 1.57 | | | |

had low knowledge of deworming. The table further indicated that beneficiary women had significantly ($P<0.05$) higher knowledge of deworming when compared to non-beneficiary women.

4.1.1.4. Feeding of green fodder.

Data in table 7 indicated that majority of beneficiary women had high knowledge of feeding of green fodder (66.6%) as against 45.3 per cent among non-beneficiaries. While beneficiaries of low knowledge were only 29.3 per cent, those among non-beneficiaries

Table 7
Distribution of respondents based on knowledge of feeding green fodder

| Beneficiary group | | | Non-beneficiary group | | | t value |
|-----------------------------------|----|------|------------------------|----|------|---------|
| Category | f | % | Category | f | % | |
| High >4.0 | 50 | 66.6 | High >3 | 34 | 45.3 | 3.06* |
| Medium 1.1-4.0 | 3 | 4.0 | Medium 1.1-3.0 | 3 | 4.0 | |
| Low 0-1 | 22 | 29.3 | Low 0-1.0 | 38 | 50.7 | |
| Mean: 3.53 SD: 2.22 *P<0.05 | | | Mean: 2.36 SD: 2.45 | | | |

Fig.7. DISTRIBUTION OF RESPONDENTS BASED ON KNOWLEDGE OF FEEDING OF CONCENTRATES

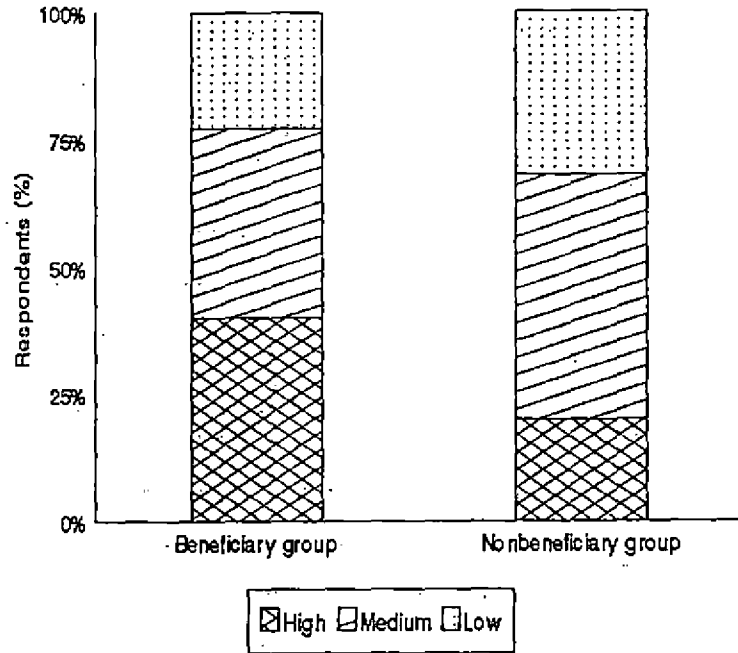
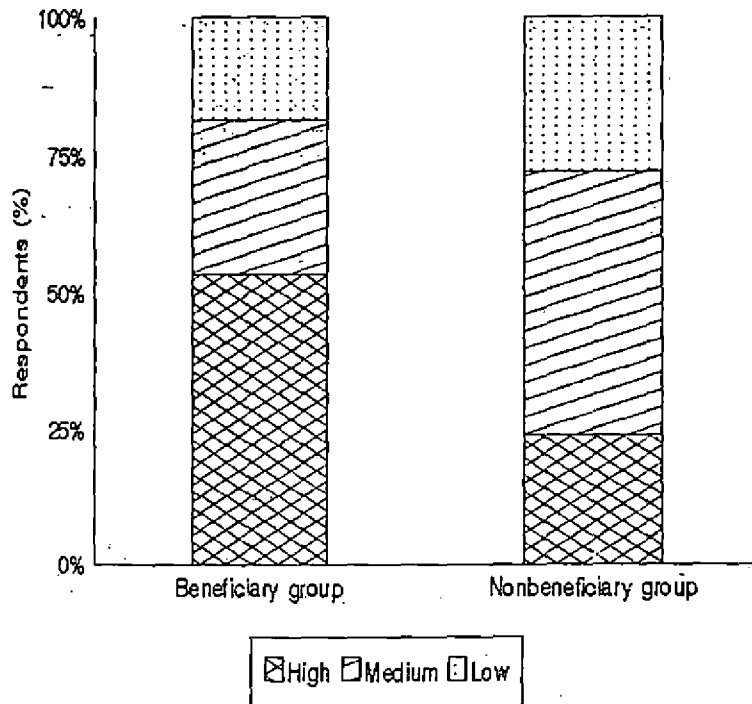


Fig.8 DISTRIBUTION OF RESPONDENTS BASED ON KNOWLEDGE OF CALF MANAGEMENT



were as much as 50.7 per cent. Just 4 per cent each of beneficiaries and non-beneficiaries had medium knowledge. Beneficiaries had significantly higher ($P<0.05$) knowledge of green fodder feeding than non-beneficiaries.

4.1.1.5. Feeding of concentrates.

Table 8 showed that with regard to knowledge of concentrate feeding, 40 per cent of beneficiaries had high knowledge while 37.33 per cent and 22.66 per cent

Table 8
Distribution of respondents based on knowledge of feeding of concentrates

| Beneficiary group n = 75 | | | Non-beneficiary group n = 75 | | | t value |
|---------------------------------------|----|-------|------------------------------|----|------|---------|
| Category | f | % | Category | f | % | |
| High >14 | 30 | 40.0 | High >12 | 15 | 20.0 | 5.24* |
| Medium 10.1-14.0 | 28 | 37.33 | Medium 8.1-12 | 36 | 48.0 | |
| Low 0-10 | 17 | 22.66 | Low 0-8.0 | 24 | 32.0 | |
| Mean: 12.72 SD: 3.46 * $P<0.05$ | | | Mean: 9.88 SD: 3.17 | | | |

respectively had medium and low knowledge. In the case of non-beneficiaries it was seen that (Table 8), 48 per cent had medium knowledge while 20 per cent and 32 per cent had high and low knowledge respectively. Table 8 further showed that the knowledge scores of beneficiary women were significantly higher ($P<0.05$) than that of non-beneficiary women about feeding of concentrates.

4.1.2. Knowledge of scientific calf rearing

4.1.2.1. Calf Management

Table 9 illustrated that 53.33 per cent of beneficiaries had high knowledge of scientific calf management practices, while only 24 per cent of non-beneficiaries fell in this category. Of the remaining beneficiary women 28 per cent had medium knowledge

Table 9
Distribution of respondents based on knowledge of calf management

| Beneficiary group n = 75 | | | Non-beneficiary group n = 75 | | | t value |
|--------------------------|----|-------|------------------------------|----|------|---------|
| Category | F | % | Category | f | % | |
| High | 40 | 53.33 | High | 18 | 24.0 | 3.78* |
| >7 | | | >7.0 | | | |
| Medium | 21 | 28.0 | Medium | 36 | 48.0 | |
| 5.1-7.0 | | | 5.1-7.0 | | | |
| Low | 14 | 18.66 | Low | 21 | 28.0 | |
| 0-5.0 | | | 0-5.0 | | | |
| Mean: 7.29 | | | Mean: 6.11 | | | |
| SD: 2.20 | | | SD: 1.57 | | | |
| *P<0.05 | | | | | | |

and 18.66 per cent had low knowledge respectively. Forty eight percent of the non-beneficiaries had medium knowledge about scientific calf management while 28 per cent had low knowledge. The table further showed that beneficiary women had significantly higher ($P<0.05$) knowledge than non beneficiary women.

4.1.2.2 Feeding of calves.

Table 10 indicated that 53.3 per cent of beneficiary women had high knowledge about scientific feeding of calves; 24.0 per cent had medium knowledge and 22.66 per cent

Fig.9 DISTRIBUTION OF RESPONDENTS BASED ON KNOWLEDGE OF SCIENTIFIC CALF FEEDING

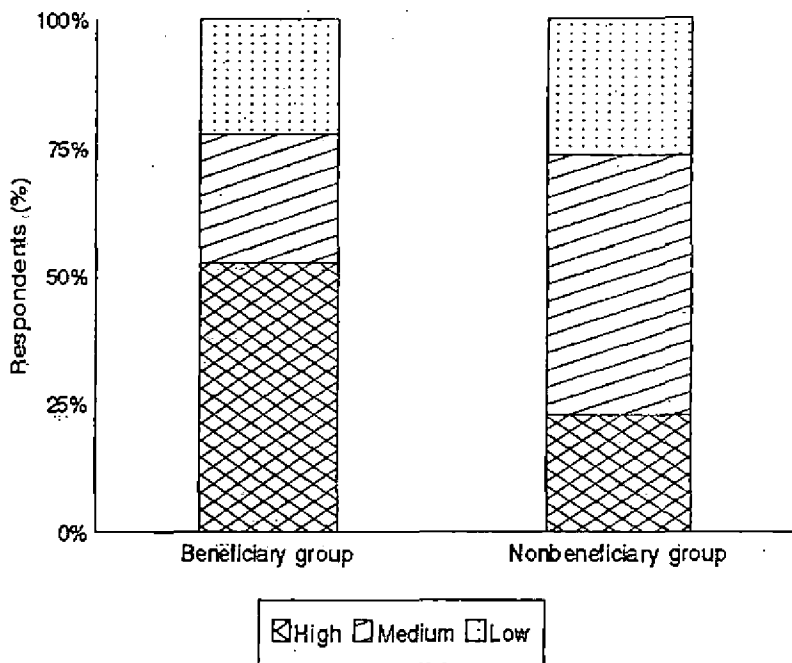


Fig.10 DISTRIBUTION OF RESPONDENTS BASED ON KNOWLEDGE OF DISEASE CONTROL AMONG CALVES

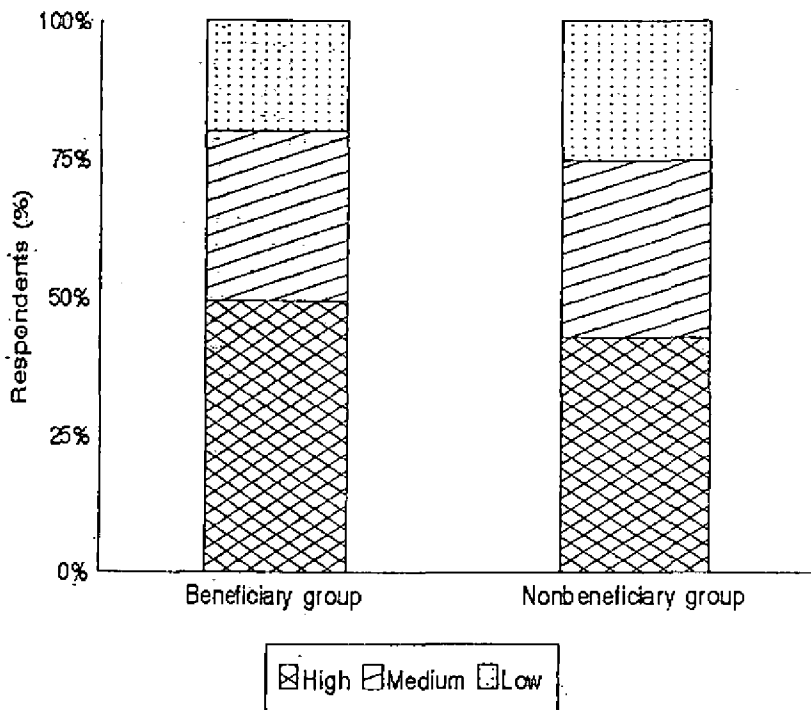


Table 10
Distribution of respondents based on knowledge of feeding of calves

| Beneficiary group | | | Non-beneficiary group | | | t value |
|-----------------------------------|----|-------|------------------------|----|------|---------|
| Category | f | % | Category | f | % | |
| High >7 | 40 | 53.33 | High >5 | 17 | 22.6 | 6.64* |
| Medium 4.1-7.0 | 18 | 24 | Medium 3.1-5.0 | 38 | 50.6 | |
| Low 0-4.0 | 17 | 22.66 | Low 0-3.0 | 20 | 26.6 | |
| Mean: 6.72 SD: 2.20 *P<0.05 | | | Mean: 4.51 SD: 1.87 | | | |

had low knowledge. On the other hand, majority (50.60%) of non-beneficiaries had medium knowledge about scientific feeding of calves, while 22.60 per cent and 26.6 per cent had high and low knowledge respectively. Statistical analysis revealed that beneficiaries had significantly higher ($P<0.05$) knowledge in this area than non-beneficiaries.

4.1.2.3 Disease control.

Perusal of Table 11 indicated that 49.30 per cent of the beneficiary women

Table 11
Distribution of respondents based on knowledge of disease control

| Beneficiary group | | | Non-beneficiary group | | | t value |
|------------------------------------|----|------|-------------------------|----|------|---------|
| Category | f | % | Category | f | % | |
| High >15 | 37 | 49.3 | High >7 | 32 | 42.7 | 4.89* |
| Medium 12.1-15.0 | 23 | 30.6 | Medium 5.1-7.0 | 24 | 32.0 | |
| Low 0-12 | 15 | 20.0 | Low 0-5.0 | 19 | 25.3 | |
| Mean: 14.91 SD: 3.15 *P<0.05 | | | Mean: 12.17 SD: 3.70 | | | |

had high knowledge about disease control as compared to 42.7 per cent among non-beneficiaries. Further, 30.6 per cent of beneficiaries had medium knowledge as against 32 per cent among non-beneficiaries. Nevertheless 25.30 per cent of the non-beneficiary women and 20 per cent of the beneficiaries had low knowledge about disease control. Results of Student's t test showed that beneficiary women had significantly ($P < 0.05$) higher knowledge of disease control as compared to non-beneficiary women.

4.1.2.4. Scientific Housing.

Table 12 illustrated that 57.33 per cent of the beneficiary women had high knowledge about scientific housing of calves while 25.33 per cent and 17.33 per

Table 12
Distribution of respondents based on knowledge of scientific housing of calves

| Beneficiary group n = 75 | | | Non-beneficiary group n = 75 | | | t value |
|--|----|-------|------------------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High >8 | 43 | 57.33 | High >7 | 29 | 38.7 | 7.65* |
| Medium 6.1-8.0 | 19 | 25.33 | Medium 5.1-7.0 | 24 | 32.0 | |
| Low 0-6 | 13 | 17.33 | Low 0-5.0 | 22 | 29.33 | |
| Mean: 8.14 SD: 1.23 * $P < 0.05$ | | | Mean: 6.15 SD: 1.96 | | | |

cent had medium and low knowledge respectively. On the other hand, 38.7 per cent of non-beneficiary women had high knowledge about scientific housing of calves, while 32 per cent and 29.33 per cent had medium and low knowledge respectively. The table further revealed that beneficiary women had significantly ($P < 0.05$) higher knowledge of scientific housing as compared to non-beneficiary women.

Fig.11 DISTRIBUTION OF RESPONDENTS BASED ON KNOWLEDGE OF SCIENTIFIC HOUSING OF CALVES

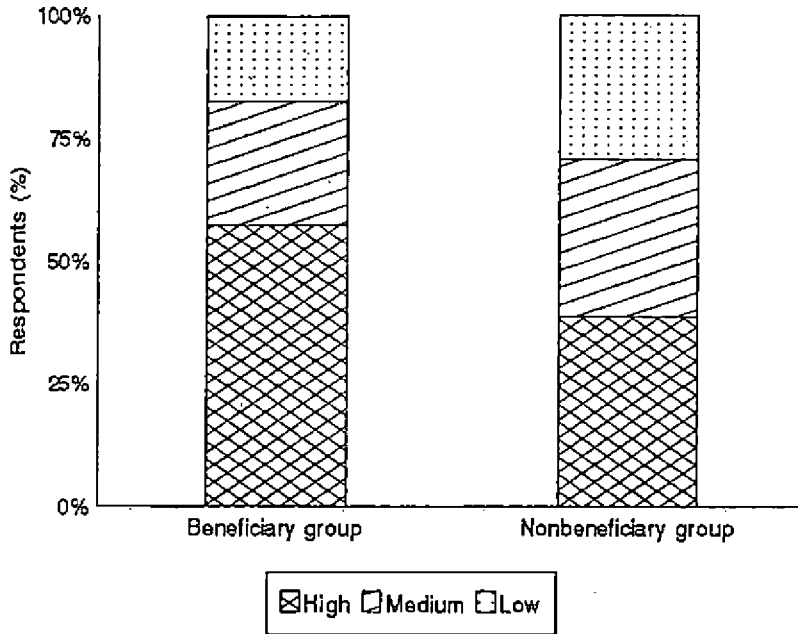
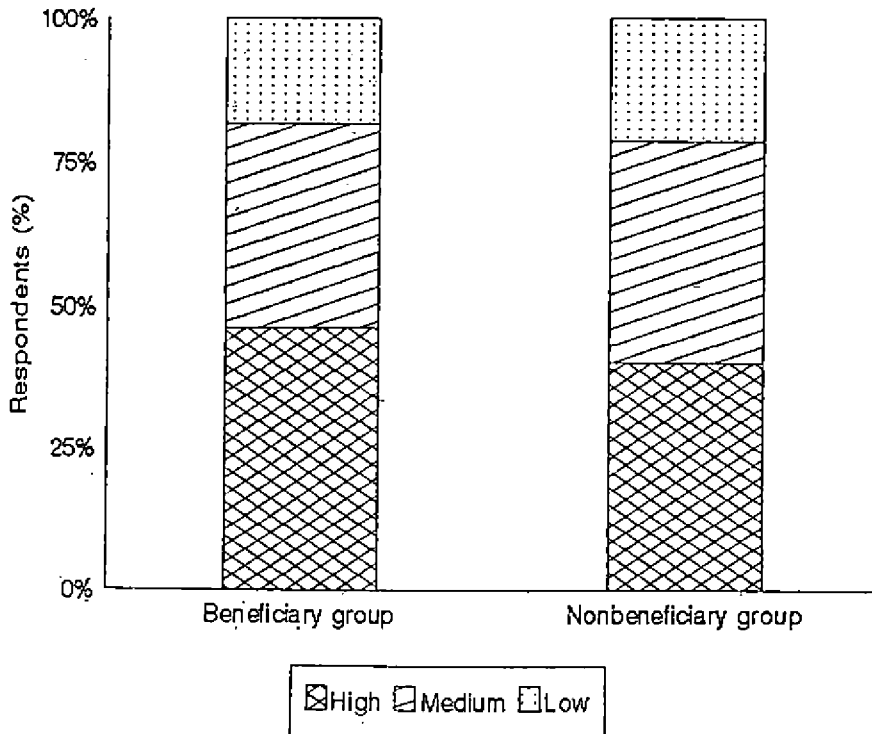


Fig.12 DISTRIBUTION OF RESPONDENTS BASED ON ATTITUDE TOWARDS DAIRY FARMING



4.1.2.5. Selection

It was evident from Table 13 that 74.66 per cent of beneficiary women and 60 per cent of non-beneficiary women had high knowledge with regard to selection

Table 13
Distribution of respondents based on knowledge of selection of calves

| Beneficiary group n = 75 | | | Non-beneficiary group n = 75 | | | t value |
|--------------------------|----|-------|------------------------------|----|------|---------|
| Category | f | % | Category | f | % | |
| High >1 | 56 | 74.66 | High >1 | 45 | 60.0 | 1.67 |
| Medium 0-1.0 | 8 | 10.66 | Medium 0-1.0 | 15 | 20.0 | |
| Low 0 | 11 | 14.66 | Low 0 | 15 | 20.0 | |
| Mean: 1.92 SD: 2.46 | | | Mean: 1.40 SD: 0.88 | | | |

of calves. Among the beneficiaries, the remaining 10.66 per cent and 14.66 per cent had medium and low knowledge respectively. The table also showed that among non-beneficiaries 20 per cent each had medium and low knowledge about selection of calves. Results of Student's t test showed that beneficiaries and non-beneficiaries did not differ significantly in respect of knowledge of selection of calves.

4.2. ATTITUDE TOWARDS VARIOUS ANIMAL HUSBANDRY TECHNOLOGIES

4.2.1. Attitude towards dairy farming

Data in table 14 revealed that 49.33 per cent of beneficiary women had expressed a highly favourable attitude towards dairy farming even as 33.33 per

Table 14
Distribution of respondents based on attitude towards dairy farming

| Beneficiary group n = 75 | | | Non-beneficiary group n = 75 | | | t value |
|--------------------------|----|-------|------------------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High >22 | 37 | 49.33 | High >21. | 30 | 40.00 | 4.42* |
| Medium 19.1-22.0 | 25 | 33.33 | Medium 17.1-21.0 | 29 | 38.66 | |
| Low 0-19.0 | 13 | 17.33 | Low 0-17.0 | 16 | 21.33 | |
| Mean: 22.10 SD: 2.31 | | | Mean: 19.58 SD: 4.37 | | | |

* P<0.05

cent had expressed a medium level of favourableness and 17.33 per cent a low level of favourableness. Forty per cent of non-beneficiary women had shown highly favourable attitude towards dairy farming. However, a higher percentage of non-beneficiary women (38.66%) were expressing a medium level of favourableness than those (21.33%) expressing a low level of favourableness towards dairy farming. It was found that there was a significant ($P<0.05$) difference between beneficiary and non-beneficiary women regarding attitude towards dairy farming, the former being more favourable.

4.2.2. Attitude towards scientific calf rearing.

It was evident from table15 that majority of beneficiary (57.33%) and 34.6 per cent of non-beneficiary women had shown a highly favourable attitude towards scientific

Table 15
Distribution of respondents based on attitude towards scientific calf rearing

| Beneficiary group n = 75 | | | Non-beneficiary group n = 75 | | | t value |
|------------------------------------|----|-------|------------------------------|----|------|---------|
| Category | f | % | Category | F | % | |
| High >43 | 43 | 57.33 | High >40 | 26 | 34.6 | 3.96* |
| Medium 36.1-43.0 | 17 | 22.60 | Medium 34.1-40.0 | 25 | 33.3 | |
| Low 0-36.0 | 15 | 20.0 | Low 0-34.0 | 24 | 32.0 | |
| Mean: 42.75 SD: 6.69 *P<0.05 | | | Mean: 38.47 SD: 6.54 | | | |

calf rearing. Attitudinal disposition of 22.60 per cent and 33.33 per cent of beneficiary and non-beneficiary women was a medium level of favourableness towards scientific calf rearing. A higher percentage (32%) of non-beneficiaries had low level of favourableness towards dairy farming than beneficiaries (20%). It was found that there was a significant ($P<0.05$) difference between beneficiary and non-beneficiary women.

4.3 EXTENT OF ADOPTION OF VARIOUS ANIMAL HUSBANDRY TECHNOLOGIES

4.3.1. Extent of adoption of dairy farming technologies.

4.3.1.1. Breeding

Table 16 illustrated that majority (52%) of the beneficiary women were medium level adopters of improved breeding technologies. Almost one-third (32%) of beneficiary women were high level adopters of improved breeding technologies. Sixteen per cent of beneficiaries were however low level adopters. Among non-beneficiary women, 45.33 per cent were low level adopters. Among non-beneficiaries, high level adopters

Fig.13 DISTRIBUTION OF RESPONDENTS BASED ON ATTITUDE TOWARDS SCIENTIFIC CALF REARING

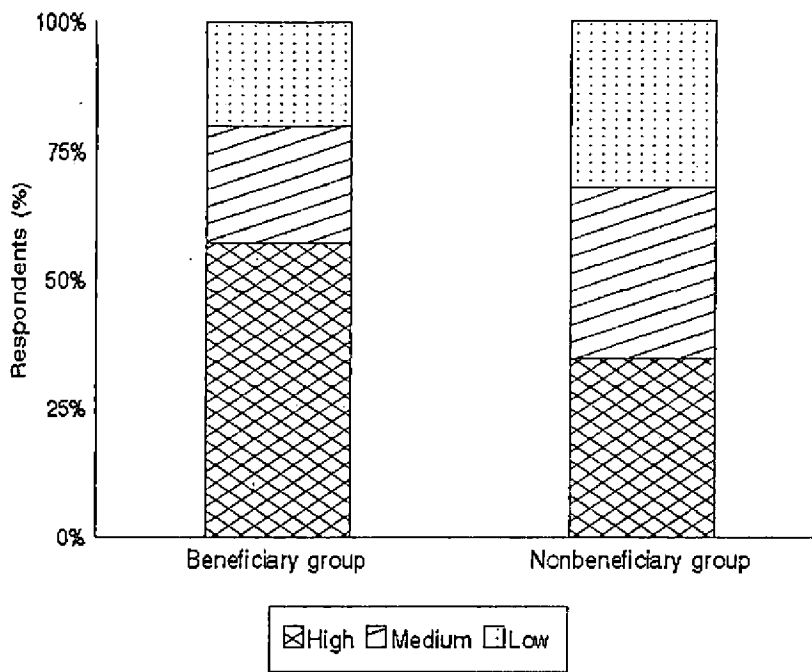


Fig.14 DISTRIBUTION OF RESPONDENTS BASED ON EXTENT OF ADOPTION OF BREEDING TECHNOLOGIES

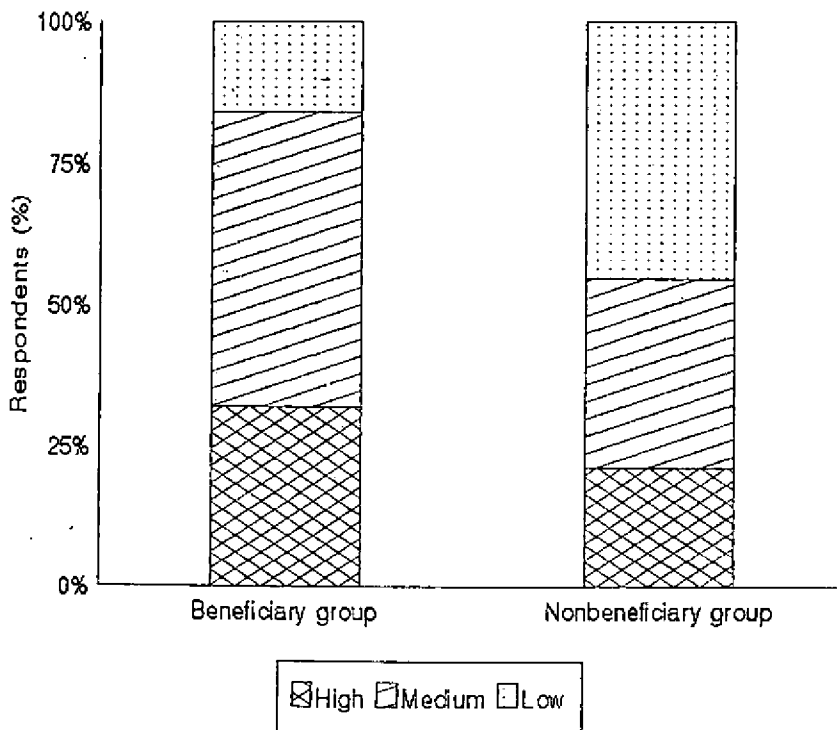


Table 16
Distribution of respondents based on extent of adoption of breeding technologies

| Beneficiary Group | | | Non-beneficiary group | | | t value |
|------------------------------------|----|------|-----------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High >13 | 24 | 32.0 | High >11 | 16 | 21.33 | 5.1* |
| Medium 8.1-13.0 | 39 | 52.0 | Medium 7.1-11.0 | 25 | 33.33 | |
| Low 0-8.0 | 12 | 16.0 | Low 0-7.0 | 34 | 45.33 | |
| Mean: 11.68 SD: 3.25 *P<0.05 | | | Mean: 9.05 SD: 3.0 | | | |

were 21.33 per cent and medium level adopters were 33.33 per cent. It was revealed that a significant ($P<0.05$) difference in the extent of adoption of breeding technologies existed between beneficiary and non-beneficiaries with the beneficiaries getting a higher mean score.

4.3.1.2. Nutrition.

Table 17
Distribution of respondents based on extent of adoption of nutrition technologies

| Beneficiary group | | | Non-beneficiary group | | | t value |
|------------------------------------|----|-------|-------------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High >16 | 34 | 45.33 | High >13 | 20 | 26.66 | 5.66* |
| Medium 11.1-16.0 | 25 | 33.33 | Medium 9.1-13.0 | 32 | 42.66 | |
| Low 0-11.0 | 16 | 21.33 | Low 0-9.0 | 23 | 30.66 | |
| Mean: 14.59 SD: 3.92 *P<0.05 | | | Mean: 11.28 SD: 3.22 | | | |

Data in table 17 indicated that 45.33 per cent of beneficiary women had high adoption scores while 33.33 per cent and 21.33 per cent respectively had medium and low adoption scores. On the other hand, 26.66 per cent of non-beneficiary women had high

Fig.15 DISTRIBUTION OF RESPONDENTS BASED ON EXTENT OF ADOPTION OF NUTRITION TECHNOLOGIES

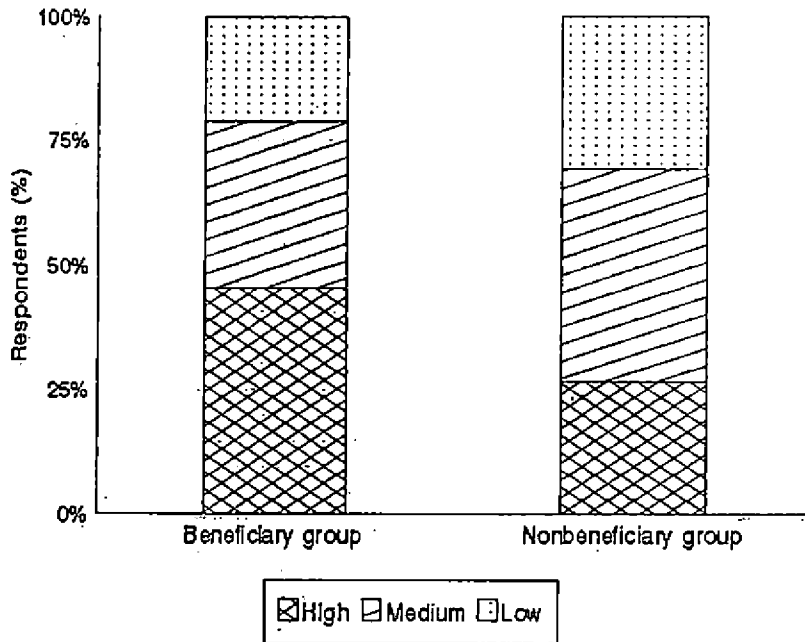
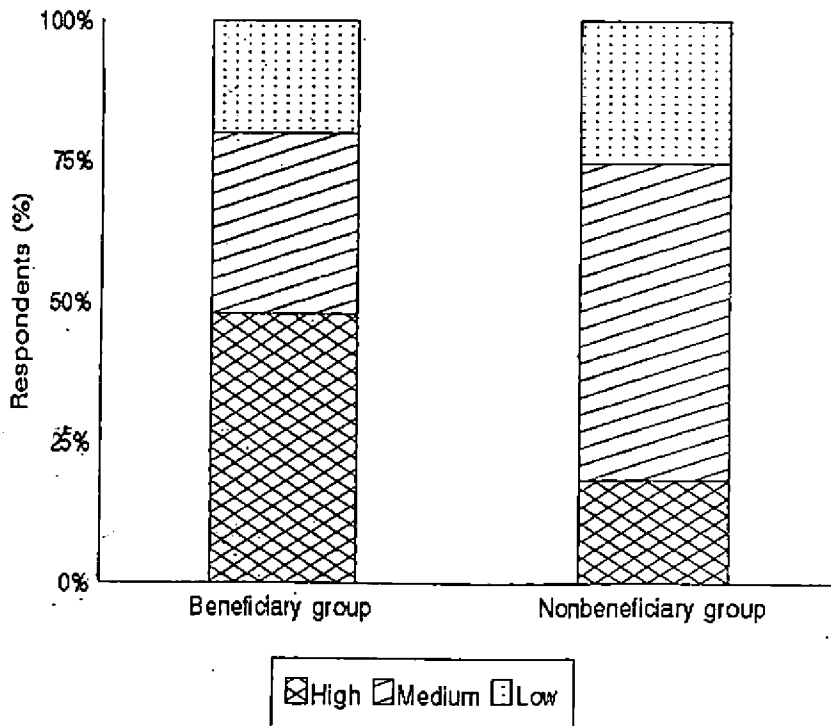


Fig.16 DISTRIBUTION OF RESPONDENTS BASED ON EXTENT OF ADOPTION OF MANAGEMENT TECHNOLOGIES



adoption scores while 42.66 per cent and 30.66 per cent had medium and low scores respectively. Results of the t test showed that beneficiaries had significantly ($P < 0.05$) higher adoption scores as compared to non beneficiaries.

4.3.1.3 Management.

As evidenced from data in Table 18, nearly half (48%) of the beneficiary women were high level adopters of management practices. The table further

Table 18
Distribution of respondents based on extent of adoption of management technologies

| Beneficiary group n = 75 | | | Non-beneficiary group n = 75 | | | t value |
|-----------------------------|----|------|---------------------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High >14 | 36 | 48.0 | High >14 | 14 | 18.66 | 1.83 |
| Medium 13.1-14.0 | 24 | 32.0 | Medium 13.1-14.0 | 42 | 56.0 | |
| Low 0-13.0 | 15 | 20.0 | Low 0-13.0 | 19 | 25.33 | |
| Mean: 14.61 SD: 1.64 | | | Mean: 13.94 SD: 1.30 | | | |

indicated that 32 per cent of beneficiary women were medium level adopters while 20 per cent were low level adopters. Among non-beneficiary women, 56 per cent were only medium level adopters of management practices. It was seen that 18.66 per cent were high level adopters and 25.33 per cent low adopters among non-beneficiaries. However results of Student's t test indicated that beneficiary women did not differ significantly ($P < 0.05$) from non-beneficiary women with regard to adoption of management practices.

4.3.1.4 Disease control

Perusal of table 19 indicated that majority (45.3%) of beneficiary women were high level adopters of disease control practices as compared to 21.33 per cent

Fig.17 DISTRIBUTION OF RESPONDENTS BASED ON EXTENT OF ADOPTION OF DISEASE CONTROL TECHNOLOGIES

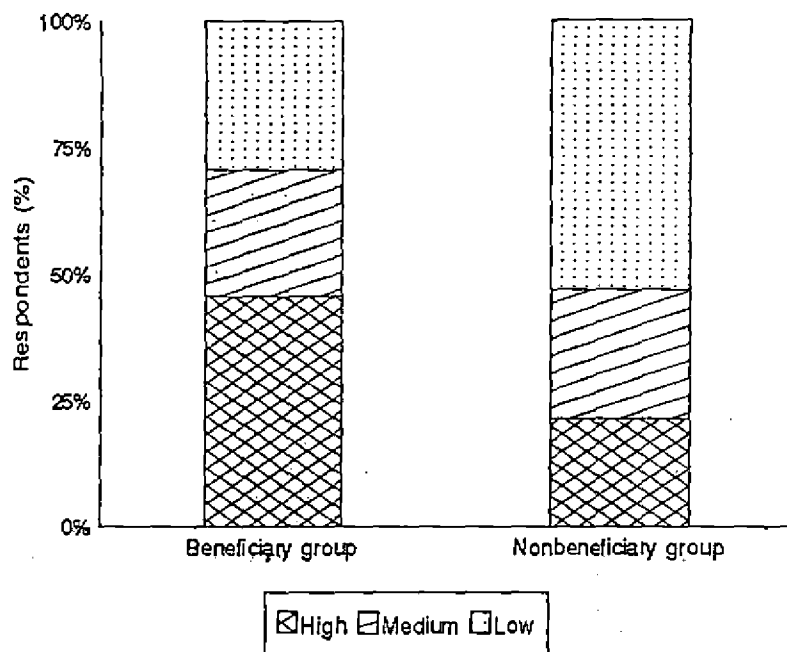


Fig.18 DISTRIBUTION OF RESPONDENTS BASED ON EXTENT OF ADOPTION OF HOUSING TECHNOLOGIES

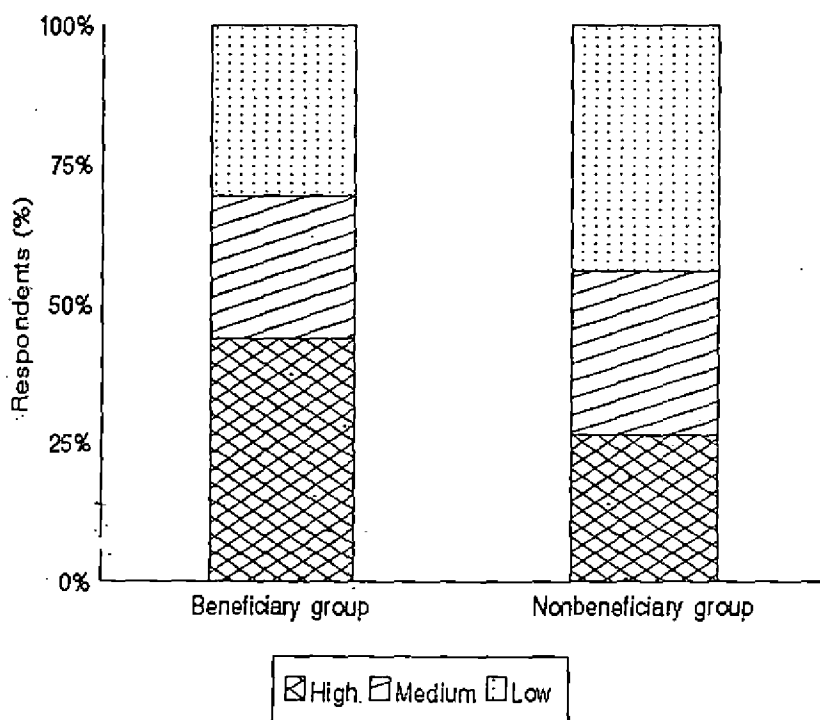


Table 19
Distribution of respondents based on extent of adoption of disease control practices

| Beneficiary group | | | Non-beneficiary group | | | t value |
|------------------------------------|----|-------|------------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High >12 | 34 | 45.33 | High >10 | 16 | 21.33 | 5.46* |
| Medium 8.1 – 12.0 | 19 | 25.33 | Medium 7.1 – 10.0 | 19 | 25.33 | |
| Low 0-8.0 | 22 | 29.33 | Low 0-7.0 | 40 | 53.33 | |
| Mean: 11.13 SD: 3.03 *P<0.05 | | | Mean: 8.60 SD: 2.39 | | | |

of non-beneficiaries. It was further noted that 25.33 per cent of both beneficiaries and non-beneficiaries were medium level adopters of disease control technologies. Majority of the non-beneficiaries (53.33%) were low level adopters of these technologies as against 29.33 per cent beneficiaries. The table also revealed that beneficiaries had significantly ($P<0.05$) higher adoption scores than non-beneficiaries.

4.3.1.5. Housing.

Table 20
Distribution of respondents based on extent of adoption of housing technologies

| Beneficiary group | | | Non-beneficiary group | | | t value |
|-----------------------------------|----|-------|------------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High >7 | 33 | 44.0 | High >7 | 20 | 26.66 | 3.89* |
| Medium 5.1-7.0 | 19 | 25.33 | Medium 5.1-7.0 | 22 | 29.33 | |
| Low 0-5.0 | 23 | 30.66 | Low 0-5.0 | 33 | 44.0 | |
| Mean: 7.13 SD: 2.09 *P<0.05 | | | Mean: 5.72 SD: 2.34 | | | |

Table 20 illustrated that 44 per cent of beneficiary women were high level adopters of housing technologies as compared to 26.66 per cent of non-beneficiaries. The table further indicated that 25.33 per cent of beneficiaries were medium level adopters while 29.33 per cent of non-beneficiaries fell in this category. Forty- four per cent of the non-beneficiaries were low level adopters of improved housing technologies as against 30.66 per cent of beneficiaries. Student's t test indicated that beneficiary women had significantly higher ($P < 0.05$) adoption scores as compared to non-beneficiary women.

4.3.1.6. Marketing.

Table 21 showed that 50.66 per cent of beneficiaries and 37.33 per cent of non-beneficiaries were high level adopters of marketing technologies. Medium level of adoption was seen among 28 per cent of beneficiaries and 30.66 per cent of non-beneficiaries. It was further observed that 21.33 per cent of beneficiary women and 30.66 per cent of non-

Table 21
Distribution of respondents based on extent of adoption of marketing technologies

| Beneficiary group | | | Non-beneficiary group | | | t value |
|------------------------|----|-------|------------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High | 38 | 50.66 | High | 28 | 37.33 | 1.59 |
| >8 | | | >8 | | | |
| Medium | 21 | 28.0 | Medium | 23 | 30.66 | |
| 6.1-8.0 | | | 5.1-8.0 | | | |
| Low | 16 | 21.33 | Low | 23 | 30.66 | |
| 0-6.0 | | | 0-5.0 | | | |
| Mean: 7.43 SD: 1.93 | | | Mean: 6.92 SD: 2.00 | | | |

beneficiary women were low level adopters. The table also indicated that beneficiaries did not differ significantly ($P < 0.05$) from non-beneficiaries with regard to marketing technologies.

Fig.19 DISTRIBUTION OF RESPONDENTS BASED ON EXTENT OF ADOPTION OF MARKETING TECHNOLOGIES

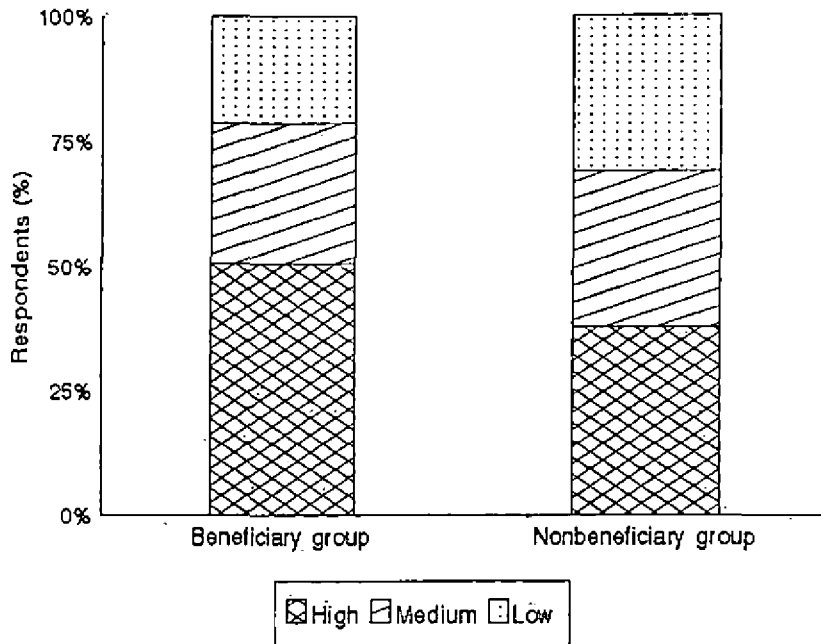
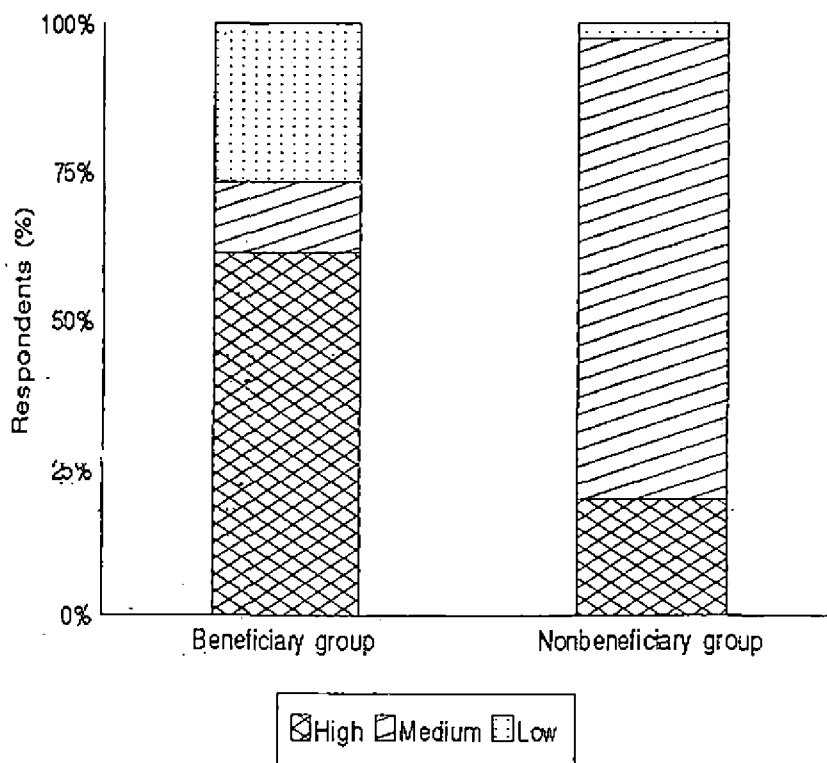


Fig.20 DISTRIBUTION OF RESPONDENTS BASED ON EXTENT OF ADOPTION OF NUTRITION (SCIENTIFIC CALF REARING) TECHNOLOGIES



4.3.2. Extent of adoption of scientific calf rearing technologies.

4.3.2.1. Nutrition.

A critical look at the data presented in table 22 indicated that 61.3 per cent of beneficiaries were high level adopters of nutrition practices and as against 20 per

Table 22

Distribution of respondents based on extent of adoption of nutrition technologies (Scientific calf rearing)

| Beneficiary group n = 75 | | | Non-beneficiary group n = 75 | | | t value |
|-----------------------------|----|------|---------------------------------|----|------|---------|
| Category | f | % | Category | f | % | |
| High > 14 | 46 | 61.3 | High >13 | 15 | 20.0 | 8.69* |
| Medium 12.1-14.0 | 9 | 12.0 | Medium 11.1-13.0 | 58 | 77.3 | |
| Low 0-12.0 | 20 | 26.6 | Low 0-11.0 | 2 | 2.66 | |

Mean: 13.79

SD: 1.94

*P<0.05

Mean: 11.52

SD: 1.17

cent of non-beneficiaries. Majority of non-beneficiaries (77.3%) were medium level adopters of nutrition practices and only 12 per cent of beneficiaries fell in this category. Low level of adoption was observed among 26.6 per cent beneficiaries and 2.66 per cent non-beneficiaries. The table further showed that beneficiary women had significantly higher (P<0.05) adoption scores than non-beneficiary women.

4.3.2.2. Management.

Data in Table 23 indicated that majority of beneficiary women (49.33%) and non-beneficiary women (48%) were medium level adopters of management practices. While 25.33 per cent of beneficiary women were high level adopters only, four per cent

Fig.21 DISTRIBUTION OF RESPONDENTS BASED ON EXTENT OF ADOPTION OF MANAGEMENT (SCIENTIFIC CALF REARING) TECHNOLOGIES

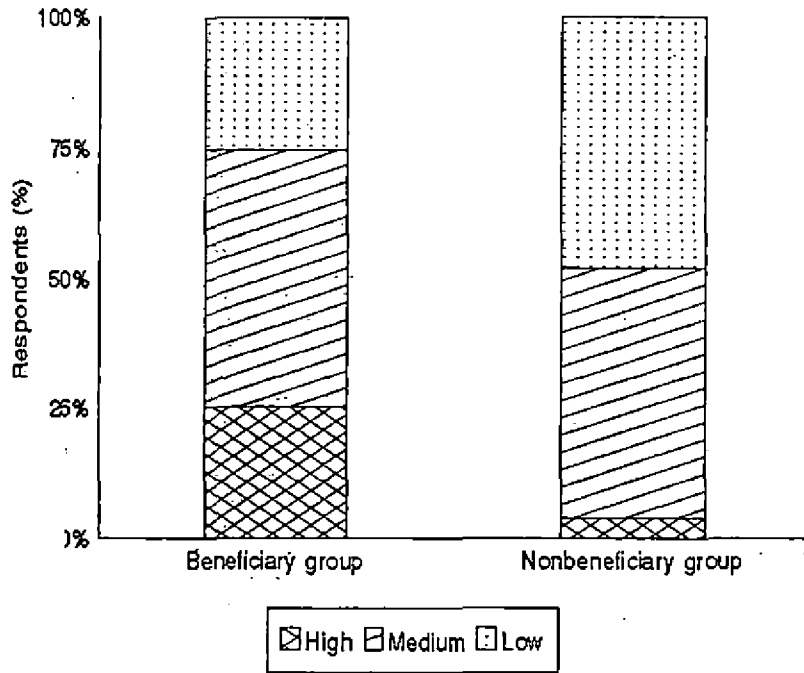


Fig.22 DISTRIBUTION OF RESPONDENTS BASED ON EXTENT OF ADOPTION OF DISEASE CONTROL (SCIENTIFIC CALF REARING) TECHNOLOGIES

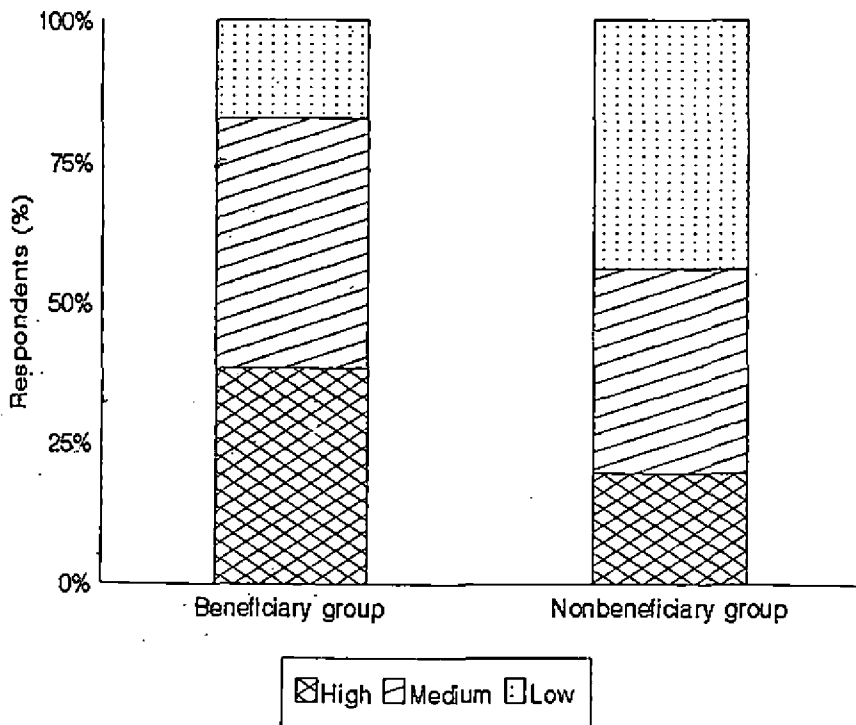


Table 23

Distribution of respondents based on extent of adoption of management technologies (scientific calf rearing)

| Beneficiary group | | | Non-beneficiary group | | | t value |
|-----------------------------------|----|-------|------------------------|----|------|---------|
| Category | f | % | Category | f | % | |
| High >11 | 19 | 25.33 | High >10 | 3 | 4.0 | 3.96* |
| Medium 9.1-11.0 | 37 | 49.33 | Medium 8.1-10.0 | 36 | 48.0 | |
| Low 0-9.0 | 19 | 25.33 | Low 0-8.0 | 36 | 48.0 | |
| Mean: 9.95 SD: 2.00 *P<0.05 | | | Mean: 8.81 SD: 1.48 | | | |

of non-beneficiary women were high level adopters. Low level of adoption of management technologies was observed among 25.33 per cent and 48 per cent beneficiaries and non-beneficiaries respectively. Analysis revealed that beneficiary women differed significantly ($P<0.05$) from non-beneficiaries in respect of adoption of management technologies.

4.3.2.3. Disease control

Table 24 illustrated that 38.66 per cent of beneficiaries were high level adopters of disease control practices, 44 per cent were medium level adopters and 17.33 per cent

Table 24

Distribution of respondents based on extent of adoption of disease control technologies (scientific calf rearing)

| Beneficiary group | | | Non-beneficiary group | | | t value |
|-----------------------------------|----|-------|------------------------|----|------|---------|
| Category | f | % | Category | f | % | |
| High >11 | 29 | 38.66 | High >10 | 15 | 20.0 | 4.55* |
| Medium 8.1-11.0 | 33 | 44.0 | Medium 7.1-10.0 | 27 | 36.0 | |
| Low 0-8.0 | 13 | 17.33 | Low 0-7.0 | 33 | 44.0 | |
| Mean: 10.2 SD: 2.43 *P<0.05 | | | Mean: 8.85 SD: 1.97 | | | |

were low level adopters of these technologies. On the other hand, 20 per cent of non-beneficiary women were high level adopters, 36 per cent were medium level adopters and 44 per cent were low level adopters of these technologies. It was found that there was a significant ($P < 0.05$) difference between beneficiary and non-beneficiary women regarding adoption of disease control technologies, with the former obtaining higher adoption scores.

4.3.2.4. Housing

It is seen (Table 25) that 38.6 per cent of beneficiaries were high level adopters while 37.3 per cent were medium level adopters and 24 per cent low level adopters of housing technologies. Data further revealed that 36 per cent of non-beneficiaries were high level adopters of housing technologies, 20 per cent medium level adopters and 44 per

Table 25

Distribution of respondents based on extent of adoption of housing practices (scientific calf rearing)

| Beneficiary group | | | Non-beneficiary group | | | t value |
|------------------------|----|------|------------------------|----|------|---------|
| Category | f | % | Category | f | % | |
| High >10 | 29 | 38.6 | High >9 | 27 | 36.0 | 2.50 |
| Medium 6.1-10.0 | 28 | 37.3 | Medium 6.1-9.0 | 15 | 20.0 | |
| Low 0-6.0 | 18 | 24.0 | Low 0-6.0 | 33 | 44.0 | |
| Mean: 9.00 SD: 2.96 | | | Mean: 7.80 SD: 3.03 | | | |

cent non-beneficiaries were low level adopters. However, t test indicated that beneficiary women did not differ significantly ($P < 0.05$) from non-beneficiary women in respect of adoption of housing technologies.

4.3.2.5. Marketing.

Fig.23 DISTRIBUTION OF RESPONDENTS BASED ON EXTENT OF ADOPTION OF HOUSING (SCIENTIFIC CALF REARING) TECHNOLOGIES

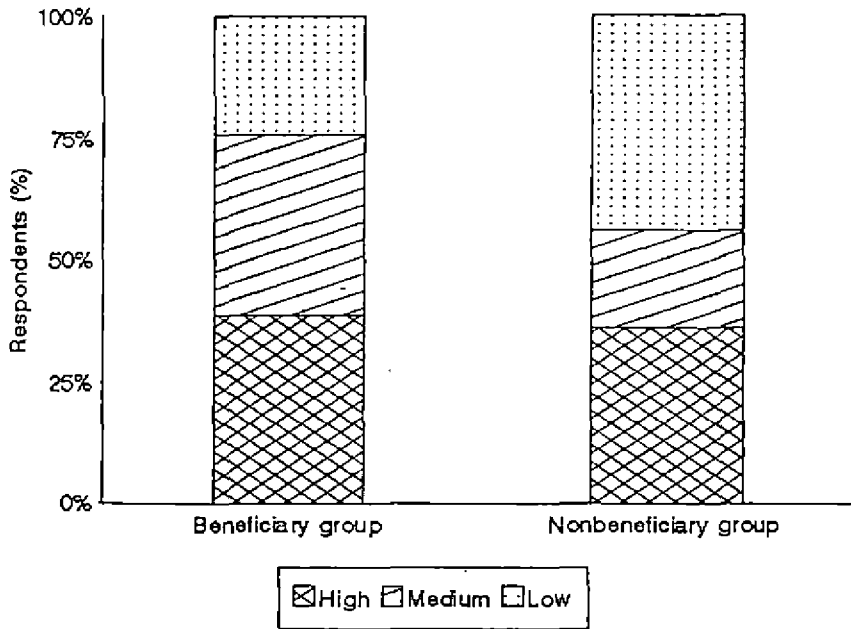
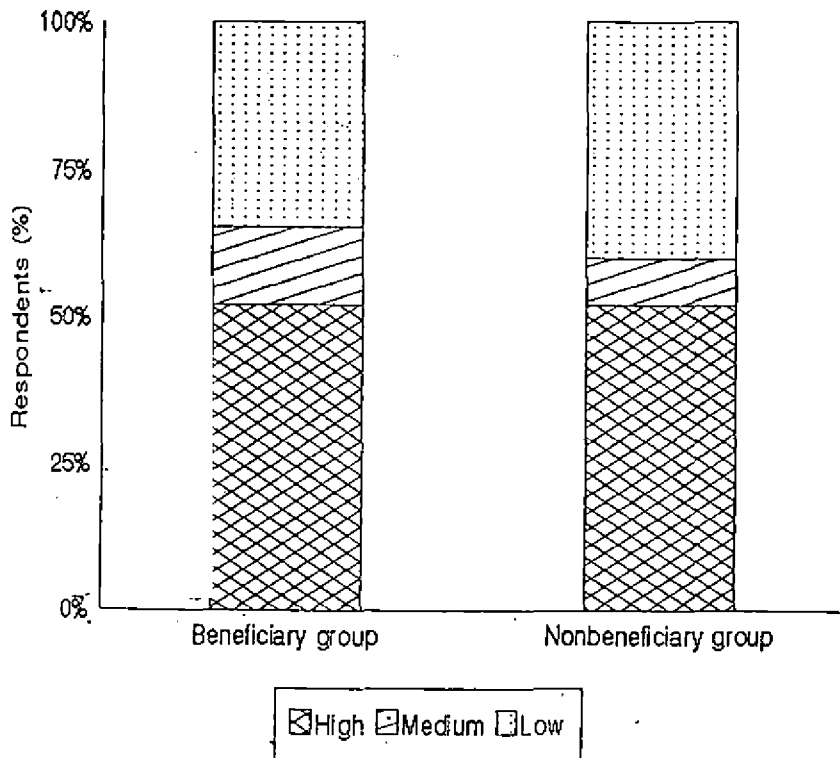


Fig.24 DISTRIBUTION OF RESPONDENTS BASED ON EXTENT OF ADOPTION OF MARKETING (SCIENTIFIC CALF REARING) TECHNOLOGIES



It is evident from table 26 that majority (52 %) of both beneficiary and non-beneficiary women were high level adopters of marketing technologies. Medium level of adoption was seen among 13.33 per cent and 8 per cent of beneficiary and non-

Table 26

Distribution of respondents based on extent of adoption of marketing technologies (scientific calf rearing)

| Beneficiary group | | | Non-beneficiary group | | | t value |
|-----------------------------------|----|-------|------------------------|----|------|---------|
| Category | f | % | Category | f | % | |
| High >4 | 39 | 52.0 | High >4 | 39 | 52.0 | 5.0* |
| Medium 3.1-4.0 | 10 | 13.33 | Medium 3.1-4.0 | 6 | 8.0 | |
| Low 0-3.0 | 26 | 34.6 | Low 0-3.0 | 30 | 40.0 | |
| Mean: 3.89 SD: 1.59 *P<0.05 | | | Mean: 2.77 SD: 1.09 | | | |

beneficiary women respectively. It was observed that 34.6 per cent of beneficiaries and 40 per cent of non-beneficiaries were low level adopters of these technologies. Results of the 't' test indicated that beneficiary women had significantly higher adoption scores when compared to non-beneficiaries.

4.4.OVERALL KNOWLEDGE OF ANIMAL HUSBANDRY TECHNOLOGIES.

4.4.1. Overall knowledge of dairy farming

Data in Table 27 indicated the overall knowledge of dairy farming technologies. It was seen that 40 per cent of beneficiary women and 38.66 per cent of non-beneficiary women had medium knowledge. It was further evident that 38.66 per cent of beneficiary women and 25.33 per cent of non-beneficiary women had high knowledge of dairy farming.

Fig. 25 DISTRIBUTION OF RESPONDENTS BASED ON OVERALL KNOWLEDGE OF DAIRY HUSBANDRY

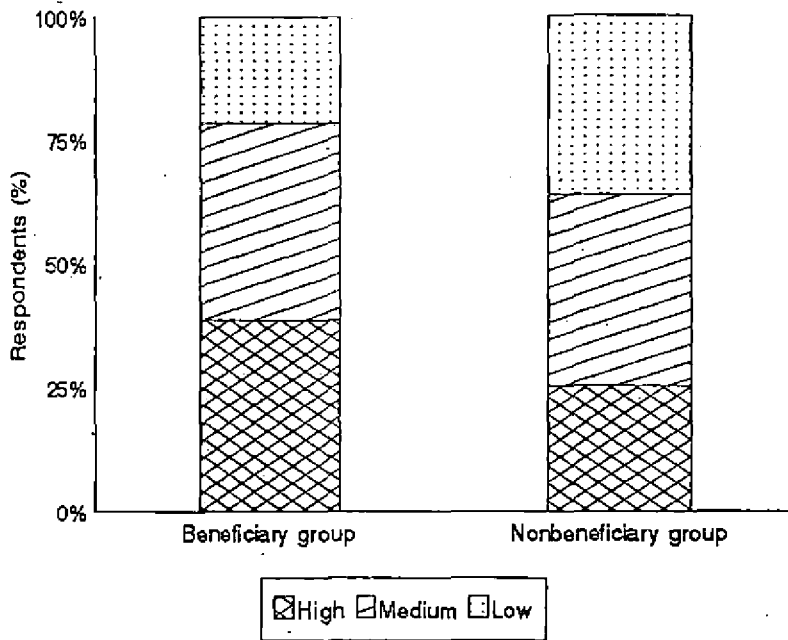
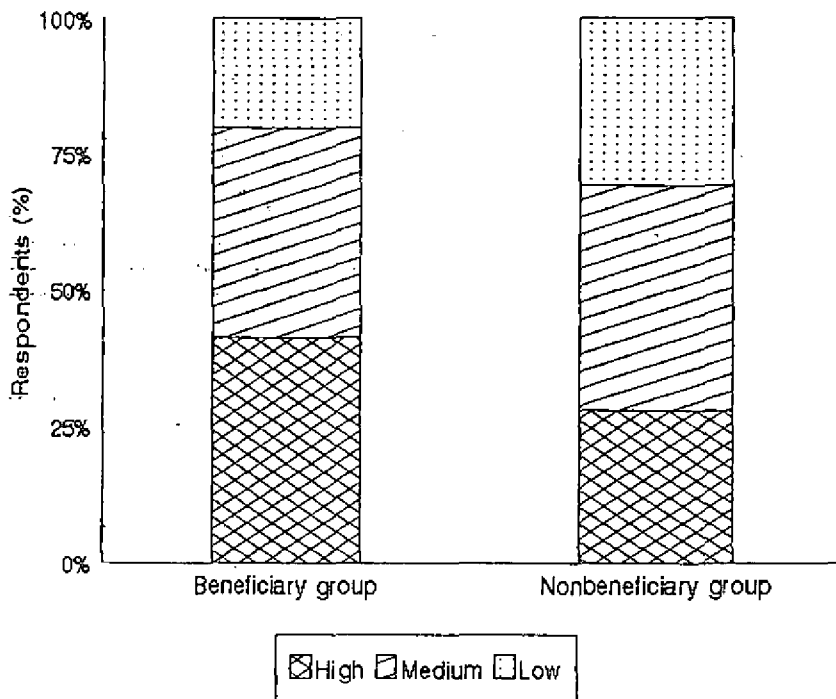


Fig. 26 DISTRIBUTION OF RESPONDENTS BASED ON OVERALL KNOWLEDGE OF SCIENTIFIC CALF REARING



Low knowledge was observed among 21.33 per cent of beneficiary women and 36 per cent of non-beneficiary women.

Table 27

Distribution of respondents based on overall knowledge of dairy farming

| Beneficiary group | | | Non-beneficiary group | | | t value |
|------------------------------------|----|-------|-------------------------|------|-------|---------|
| Category | f | % | Category | f | % | |
| High | 29 | 38.66 | High | 19.0 | 25.33 | 5.19* |
| > 39 | | | > 34.0 | | | |
| Medium | 30 | 40.0 | Medium | 29.0 | 38.66 | |
| 28.0-39.0 | | | 21.1 – 34.0 | | | |
| Low | 16 | 21.33 | Low | 27.0 | 36.0 | |
| 0-28.0 | | | 0 – 21.0 | | | |
| Mean: 35.23 SD: 9.80 *P<0.05 | | | Mean: 27.19 SD: 9.15 | | | |

The table also showed that beneficiary women had significantly ($P<0.05$) higher knowledge of dairy husbandry as compared to their non-beneficiary counterparts.

4.4.2. Overall knowledge of scientific calf rearing.

A critical look at table 28 indicated that 41.33 per cent of beneficiary women and 28 per cent of non-beneficiary women had high knowledge about scientific calf rearing. Medium knowledge scores were observed among 38.66 per cent beneficiaries and 41.33 per cent non-beneficiaries. It was evident from the table that 20 per cent of beneficiary women had low knowledge while 30.66 per cent of non-beneficiary women had low knowledge of scientific calf rearing. The table also indicated that beneficiary women had significantly ($P<0.05$) higher knowledge of scientific calf rearing as compared to non-beneficiaries.

Fig. 27 DISTRIBUTION OF RESPONDENTS BASED ON OVERALL EXTENT OF ADOPTION OF DAIRY FARMING TECHNOLOGIES

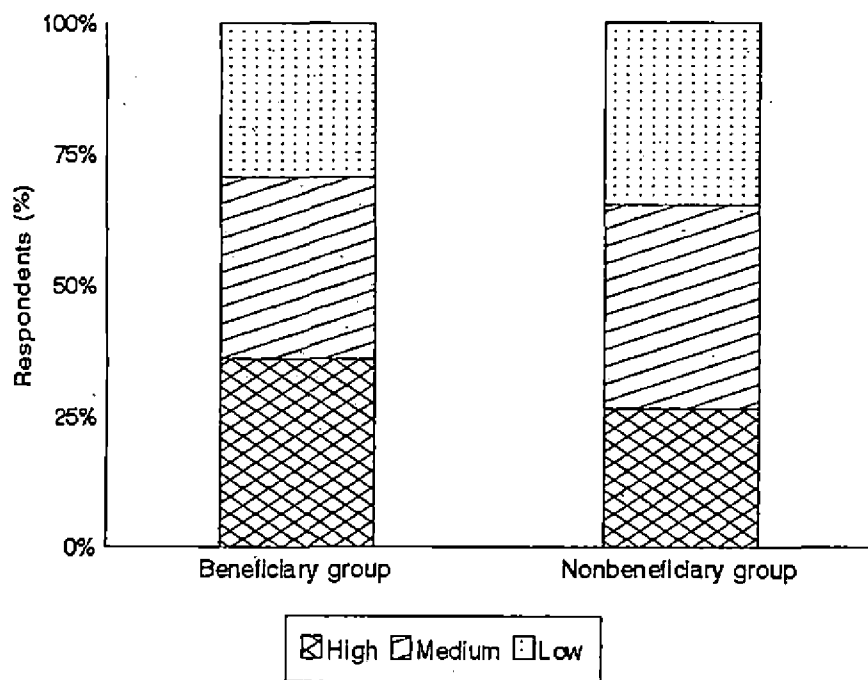
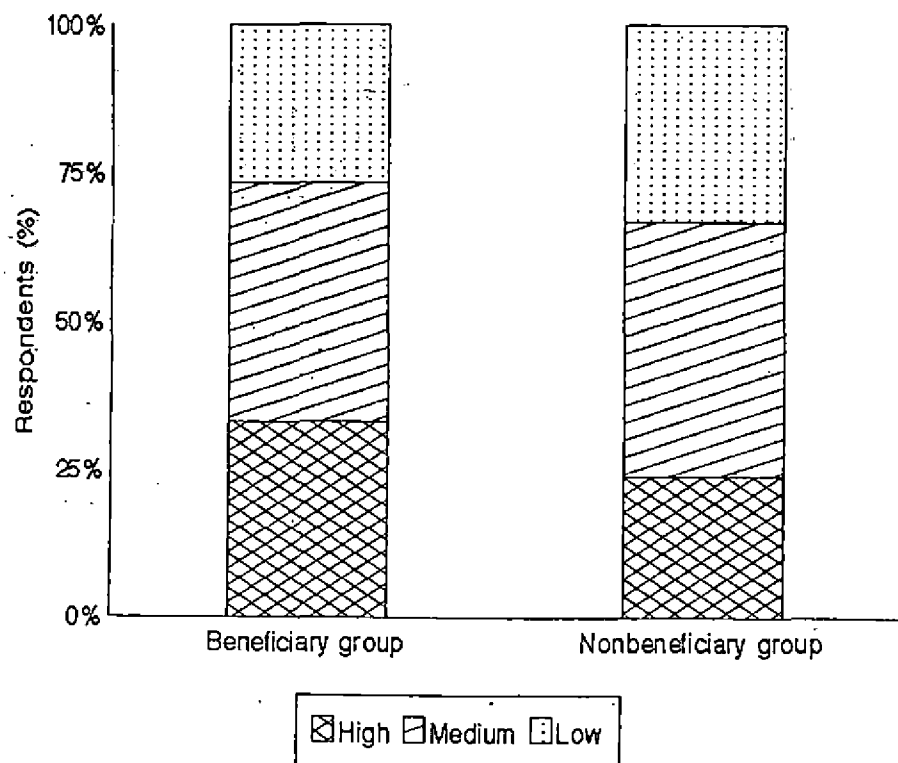


Fig. 28 DISTRIBUTION OF RESPONDENTS BASED ON OVERALL EXTENT OF ADOPTION OF SCIENTIFIC CALF REARING TECHNOLOGIES



technologies. Statistical analysis revealed that beneficiary women had significantly ($P < 0.05$) higher adoption scores than non-beneficiary women.

4.5.2. Overall extent of adoption of scientific calf rearing technologies.

It was observed (Table 30) that 33.33 per cent of beneficiary women and 24 per cent of non-beneficiary women were high level adopters of scientific calf rearing technologies. Among beneficiaries 40 per cent and among non-beneficiary women 42.66 per cent were medium level adopters of these technologies. Low level of adoption was observed among

Table 30

Distribution of respondents based on extent of adoption of scientific calf rearing technologies

| Beneficiary group | | | Non-beneficiary group | | | t value |
|-------------------|----|-------|-----------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High | 25 | 33.33 | High | 18 | 24.0 | 6.37* |
| >51 | | | > 44 | | | |
| Medium | 30 | 40.00 | Medium | 32 | 42.66 | |
| 41.1 – 51.0 | | | 36.1 – 44.0 | | | |
| Low | 20 | 26.66 | Low | 25 | 33.33 | |
| 0 – 41.0 | | | 0 –36.0 | | | |
| Mean: 46.87 | | | Mean: 39.69 | | | |
| SD: 7.79 | | | SD: 5.89 | | | |
| *P<0.05 | | | | | | |

26.66 per cent of beneficiary women and 33.33 percent of non-beneficiary women. Student's t test indicated that beneficiary women adopted significantly higher ($P < 0.05$) number of calf rearing technologies than non-beneficiary women.

4.6. ANIMAL BREEDING PARAMETERS.

4.6.1. Age at first oestrus

Data in table 31 revealed that majority of calves (71.12 %) belonging to beneficiary women attained puberty between 13.89 and 26.99 months, while 15.25 per cent heat signs after 26.99 months and 13.55 per cent attained puberty within 13.89 months. The table further revealed that majority of the calves belonging to non-

Table 31
Distribution of calves based on age at first oestrus

| Beneficiary group | | | Non-beneficiary group | | | t value |
|------------------------------------|----|-------|-------------------------|----|-------|---------|
| Category | F | % | Category | f | % | |
| High | 9 | 15.25 | High | 11 | 21.15 | 4.53* |
| >26.99 | | | > 31.87 | | | |
| Medium | 42 | 71.12 | Medium | 36 | 69.2 | |
| 13.89- 26.99 | | | 15.37 - 31.87 | | | |
| Low | 8 | 13.55 | Low | 5 | 9.6 | |
| <13.89 | | | < 15.37 | | | |
| Mean: 20.44 SD: 6.55 *P<0.05 | | | Mean: 23.62 SD: 8.25 | | | |

beneficiaries attained puberty between 15.37 and 31.87 months, while 21.15 per cent attained puberty after 31.87 months and 9.60 per cent within 15.37 months. Results of students' t test revealed that the calves of beneficiary women attained puberty significantly ($P<0.05$) earlier than those of non-beneficiaries.

4.6.2. Age at first insemination.

Table 32 indicated that majority of calves belonging to beneficiary women were

Table 32
Distribution of heifers based on age at first insemination

| Beneficiary group | | | Non-beneficiary group | | | t value |
|-------------------------------------|----|-------|-------------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High | 9 | 15.25 | High | 12 | 23.07 | 4.919* |
| >28.38 | | | > 33.99 | | | |
| Medium | 46 | 77.97 | Medium | 35 | 67.3 | |
| 15.34- 28.38 | | | 16.79- 33.99 | | | |
| Low | 4 | 6.78 | Low | 5 | 9.62 | |
| < 15.34 | | | < 16.79 | | | |
| Mean: 21.86 SD: 6.52 * P<0.05 | | | Mean: 25.39 SD: 8.60 | | | |

inseminated between 15.34 and 28.38 months. Higher ages at first insemination were observed among 15.25 per cent of calves belonging to beneficiary women and 23.03 per

cent of calves of non-beneficiaries. Students' t test indicated that the age at first insemination of calves under the scheme was significantly ($P < 0.05$) lower than that of calves outside the scheme.

4.6.3 Age at first calving.

As evidenced from data in table 33, majority of heifers under the calf feed scheme (77.97%), calved between the age of 24 to 37.6 months, while 6.78 per cent

Table 33
Distribution of heifers based on age at first calving

| Beneficiary group | | | Non-beneficiary group | | | t value |
|-----------------------------------|----|-------|---------------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High > 37.6 | 9 | 15.25 | High > 43.06 | 19 | 36.54 | 6.01* |
| Medium 24.0-37.6 | 46 | 77.97 | Medium 26.98- 43.06 | 26 | 50.0 | |
| Low <24.0 | 4 | 6.78 | Low < 26.98 | 7 | 13.46 | |
| Mean: 30.8 SD: 6.80 *P<0.05 | | | Mean : 35.02 SD: 8.04 | | | |

calved before 24 months of age and 15.25 per cent calved after 36.7 months. In the case of heifers outside the scheme 50 per cent of them calved between 26.98 and 43.06 months of age while 13.46 per cent calved before 26.98 months and 36.54 per cent calved after 43.06 months. Analysis revealed that age at first calving for heifers under the scheme was significantly ($P < 0.05$) lower than that of calves outside the scheme.

4.6.3. Post calving insemination period

A perusal of table 34 revealed that 90 per cent of the cows under the scheme were inseminated between 2.62 and 6.72 months after calving while 10 per cent of cows were inseminated later than 6.72 months. On the other hand, 74.36 per cent of the cows

Table 34
Distribution of cows based on post calving insemination period

| Beneficiary Group | | | Non-beneficiary group | | | t value |
|-------------------------|-------|-------|------------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High > 6.72 | 4 | 10 | High > 8.29 | 4 | 10.26 | 0.858 |
| Medium 2.62 – 6.72 | 36 | 90 | Medium 3.71 – 8.29 | 29 | 74.36 | |
| Low < 2.62 | ..... | ..... | Low < 3.71 | 6 | 15.38 | |
| Mean: 4.675 SD: 2.05 | | | Mean: 6.00 SD: 2.29 | | | |

belonging to non-beneficiaries were inseminated between 3.71 and 8.29 months after calving, while 15.38 per cent of them were inseminated within 3.71 months after calving and 10.26 per cent of them were inseminated beyond 8.29 months after calving. There was no significant difference between the animals under the scheme and those outside the scheme with regard to this breeding parameter.

4.6.4 Age at second calving.

Table 35 illustrated that 71.87 per cent of animals under the scheme had their

Table 35
Distribution of cows based on age at second calving

| Beneficiary Group | | | Non-beneficiary group | | | t value |
|------------------------------------|----|-------|---------------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High > 52.66 | 6 | 18.75 | High > 56.48 | 5 | 16.66 | 4.19* |
| Medium 36.12– 52.66 | 23 | 71.87 | Medium 39.58– 56.48 | 22 | 73.33 | |
| Low < 36.02 | 3 | 9.38 | Low < 39.58 | 3 | 10 | |
| Mean: 44.37 SD: 8.29 *P<0.05 | | | Mean: 48.03 SD: 8.45 | | | |

second calving between 36.12 and 52.66 months, while 9.38 per cent calved for the second time within 36.02 months and 18.75 per cent calved beyond 52.66 months. Further, 73.33 per cent of animals outside the scheme had their second calving between 39.58 and 56.48 months of age, 16.66 per cent calved for the second time beyond 56.48 months and 10 per cent had a second calf within 39.58 months. Results of t test indicated that the mean age at second calving of animals under the scheme was significantly lower than that of animals outside the scheme.

4.6.5 Intercalving period.

As evidenced from table 36, 78.13 per cent of animals belonging to beneficiary women had a medium intercalving period ranging from 11.98 to 15.46 months. The

Table 36
Distribution of cows based on intercalving period

| Beneficiary group | | | Non-beneficiary group | | | t value |
|-------------------|------|-------|-----------------------|----|-------|---------|
| Category | f | % | Category | f | % | |
| High | 7 | 21.87 | High | 3 | 10 | 4.2* |
| > 15.46 | | | > 18.14 | | | |
| Medium | 25 | 78.13 | Medium | 23 | 76.67 | |
| 11.98– | | | 12.82– | | | |
| 15.46 | | | 18.14 | | | |
| Low | .... | .... | Low | 4 | 13.33 | |
| < 11.98 | | | < 12.82 | | | |
| Mean: 13.72 | | | Mean: 16.48 | | | |
| SD: 1.74 | | | SD 2.66 | | | |
| *P<0.05 | | | | | | |

remaining 21.87 per cent of animals had high intercalving period above 15.46 months. On the other hand, 76.67 per cent of animals belonging to non-beneficiary women had medium intercalving period ranging from 12.82 to 18.14 months, 13.33 per cent had lower intercalving period and 10 per cent had high intercalving period. Results of student's t test

indicated that there was a significant difference between the intercalving period of scheme animals when compared to those not under the scheme.

4.7. KNOWLEDGE LEVEL OF BENEFICIARY WOMEN ABOUT VARIOUS ANIMAL HUSBANDRY TECHNOLOGIES.

4.7.1. Dairy farming

A cursory look at table 37 revealed that the knowledge level of beneficiary women with regard to various animal husbandry technologies. Beneficiary women had highest knowledge in the area of artificial insemination (mean score 0.72) followed by feeding of

Table 37

Domain wise mean scores- knowledge of dairy farming

| SLNo | Domain | Mean Score | Rank |
|------|--|------------|------|
| 1 | AI | 0.72 | I |
| 2 | H.S., F.M.D., R.P., and vaccination against them | 0.225 | V |
| 3 | Deworming | 0.515 | IV |
| 4 | Feeding of green fodder | 0.706 | II |
| 5 | Feeding of concentrated | 0.669 | III |

green fodder (m.s.0.706), feeding of concentrates (m.s. 0.669), deworming (m.s. 0.515) and lowest knowledge in the area of H.S., R.P., F.M.D., and vaccination against these diseases, The practices were ranked in this order.

4.7.1.1. Artificial insemination.

Table 38
Item wise mean scores- knowledge of AI

| Sl.no. | Item | Mean score | Rank |
|--------|--|------------|------|
| 1. | In which heat cycle should a heifer be inseminated for the first time? | 0.71 | VI |
| 2. | How many times should a cow be inseminated in one heat cycle for optimum results? | 0.75 | V |
| 3 | What is the appropriate time for heat detection in cows? | 0.96 | I |
| 4 | After how many days does a cow repeat its heat cycle? | 0.96 | I |
| 5 | What are the reasons for a cow not coming into heat? | | |
| 6 | Nutritional deficiency? | 0.65 | VIII |
| 7 | Heavy parasitic load? | 0.61 | IX |
| | Due to reproductive disorders? | 0.91 | II |
| | Why do you follow AI in your cow? | | |
| 8 | Desi bulls are not good. | 0.87 | III |
| 9 | Animal becomes pregnant without fail. | 0.67 | VII |
| 10 | At what age does a crossbred heifer generally come into heat for the first time? | 0.79 | IV |
| 11 | How many days after parturition should a crossbred heifer generally come into heat for the first time? | 0.43 | X |
| 12 | What should be the body weight of a crossbred heifer at puberty for getting the optimum benefit of AI? | 0.37 | XI |

It was observed from table 38 that most of the beneficiary women knew the appropriate time for insemination in cows (m.s. 0.96) as well as the inter-oestrus interval of the cow (m.s. 0.96). It was further evident that a sizeable majority of women could correctly indicate the number of times a cow should be inseminated in one heat cycle for optimum results (m.s.0.75) as well as the heat cycle in which a heifer should be inseminated for the first time (m.s.0. 71). With regard to the reasons for a cow not coming into heat,

majority of the women identified reproductive disorders as a cause (m.s. 0.91), while nutritional deficiency (m.s 0.65) and heavy parasitic load (m.s. 0.61) were identified by lesser numbers of women as causes. Regarding the reasons for following AI in cows majority of the women knew that desi bulls were not good (0.87) but many of them had a misconception that the animal would become pregnant (0.67). A good number of beneficiary women knew the age at puberty of crossbred heifers (m.s. 0.79). Considerably lesser number of beneficiary women could positively indicate the optimum time for inseminating a cow after parturition (m.s 0.43) as well as the body weight of a cross-bred heifer at puberty for optimum benefits of AI (m.s 0.37). Among all the items, the item regarding the appropriate time for AI was ranked first and the item regarding the optimum body weight of a heifer for maximum benefit of AI was ranked last.

4.7.1.2. H.S., R.P.,F.M.D and vaccination against them.

As evidenced from table 39, none of the beneficiary women answered correctly those items relating to disposal of animals that had died of H.S., R.P., or F.M.D., consequences of H.S., and R.P., vaccination, frequency and target group for H.S., vaccination and the schedule of R.P., vaccination. Only a few women mentioned the symptoms of H.S., (m.s 0.133) and R.P., (m.s 0.03). Majority of the beneficiary women knew that vaccination was a prophylactic measure against disease (m.s 0.97). Regarding F.M.D., though a good number of women knew the symptoms of this disease (m.s. 0.73) and the consequences of F.M.D., vaccination (m.s 0.71) yet none knew when the first and second vaccinations of F.M.D., should be done as a good number of them reported that the time of first vaccination was fifth month (m.s 0.51) and time of second vaccination one year

(m.s 0.63). The item what do you know about vaccination? was ranked first. The items on disposal of carcasses of animals, vaccination against H.S., and R.P., and consequences

Table 39

Item wise mean scores- knowledge of H.S., R.P., F.M.D., and vaccination against them

| Sl.No | Item | Mean score | Rank |
|-------|---|------------|------|
| 1 | How will you dispose of an animal if it dies of H.S., F.M.D., and R.P., diseases? | 0 | VIII |
| 2 | What are the symptoms of H.S.,? | | |
| | Diarrhoea | 0.013 | VII |
| 3 | Moves in a circle | 0.013 | VII |
| | What are the symptoms of F.M.D.,? | | |
| 4 | Diarrhoea | 0.73 | II |
| 5 | Frequent urination | 0.73 | II |
| | What are the symptoms of R.P.? | | |
| 6 | Lower surface of the tongue is ulcerated | 0.03 | VI |
| 7 | Swollen in throat and lower jaw | 0.03 | VI |
| 8 | Shooting diarrhoea | 0.03 | VI |
| 9 | Breathing trouble | 0.03 | VI |
| 10 | Offensive smelling faeces | 0.03 | VI |
| | What do you know about vaccination? | | |
| 11 | It is a prophylactic measure against a disease. | 0.97 | I |
| 12 | When an animal is vaccinated against H.S., it develops | 0 | VIII |
| 13 | How long does it generally take for the swelling to subside after vaccination? | 0 | VIII |
| 14 | When an animal is vaccinated against F.M.D., it develops | 0.71 | III |
| 15 | How long does it take for the temperature to subside after vaccination? | 0.71 | III |
| 16 | When an animal is vaccinated against R.P., it develops..... | 0 | VIII |
| 17 | How long does it generally take for the temperature to subside after vaccination? | 0 | VIII |
| 18 | How many times should H.S., vaccination be given? | 0 | VIII |
| | In what age group should H.S., vaccination be given? | | |
| 19 | All age groups of animals. | 0 | VIII |
| 20 | All animals except pregnant cows. | 0 | VIII |
| 21 | How many times should R.P., vaccination be given? | 0 | VIII |
| 22 | When is vaccination against R.P., done? | 0 | VIII |
| | What is the schedule of vaccination against F.M.D.,? | | |
| 23 | First vaccination | 0 | VIII |
| 24 | Second vaccination | 0 | VIII |
| 25 | Third vaccination | 0.51 | V |
| 26 | Fourth vaccination | 0.63 | IV |
| 27 | Subsequent vaccinations | 0.63 | IV |
| 28 | When is vaccination against F.M.D., done? | 0.51 | V |

of vaccination were ranked last.

4.7.1.3. Deworming.

Perusal of table 40 revealed that all the beneficiary women knew why deworming should be done (m.s.1.00). However none of the women knew how and when to administer coccidiostat to young calves. Though a good number of women knew the schedule of

Table 40
Item wise mean scores- knowledge of deworming

| Sl. no. | Item | Mean score | Rank |
|---------|---|------------|------|
| 1 | Why deworming should be followed? | 1 | I |
| 2 | How do you administer coccidiostat to calves? | 0 | VII |
| 3 | When do you administer? | 0 | VII |
| | What is the schedule of deworming in cattle? | | |
| 4 | Monthly interval for first three months | 0.75 | III |
| 5 | Quarterly interval upto one year of age | 0.69 | IV |
| 6 | Every 6 month interval before or after rainy season | 0.27 | VI |
| 7 | In adult one year interval | 0.44 | V |
| 8 | How can internal parasites be controlled | 0.97 | II |

deworming of cattle for the first three months (m.s. 0. 75) as well as up to one year of age (m.s 0.69), fewer women knew the schedule of deworming adult animals (m.s 0. 44) and deworming 6 months before and after rainy season (m s. 0.27). Majority of the women knew that internal parasites could be controlled by deworming (m.s. 0.97). The item on reason for deworming was ranked first while that on administration of coccidiostat was ranked last.

4.7.1.4. Feeding green fodder.

As evidenced from data in table 41, comparatively more women knew the amount of green fodder to be fed to milch cows (m.s.0 73) and small calves (m.s.0 73) than those who knew the amount of green fodder to be fed to dry cows (m.s.0. 69) and heifers (m.s. 0. 69) and pregnant animals (m.s. 0.69). The items on the amount of green fodder to be fed to milch animals and calves was ranked first while the items on amount of green fodder to be fed to pregnant animals, dry cows, and heifers were ranked second.

Table 41
Item wise mean scores- knowledge of feeding green fodder

| Sl.no. | Item | Mean Score | Rank |
|--------|---|------------|------|
| 1 | What is the appropriate quantity of green fodder to be fed to animals per day? <u>Milch</u> Cow | 0.73 | I |
| 2 | <u>Dry</u> Cow | 0.69 | II |
| 3 | <u>Young</u> Heifer | 0.69 | II |
| 4 | <u>Pregnant</u> Cow | 0.69 | II |
| 5 | <u>Small</u> Calf | 0.73 | I |

4.7.1.5. Feeding of concentrates.

Table 42 revealed that a great majority of beneficiary women knew that concentrate mixtures should be fed to cows during the cooler hours of the day especially in summer (m.s.0. 93). As regards computation of rations, though majority of the beneficiary women could identify maize (m.s.0. 87), cotton seed cake (m.s 0. 87), tamarind seed cake (m.s. 0. 97) groundnut cake (m.s 0.97) and coconut cake (m.s. 0.97) fewer women could

identify tapioca chips (m.s 0. 37) and the various pulses and grams (m.s. 0.04) as ingredients in a ration. A significant majority of women knew that rice bran (m.s.0 91)

Table 42

Item wise mean scores- knowledge of feeding of concentrates

| Sl.no. | Item | Mean Score | Rank |
|--------|--|------------|------|
| 1 | During summer at what time of the day should concentrate mixtures be fed to animals? | 0.93 | II |
| | What are the cereals used for computation of rations? | | |
| 2 | Maize | 0.88 | IV |
| 3 | Tapioca chips | 0.37 | XII |
| 4 | Cotton seed cake | 0.87 | V |
| 5 | Tamarind seed cake | 0.87 | V |
| | What are the oil cakes used for computation of rations for cows? | | |
| 6 | Groundnut cake | 0.97 | i |
| 7 | Coconut cake | 0.97 | I |
| | What are the pulses/grams used for computation of rations for cows? | | |
| 8 | Horsegram | 0.04 | XIII |
| 9 | Bengal gram | 0.04 | XIII |
| | What are the brans used for computation | | |
| 10 | Rice bran | 0.91 | III |
| 11 | How much cereal is required to formulate concentrate mixture for cows? | 0.71 | IX |
| 12 | How much oil cake is required to formulate concentrate mixture for cows? | 0.64 | XI |
| 13 | How much bran is required to formulate concentrate mixture for cows? | 0.75 | VII |
| 14 | How much pulses/grams is required to formulate concentrate mixtures for cows? | 0.04 | XIII |
| | What is the appropriate quantity of concentrates to be fed to the animals per day? | | |
| 15 | <u>Milch</u> | | |
| | Cow | 0.73 | VIII |
| 16 | <u>Dry</u> | | |
| | Cow | 0.68 | X |
| 17 | <u>Young</u> | | |
| | Heifer | 0.73 | VIII |
| 18 | <u>Pregnant</u> | | |
| | Cow | 0.77 | VI |
| 19 | <u>Small</u> | | |
| | Calf | 0.77 | VI |

could be used for computing rations. Majority of the women could spell out the amount of bran (m.s 0. 75) and cereal (m.s 0. 71) required to formulate a concentrate mixture while fewer respondents knew the amount of oil cake (m.s0. 64) required for computation. Very few women knew the amount of pulses (m.s.0.04) required to formulate a ration. Majority of the beneficiary women knew the amount of concentrates to be fed to a pregnant cow (m.s 0. 77) and small calves (m.s.0. 77) daily. Fewer women could mention the amounts of concentrates to be fed to a milch cow (m.s 0. 73) and heifers (0.73) daily. Fewer numbers of women knew the amount of concentrates to be fed to dry cows (m.s 0. 68). The item on name of oil cakes used for computation of rations was ranked first whereas the items on the names and amount of pulses to be used in rations for cows were ranked last.

4.7.2. SCIENTIFIC CALF REARING

Table 43

Domain wise mean scores- knowledge of scientific calf rearing

| Sl no | Domain | Mean Score | Rank |
|-------|--------------------|------------|------|
| 1 | Management | 0.81 | VI |
| 2 | Feeding | 0.746 | V |
| 3 | Disease Control | 0.828 | III |
| 4 | Scientific Housing | 0.904 | II |
| 5 | Selection | 0.96 | I |

Data in table 43 indicated that beneficiary women had higher levels of knowledge of selection of calves (m.s. 0.96), scientific housing (m.s.0.904), and disease control (m.s.0. 828) and lower level of knowledge in the area of management (m.s.0. 81) and feeding (m.s.0. 746); these were ranked in this order.

4.7.2.1. Management.

Data in table 44 indicated that all beneficiary women knew the steps to be taken in case a new born calf failed to breath (m.s. 1.00). A large number of women knew the amount of colostrum (m.s. 0. 97) as well as the frequency of feeding colostrum to day old calves (m.s.0. 96). The item that could elicit the next highest mean score was one regarding the merits of colostrum feeding (m.s.0. 95).

An appreciable number of women knew that the umbilical cord was a portal of entry for disease organisms (m.s.0. 76). Similarly quite a number of beneficiary women knew the advantage of feeding large amounts of green grass to cows during the last trimester of pregnancy (m.s.0.76).

Fewer women had correct knowledge of the birth weight of a new born calf. It was further noted that only a few women were aware of the correct procedure to be followed while attending to the umbilical cord of new born calves.

Table 44

Item wise mean scores- knowledge of calf management

| Sl. No | Item | Mean Score | Rank |
|--------|---|------------|------|
| 1 | If the newborn fails to breathe, its chest should be pressed gently. | 1.00 | I |
| 2 | If the umbilical cord is not broken and the newborn is not separated what shall you do? | 0.31 | VII |
| 3 | Disease organisms gain entry through the umbilical cord at the time of birth What are the merits of feeding colostrum to calves? | 0.76 | V |
| 4 | It is a laxative. | 0.95 | IV |
| 5 | It contains certain important constituents, which give the calf protection from disease. | 0.95 | IV |
| 6 | The approximate birth weight of a healthy crossbred calf is .....Kg. | 0.63 | VI |
| 7 | A crossbred calf should be given around 2.5 to 3.0 Kg of colostrum on the first day of life. | 0.97 | II |
| 8 | The total amount of colostrum to be fed to a calf should be given in small amounts distributed through the day. | 0.96 | III |
| 9 | A cow fed 15 Kg of green grass a day during the last three months of pregnancy will produce Vitamin A rich colostrum. | 0.76 | V |

4.7.2.2. Feeding.

As revealed in table 45, all the beneficiary women unanimously agreed that scientific feeding of calves was necessary for their optimum growth (m.s 1.00). Table 45 further illustrated that majority of the women knew that highly moist and tender grass should be wilted or mixed with straw and fed to calves (m.s.0.91). As regards feeding of rice gruel to young calves, a sizeable majority of women agreed that this should never be

Table 45
Item wise mean scores- knowledge of scientific calf feeding

| Sl. no | Item | Mean score | Rank |
|--------|--|------------|------|
| 1 | A good calf starter should contain higher amounts of protein. | 0.67 | VI |
| 2 | If there is large amounts of foam on the surface of milk it should be removed before being fed to a calf. | 0.56 | VII |
| 3 | Large quantities of starch rich rice gruel should never be fed to calves below one year of age. | 0.79 | III |
| 4 | For optimum growth a calf should be fed scientifically prescribed amounts of concentrates and green grass. | 1.00 | I |
| 5 | Green grass is a rich source of Vitamin A. | 0.76 | IV |
| 6 | At the age of six months a calf should be fed 1 Kg concentrates and 3-5 Kg green grass. | 0.76 | IV |
| 7 | Highly moist and tender grass should be wilted or mixed with straw and fed to calves. | 0.91 | II |
| 8 | By the age of 9 months a calf should be fed 1.5 Kg concentrates and 5-10 Kg green grass. | 0.72 | V |
| 9 | Abrupt changes in feed is not detrimental to calves. | 0.55 | VIII |

practised (m.s. 0.79). A good number of women were aware of the amount of concentrates to be fed at six months and nine months of age (m.s. 0.76 and 0.72 respectively). It was further evident that more women knew that green grass was a rich source of vitamin A (m.s. 0.76) when compared to those who knew that a good calf starter should contain higher amounts of protein (m.s. 0.67). Fewer women knew that large amounts of foam on milk surfaces should be removed before being fed to calves (m.s. 0.56) and that abrupt changes in feed was detrimental to calves (m.s. 0.55). The item on the need to feed scientifically prescribed of concentrates and green grass to calves was ranked first while that on avoiding foam on the surface of milk fed to calves was ranked last.

4.7.2.3. Disease control.

Data in table 46 indicated that all the beneficiary women knew that a sick calf would show signs of weariness (m.s. 1.00), be disinterested in its surroundings (m.s. 1.00)

Table 46

Item wise mean scores- knowledge of disease control in calves

| Sl. No. | Item | Mean Score | Rank |
|---------|--|------------|------|
| | Which of the following are general signs of ill health in calves? | | |
| 1 | Animal shows weariness. | 1.00 | I |
| 2 | Animal is disinterested in surroundings. | 1.00 | I |
| 3 | Animal does not eat/drink with relish. | 1.00 | 1 |
| 4 | Urine of a healthy calf is clear and pale yellow. | 0.83 | VI |
| | Serious respiratory diseases in calves are characterised by | | |
| 5 | Cough | 0.88 | III |
| 6 | Nasal discharge | 0.87 | JV |
| 7 | Fever | 0.81 | VII |
| 8 | To protect a calf against F.M.D, it should be vaccinated at 4 months | 0.51 | IX |
| 9 | Vaccination against F.M.D. should be repeated every 6 months. | 0.53 | X |
| 10 | Period of greatest calf mortality is from birth to 3 months. | 0.79 | VIII |
| 11 | Feeding large amounts of jackfruit and rice gruel is not dangerous. | 0.87 | IV |
| 12 | Chronic digestive disorders are characterised by | 0.89 | II |
| | Stunted growth | 0.89 | II |
| 13 | Pot belly | | |
| 14 | In cases of severe diarrhoea, in young calves, calf should be given more milk to reduce dehydration. | 0.87 | IV |
| 15 | Difficulty to get up and walk is an important sign of anaemia in calves. | 0.81 | VII |
| | Feeding mouldy GNC can lead to | | |
| 16 | Lack of appetite | 0.83 | VI |
| 17 | Death | 0.84 | V |
| 18 | At what age should calves be first dewormed? | 0.69 | IX |

besides being off feed (m.s. 1.00). Majority of the women were aware of the colour of urine of a healthy calf (m.s 0.83) as well as that respiratory disorders were characterised by cough (m.s 0.88), nasal discharge (m.s. 0.87) and fever (m.s. 0.81). Majority of the women knew that feeding large amounts of jackfruit and rice gruel to calves was dangerous (m.s. 0.87) and that milk feeding should be reduced in cases of diarrhoea (m.s. 0.87). It was also evident that quite a number of women knew the period of greatest calf mortality (m.s. 0.79). Many women could identify the symptoms of chronic digestive disorders (m.s. 0.89) as well as the consequences of feeding mouldy groundnut cake (m.s 0.83, 0.84) and the signs of anaemia in calves (m.s. 0.81). It was however noted that fewer women knew the age at which calves should be dewormed for the first time (m.s. 0.69). Just over fifty per cent of the beneficiary women knew that calves should be vaccinated against F.M.D., at four months (m.s. 0.51) and this should be repeated every six months (m.s. 0.53). The items on the signs of ill health in calves, except that on the colour of urine of a healthy calf, were ranked first. In contrast, the item on vaccination of calves at four months of age was ranked last.

4.7.2.4. Scientific housing.

Perusal of table 47 revealed that most of the beneficiary women knew that the floor of the calf shed should have a gentle slope (m.s 0.95) and be regularly washed (m.s. 1.00). It was also evident that most of the beneficiary women knew the features of an ideal site for constructing a calf shed (m.s 0.98), as well as that calves should be protected from cold winds and rains (m.s 0.97). With regard to construction of the walls of a calf shed, majority

of the women agreed that half walls were more advantageous (m.s 0.92). Most of the women knew that suckling calves should not be bathed (m.s. 0.91). The table further illustrated that lesser number of women knew the advantages of manure pits (m.s 0.83) and

Table 47
Item wise mean scores- knowledge of scientific housing of calves

| Sl.No | Item | Mean score | Rank |
|-------|--|------------|------|
| 1 | A site with plenty of trees around is ideal for construction a calf shed. | 0.98 | II |
| 2 | Floor of the calf shed should have a gentle slope to facilitate drainage | 0.95 | IV |
| 3 | be washed only once a week. | 1.00 | I |
| 4 | Half walls permit the flow of fresh air into the shed. | 0.92 | V |
| 5 | Sunlight is a natural germicide. | 0.77 | IX |
| 6 | Manure should be stored in a manure pit to avoid fly menace. | 0.83 | VII |
| 7 | Manure pit should be located at a minimum distance of 10 metres from wells. The following management practices should be undertaken in care of suckling calves. | 0.81 | VIII |
| 8 | They need not be bathed but should be brushed daily. | 0.91 | VI |
| 9 | They should be protected from cold winds and rain. | 0.97 | III |

the minimum distance of the pit from wells (m.s 0.81). Comparatively lesser number of women knew that sunlight was a natural germicide (m.s 0.77). The item on frequency of washing the floor of the calf shed was ranked first while the item sunlight is a natural germicide was ranked last.

4.7.2.5. Selection

It was evident from table 48 that majority of the beneficiary women knew that cross-bred calves were preferred over desi calves for reasons other than greater disease resistance

Table 48
Item wise mean scores- knowledge of selection of calves

| Sl.No | Item | Mean score | Rank |
|-------|---|------------|------|
| 1. | Cross-bred calves are preferred over desi calves as they have greater resistance. | 0.95 | II |
| 2. | They do not need much care. | 0.97 | I |

(m.s 0.95) and the need for only lesser care (m.s 0. 97). The item regarding care of calves was ranked first while the item on disease resistance of calves was ranked second.

4.8. EXTENT OF ADOPTION OF ANIMAL HUSBANDRY TECHNOLOGIES BY BENEFICAIRY WOMEN.

4.8.1. Dairy farming technologies.

Table 49 revealed that beneficiary women adopted marketing technologies to the greatest extent (m.s 2.48) followed by management practices (m.s. 2.44), housing practices (m.s. 2.38), nutrition practices (m.s. 2.35), breeding practices (m.s. 2.33), and disease

Table 49
Domain wise mean scores – Extent of adoption of dairy farming technologies

| Sl.No | Item | Mean score | Rank |
|-------|---------------------------|------------|------|
| 1 | Breeding practices | 2.33 | V |
| 2 | Nutrition practices | 2.35 | VI |
| 3 | Management practices | 2.44 | II |
| 4 | Disease control practices | 2.23 | VI |
| 5 | Housing practices | 2.38 | III |
| 6 | Marketing practices | 2.48 | I |



control practices (m.s. 2.23), and adoption of these technologies were ranked in this order.

4.8.1.1. Breeding practices.

It was evident from table 50 that majority of the beneficiary women (84 %) continued to practice artificial insemination at the proper time of heat while 16 per cent had not adopted this practice. Nearly equal numbers of women (78.66 %, 77.33% respectively) continued to seek veterinary attention in cases of dystocia and in cases of retention of

Table50

Distribution of beneficiaries based on extent of adoption of breeding practices

| Sl no | Practice | Continued adoption % | discontinued % | not adopted % | Rank |
|-------|--|----------------------|----------------|---------------|------|
| 1 | Practising AI at the proper time of heat | 84.0 | .... | 16.0 | I |
| 2 | Treatment of infertile animals by a veterinarian | 61.33 | .... | 38.66 | IV |
| 3 | Having the cow inseminated 60-90 days after calving | 32.0 | .... | 68.0 | V |
| 4 | Seeking veterinary attention in cases of dystocia | 78.66 | | 21.33 | II |
| 5 | Seeking veterinary aid in cases of retention of placenta | 77.33 | | 22.66 | III |

placenta. Just over sixty percent of beneficiary women continued to seek treatment for their infertile animals while 38.66 per cent did not adopt this practice.

Very few women (32%) continued to adopt early breeding of cows, majority (68 %) were non-adopters of this practice. The table indicated that the

technology with regard to practising artificial insemination at the proper time of heat was ranked first whereas the technology on having the animal inseminated 60 to 90 days after calving was ranked last.

4.8.1.2. Nutrition practices.

Table 51
Distribution of beneficiaries based on extent of adoption of nutrition practices

| Sl.no | Practice | continued adoption % | Discontinued % | not adopted % | Rank |
|-------|--|----------------------|----------------|---------------|------|
| 1. | Feeding concentrates in relation to production | 72.0 | ..... | 28.0 | II |
| 2. | Feeding concentrates for growing animals in production | 58.66 | ..... | 41.33 | V |
| 3. | Feeding extra concentrates from months of pregnancy | 69.33 | ..... | 30.66 | III |
| 4. | Feeding enough green grass | 40.0 | ..... | 60.0 | VI |
| 5. | Continuous supply of clean drinking water | 100 | ..... | ..... | I |
| 6. | Feeding enough concentrates to heifers | 64.0 | ..... | 36.0 | IV |

It was evident from table 51 that a good number (72 %) of beneficiary women continued to feed concentrates to their animals in relation to milk production while the remaining 28 per cent had not adopted this practice. Nearly 60 per cent of women continued to feed extra concentrates to growing animals in relation to production, whereas 41.33 per cent had not adopted this practice. With regard to feeding extra concentrates from six months of pregnancy, 69.33 per cent of beneficiary women continued to adopt while the remaining 30.66 per cent did not adopt this practice. Nearly 40 per cent of beneficiary

women continued to feed enough green grass to their animals where as 60 per cent had not adopted this practice. All seventy-five women continued to provide clean drinking water periodically to their animals. While 64 per cent of beneficiary women continued to feed enough concentrates to heifers, 36 per cent of the women had not adopted this practice. The practice continuous supply of clean drinking water was ranked first while the practice feeding enough green grass was ranked last.

4.8.1.3. Management practices.

Table 52
Distribution of beneficiaries based on extent of adoption of management practices

| Sl.no | Practice | Continued adoption % | Discontinued % | Not adopted % | Rank |
|-------|--|----------------------|----------------|---------------|------|
| 1 | Daily removal of dung from the cattle shed | 85.33 | .... | 14.66 | IV |
| 2 | Record keeping /keeping AI to know date of AI and possible date of calving | 48.0 | 10.66 | 41.33 | V |
| 3 | Pre-milking udder cleaning | 100 | .... | .... | I |
| 4 | Post milking teat dipping | ... | .... | 100 | VI |
| 5 | Regular milking of animals | 97.33 | .... | 2.66 | II |
| 6 | Drying the animal 2 months prior to parturition | 94.66 | ..... | 5.33 | III |

Table 52 illustrated that a sizeable majority of beneficiary women (85.33 per cent) continued to remove dung daily from the cattle shed as against 14.66 per cent who did not practice it daily. Less than half of the beneficiary women continued to keep records pertaining to insemination details of their animals whereas 10.66 per cent of women discontinued this practice and 41.33 per cent had not adopted it. Table 52 further illustrated that all the beneficiary women continued to practice pre-milking udder cleaning. In sharp contrast, none of the beneficiary women had adopted post milking teat dipping. A great majority of beneficiary women (97.33 %) continued to adopt regular milking of

animals while, 2.66 per cent of them were non-adopters. Similarly, most of the women (94.66%) continued to adopt drying of animals minimum 2 months prior to parturition, whereas 5.33 per cent of them had not adopted this practice. The practice on pre-milking udder cleaning was ranked first while the practice on post milking teat dipping was ranked last.

4.8.1.4. Disease control practices

Perusal of table 53 threw light on the fact that only 34.66 per cent of beneficiary women continued to vaccinate their cows every six months against F.M.D., while 28 per cent had discontinued this practice and 37.33 per cent were non adopters. In contrast, 88 per cent of beneficiary women continued to seek veterinary aid for ailments while 12 per cent had not

Table53

Distribution of beneficiaries based on extent of adoption of disease control practices

| Sl no | Practice | Continued adoption % | Discontinued % | Not adopted % | Rank |
|-------|--|----------------------|----------------|---------------|------|
| 1 | Vaccination every 6 months against F.M.D., | 34.66 | 28.0 | 37.33 | IV |
| 2 | Seeking veterinary aid for ailments | 88.0 | ..... | 12.0 | I |
| 3 | Regular deworming of animals | 56.0 | 14.66 | 29.33 | II |
| 4 | Isolation of sick animals | 58.66 | ..... | 41.33 | III |
| 5 | Quick reporting of an out break | 48.0 | ..... | 52.0 | V |

adopted this practice. With regard to regular deworming of animals 56 per cent of beneficiary women continued to adopt this practice while 14.66 per cent discontinued this practice and 29.33 per cent did not adopt this practice at all. Nearly sixty per cent of beneficiary women continued to isolate sick animals whereas 41.37 per cent were non-

adopters. Table 53 concluded with figures regarding quick reporting of out breaks of contagious diseases to the local veterinary surgeon; it was observed that 48 per cent of beneficiary women continued to adopt this practice whereas 52 per cent were non-adopters. The practice seeking veterinary aid for ailments was ranked first whereas the practice quick reporting of an outbreak of a contagious disease to the local veterinary surgeon was ranked last.

4.8.1.5. Housing practices

As evidenced from data in table 54 indicated that 57.33 per cent of beneficiary women continued to have enough floor space in their animal sheds while 29.33 per cent had discontinued this practice and 13.33 per cent did not have enough floor space in their sheds. As regards proper construction of floor, 53.33 per cent continued to have the floors of

Table 54
Distribution of beneficiaries based on extent of adoption of housing practices

| Sl.no | Practice | Continued adoption % | Discontinued % | Not adopted % | Rank |
|-------|---|----------------------|----------------|---------------|------|
| 1 | Enough floor space in the shed | 57.33 | 29.33 | 13.33 | I |
| 2 | Proper construction of the floor | 53.33 | 33.33 | 13.33 | II |
| 3 | Proper drainage and minimum dampness of floor | 49.33 | 30.66 | 20.0 | III |

their sheds properly constructed whereas 33.33 percent cent had discontinued this practice and 13.33 per cent had not adopted this practice. With regard to proper drainage, and minimum dampness of floor, 49.33 per cent continued to adopt this practice while 30.66 per cent had discontinued this practice and 20 per cent were non- adopters. The practice,

enough floor space in the shed was ranked first whereas the practice related to proper drainage and minimum dampness of the floor was ranked last.

4.8.1.6. Marketing practices.

Table 55
Distribution of beneficiaries based on extent of adoption of marketing practices

| Sl.no | Practice | Continued adoption % | Discontinued % | Not adopted % | Rank |
|-------|---|----------------------|----------------|---------------|------|
| 1 | Obtaining loans from banks instead of local money lenders | 57.33 | 9.33 | 33.33 | III |
| 2 | Purchasing animals after observing milking | 84.0 | ..... | 16.0 | I |
| 3 | Timely culling of unproductive/underproductive stock | 72.0 | 6.66 | 21.33 | II |

A cursory look at Table 55 revealed that a slight majority of beneficiary women (57.33%) continued to obtain loans from banks instead of local money lenders, while 33.33 per cent were non-adopters. Just over 9 per cent of the women had previously adopted the practice of obtaining loans from banks, but they had discontinued it. With regard to purchasing animals after observing a milking, a great majority of beneficiary women (84%) adopted this practice while 16 per cent were non-adopters. The table concluded with a picture regarding the extent of adoption of the practice of timely culling unproductive/underproductive stock; 72 per cent of beneficiary women fell in the continued adoption category, 6.66 per cent in the discontinued category and 21.33 per cent of beneficiary women were non-adopters of this practice. The practice on purchasing animals

after observing a milking was ranked first while the practice on obtaining loans from banks rather than local money lenders was ranked third.

4.8.2. Scientific calf rearing technologies

Data in table 56 revealed that beneficiary women had high extent of adoption of nutrition practices (m.s 2.75), followed by management practices (m.s. 2.49) housing

Table 56

Domain-wise mean scores –Extent of adoption of scientific calf rearing technologies

| Sl.No | Domain | Mean Score | Rank |
|-------|---------------------------|------------|------|
| 1 | Nutrition practices | 2.75 | I |
| 2 | Management practices | 2.49 | II |
| 3 | Disease control practices | 2.04 | IV |
| 4 | Housing practices | 2.25 | III |
| 5 | Marketing practices | 1.95 | V |

practices (m.s. 2.25) disease control practices (m.s 2.04) and lowest extent of adoption of marketing practices (m.s 1.95), and that the extent of adoption of these practices was ranked in that order.

4.8.2.1. Nutrition practices.

Data in table 57 revealed that all the beneficiary women continued to feed colostrum to their calves. Further, sixty per cent of beneficiary women continued to feed concentrates according to the age of the calf, 21.33 per cent discontinued this practice and 18.66 per cent did not adopt this practice. All the beneficiary women provided continuous supply of clean drinking water to their calves. The table further indicated that 69.33 per cent of beneficiary women continued to adopt milk feeding of calves proportionate to weight gain, while 5.33

per cent discontinued this practice and 25.33 per cent did not adopt this practice. A sizeable majority (96%) of beneficiary women continued to feed milk to their calves upto three months of age as against 1.33 per cent who discontinued it and 2.66 per cent who were non-adopters. The practice of feeding colostrum to calves was ranked first while that on feeding concentrates to calves according to their age was ranked last.

Table 57

Distribution of beneficiaries based on extent of adoption of nutrition practices (scientific calf rearing)

| Sl.no | Practice | Continued adoption % | Discontinued % | Not Adopted % | Rank |
|-------|--|----------------------|----------------|---------------|------|
| 1 | Feeding colostrum to calves. | 100 | ..... | ..... | I |
| 2 | Feeding concentrates to calves according to the age of the calf. | 60.0 | 21.33 | 18.66 | IV |
| 3 | Continuous supply of clean drinking water to calves. | 100 | ..... | ..... | I |
| 4 | Milk feeding to calves proportionate to weight gain. | 69.33 | 5.33 | 25.33 | III |
| 5 | Milk feeding upto 3 months | 96.0 | 1.33 | 2.66 | II |

4.8.2.2. Management practices.

Data in table 58 revealed that a sizeable majority of beneficiary women (97.33%) continued to feed colostrum to calves within thirty minutes of birth while the remaining 2.66 per cent were non-adopters. It was also evident that a sizeable majority (86.66%) of beneficiary women continued to adopt timely control measures for diarrhoea while 1.33 per cent discontinued this practice and 12 per cent did not adopt this practices at all. The table also illustrated that 85.33 per cent of the beneficiary women continued to wash their calf sheds daily as against 14.66 per cent of them who did not adopt this practice. The table

brought to light the fact that a significant majority of beneficiary women (73.33%) did not adopt antiseptic application to the navel cord after birth, 26.66 per cent of them however,

Table58

Distribution of beneficiaries based on extent of adoption of management practices (scientific calf rearing)

| Sl. No. | Practice | Continued adoption (%) | Continued adoption (%) | Not Adopted (%) | Rank |
|---------|---|------------------------|------------------------|-----------------|------|
| 1 | Feeding colostrum to calves within 30 minutes of birth. | 97.33 | ..... | 2.66 | I |
| 2 | Timely control of diarrhoea. | 86.66 | 1.33 | 12.0 | II |
| 3 | Daily washing of calf shed. | 85.33 | ..... | 14.66 | III |
| 4 | Antiseptic application to navel at birth. | 26.66 | ..... | 77.33 | IV |

continued to adopt this practice. The practice feeding colostrum to calves within 30 minutes of birth was ranked first while the practice antiseptic application to the navel at birth was ranked last.

4.8.2.3. Disease control

Table 59 illustrated that one third of the beneficiary women (33.33 per cent) continued to adopt vaccination of calves against F.M.D., 53.33 per cent discontinued this

Table 59

Distribution of beneficiaries based on extent of adoption of disease control practices (scientific calf rearing)

| Sl.No | Practice | Continued adoption (%) | Discontinued % | Not Adopted (%) | Rank |
|-------|--|------------------------|----------------|-----------------|------|
| 1 | Vaccination of calves against F.M.D., | 33.3 | 53.3 | 13.33 | II |
| 2 | Vaccination of calves against H.S., | 4.0 | ..... | 96.0 | V |
| 3 | Regular deworming of calves. | 22.66 | 40.0 | 37.33 | IV |
| 4 | Isolation of sick calves. | 50.66 | ..... | 49.33 | III |
| 5 | Treatment of sick animals by a veterinarian. | 90.66 | .... | 9.33 | I |

practice and 13.33 per cent were non-adopters. In contrast, just 4 per cent of beneficiary women continued to vaccinate their calves against H.S. and the remaining 96 per cent did not adopt this practice. It was also evident from the table that 22.66 per cent of beneficiary women continued to deworm their animals regularly, 40 per cent discontinued this practice and 37.33 per cent were non-adopters. With regard to isolation of sick calves, 50.66 per cent of beneficiary women continued to adopt this practice whereas 49.33 per cent had not adopted this practice. It was also evident that majority (90.66%) of the beneficiary women sought veterinary assistance for their sick calves while 9.33 per cent did not adopt this practice. The practice regarding treatment of sick animals by a veterinarian was ranked first while the practice on vaccination against H.S., was ranked last.

4.8.2.4. Housing practices.

Table 60 illustrated that 53.33 per cent of beneficiary women continued to adopt the practice of providing proper flooring in the calf shed while 33.33 per cent discontinued this

practice and 13.33 per cent had not adopted this practice. It was also seen that 54.66 per cent of the beneficiary women had continued to adopt the standard space requirements for calves while 5.33 per cent discontinued this practice and 40 per cent of beneficiary

Table 60

Distribution of beneficiaries based on extent of adoption of housing practices (scientific calf rearing)

| Sl. No. | Practice | Continued adoption (%) | Discontinued % | Not Adopted (%) | Rank |
|---------|--|------------------------|----------------|-----------------|------|
| 1 | Proper floor in the calf shed. | 53.33 | 33.33 | 13.33 | I |
| 2 | Adequate space for calves. | 54.66 | 5.33 | 40.0 | IV |
| 3 | Proper ventilation for calves. | 58.66 | ..... | 41.33 | III |
| 4 | Adequate drainage and minimum dampness of floor. | 49.33 | 30.66 | 20.0 | II |

women did not adopt this practice. It was also observed from table 60 that 49.33 per cent of beneficiaries continued to adopt various measures to ensure adequate drainage and minimum dampness of floor while 30.66 per cent discontinued this practice and 20 per cent were non-adopters. The practice regarding proper floor in the calf shed was ranked first whereas the practice on adequate space was ranked last.

4.8.2.5. Marketing practices.

It was evident from table 61 that 57.33 per cent of beneficiary women continued to adopt the practice of obtaining loans from banks and not from moneylenders, 9.33 per cent discontinued this practice while 33.33 per cent were non-adopters. As regards sale of bull

Table 61

Distribution of beneficiaries based on extent of adoption of marketing practices (scientific calf rearing)

| Sl.no. | Practice | Continued adoption (%) | Discontinued (%) | Not Adopted (%) | Rank |
|--------|---|------------------------|------------------|-----------------|------|
| 1 | Obtaining loans from banks and not from local moneylenders. | 57.33 | 9.33 | 33.33 | I |
| 2 | Sale of bull calves. | 33.33 | ----- | 66.66 | II |

calves 33.33 per cent of the beneficiary women continued to adopt this practice while the remaining 66.66 per cent were non-adopters. The practice obtaining loans from banks and not from local moneylenders was ranked first while the practice sale of bull calves was ranked second.

DISCUSSION

DISCUSSION

5.1 KNOWLEDGE OF DAIRY FARMING

Student's t test on the knowledge scores of beneficiaries and non-beneficiaries showed that the beneficiaries' knowledge of dairy farm technologies to be significantly higher than that of non-beneficiaries. Hence, it is implicit that the scheme had succeeded in imparting higher knowledge so as to ensure that beneficiaries avail maximum benefit from dairying. However, the knowledge among almost one-third beneficiary women was one low which could be due to fewer interactions that they had with technical personnel of the scheme. Various authors had reported that the knowledge of dairy farming among farm women was low. For instance, Shreeshailaja and Veerabhadraiah (1994) reported that majority of farm women had medium knowledge of dairy farming technologies. Likewise, Tripathi *et al.* (1995) also reported. Among all the studied domains of dairy farming, beneficiaries were relatively more knowledgeable about AI and least knowledgeable about disease and vaccination.

Correct knowledge of dairy farming technologies has been identified as one of the primary factors responsible in achieving productivity. The results of this study are suggestive of the favourable impact made in this direction.

5.1.1 Knowledge of artificial insemination

Comparatively larger percentage of beneficiary women and that too almost half of them had acquired a high knowledge of AI and that beneficiary women in general, acquired a significantly higher knowledge score as shown by 't' test indicated the influence of the calf feed subsidy scheme in bringing about a substantial change in knowledge on an important breeding component, AI. It is implicit that the scheme necessitated knowing the signs of heat, detecting of heat and other breeding aspects so as to enable beneficiaries to avail maximum benefit from the scheme. The above positive indications notwithstanding, almost one fourth of beneficiary women possessed only lesser knowledge of AI, which could be due to lesser interaction between them and those technical personnel of the scheme. Singh *et al.* (1979) too reported an almost similar finding that knowledge of adopter farmers in I.C.D.P. areas, of AI, was one high. So also, Shreeshailaja and Veerabhadraiah (1994) reported that the farm women studied by them had correct knowledge of AI.

Efficient breeding management has been identified as one of the primary factors responsible in achieving productivity in farm animals. Realising this objective envisaged in the scheme, augmenting breeding efficiency through improving required knowledge vis-à-vis practice is being tried. The results of this study are explicitly suggestive of the favourable impact made in this direction.

Item wise analysis indicated that more than ninety five per cent of beneficiary women knew the inter-oestrus interval of cows as well as the appropriate time for inseminating them. Ingole *et al.* (1988) too observed that more than ninety per cent of cattle owners in I.C.D.P areas had correct knowledge of oestrus cycle and time of insemination. More than two- third of beneficiary women knew the number of times that a cow should be inseminated in one heat cycle to impregnate. It was also seen that more than two third knew the heat cycle in which a heifer should be inseminated first. Even as most of beneficiaries were knowledgeable about these breeding aspects, nearly one third were not knowledgeable. This pointed out to the need for imparting sufficient knowledge particularly to less knowledgeable beneficiaries.

With regard to the reasons for a cow not coming into heat, though most of the beneficiary women could identify reproductive disorders as a cause, relatively lesser women knew of the reasons such as nutritional deficiency and parasitic infestation and this could be due to the lack of proper understanding about the inter-relationship of a multiplicity of factors causing infertility. The need for imparting a comprehensive knowledge about infertility is to be emphasised. Most of the women knew that desi bulls were not good. This is obviously because of the concerted educational efforts over the last decades in popularising artificial insemination. However, it was noted that more than two-third of the beneficiary women had a misconception that the animal would definitely become pregnant if inseminated. Most of the beneficiary women knew the age at puberty of crossbred heifers. However, less than half of the beneficiary women

knew the optimum time for inseminating a cow after parturition as well as the optimum weight of a crossbred heifer at puberty. Nisha and Subramanian (1997) reported that just eleven per cent of average farm women knew of the ideal breeding time after calving. In view of this, the fact that atleast 43 per cent of non-beneficiary women knew of the ideal breeding time after calving is suggestive of the positive impact of the scheme.

5.1.2 Knowledge of preventive vaccination

A larger percentage of beneficiary women were highly knowledgeable about preventive vaccination as compared to non-beneficiary women among whom those highly knowledgeable were meagre. Further, in general, beneficiaries had a significantly higher knowledge score over that of the non-beneficiaries as was evident from 't' test. It nonetheless, need mentioning that nearly one fourth of the beneficiaries had only a low knowledge of preventive vaccinations. Many studies conducted in the past had amply shown that women's knowledge of preventive vaccination was conspicuously low. For instance, Shreeshailaja and Veerabhadraiah (1994) reported that none of the farm women had correct knowledge of the time of vaccination. Nisha and Subramanian (1997) reported that just nine per cent of farm women had correct knowledge of vaccination. Rangnekar *et al.* (1994) observed that only a few rural women knew of the usefulness of vaccination. In as much as it was known from earlier studies that the knowledge of farm women in general was notably less it was worth

appreciating the efforts made under calf feed subsidy scheme as a good number of beneficiary women had acquired fairly good knowledge of preventive vaccination.

Although beneficiary women obtained a comparatively better score regarding knowledge of preventive vaccination yet data indicated that they were not knowledgeable about some component items. Evidently none of the beneficiary women knew about the proper disposal of carcasses of animals died of highly contagious disease such as H.S. F.M.D. and R.P. Similarly, none of the women could correctly answer about the consequences of H.S. and R.P, vaccination. This could be explained from the fact that the incidence of H.S., in the district studied had been less and hence preventive measures in this direction had been toned down. Moreover, rinderpest disease being eradicated from the state, vaccination programmes as well as educational efforts have been in all practical sense terminated. Majority of the beneficiary women, however knew that vaccination was a prophylactic measure. Regarding F.M.D., though most of the beneficiaries knew of the symptoms as well as the consequences of vaccination many could not mention correctly the schedule of vaccination.

Perhaps the adage prevention is better than cure is more relevant today as there are far more people than ever before who are solely dependant on dairying for livelihood and that the cost of animals as well as medicines has escalated manifold. On the face of it, whether preventive measures are receiving as much attention as they deserve is however doubtful. Deliberate educational efforts making use of print and

electronic media are very essential and extension agencies or implementers should not be content with some knowledge acquired incidental to the compulsion to vaccinate under any scheme.

5.1.3 Knowledge of deworming

Efforts under calf feed subsidy scheme had brought in a perceptible change in the knowledge of deworming among the beneficiaries of the scheme. This was obvious from the finding that when most non-beneficiaries belonged to medium knowledge category, most beneficiaries were highly knowledgeable about deworming practices. Moreover beneficiary women mostly obtained higher knowledge scores as compared to non-beneficiaries, and that was found to be statistically significant. It was evident that the scheme necessitated knowing the time of deworming in calves as part of the associated health care programmes. Nevertheless, more than one-fourth of beneficiaries were only less knowledgeable about deworming which could be due to the lesser interaction that they had with technical personnel of the scheme.

Various authors such as Shreeshailaja and Veerabhadraiah (1994) as well as Nisha and Subramanian (1997) pointed out that only a few farm women had correct knowledge of deworming. So the findings of this study highlight the fact that the scheme had been instrumental in fostering knowledge of deworming.

Item wise analysis revealed that all the beneficiary women knew the reasons for deworming. More women knew the schedule of deworming in young calves when compared to those who knew the schedule followed for older calves. Timely deworming of farm animals is vital to ensuring maximum feed efficiency and this has an important bearing on productivity of animals. The results of this study indicated that the scheme had succeeded to some extent in impressing upon beneficiaries this significant interrelationship.

5.1.4 Knowledge of green fodder feeding

Large numbers of beneficiary women had high knowledge of feeding of green fodder when compared to their non-beneficiary counterparts as well as significantly higher knowledge scores. Unlike other parts of the country dairy farming in Kerala being highly based on feeding concentrates is at the crossroads considering its high cost. In this background it is important that alternative sources of feed be explored. Correct knowledge of the amount of fodder to be fed is the key to ensuring economic milk production. Studies in the past have indicated that dairy farmers in general had low knowledge of green fodder feeding. For instance, Nataraju and Channegowda (1986) and Tripathi *et al.* (1995) observed that dairy farmers had low knowledge of feeding of green fodder. The fact that beneficiary women had significantly higher knowledge scores over that of non-beneficiaries as evidenced from 't' test pointed to the impact of the scheme in ensuring higher knowledge among beneficiaries.

Item analysis indicated that majority of the beneficiary women had correct knowledge of the amount of green fodder to be fed to milch cows and small calves. Nevertheless, it was worth mentioning that comparatively lesser number of beneficiary women were knowledgeable about the amount of green fodder to be fed to heifers, those pregnant and dry. This revealed that beneficiaries were critical about feeding of green fodder to cows in milk alone rather neglecting other categories. Sufficient knowledge needs to be imparted regarding feeding of green fodder to heifers, those pregnant and dry as well since negligence in this regard would definitely affect milk productivity once they become cows in milk entailing heavy economic loss.

5.1.5 Knowledge of feeding of concentrates

Nearly equal percentages of beneficiary women had high and medium knowledge of feeding concentrates, whereas nearly half of non-beneficiary women had medium knowledge. The fact that the calf feed subsidy scheme had succeeded in making a change in knowledge in a favourable direction and that too significantly, was evident. Rajkamal (1993) observed that most tribal dairy women had only medium knowledge of concentrate feeding. Similarly Tripathi *et al.* (1994) reported that most farm women had only medium knowledge of concentrate feeding.

Itemwise analysis revealed that majority of beneficiaries knew the ingredients used for computation of ration. However, only a few beneficiaries knew that pulses could be incorporated as a part of ration. Most beneficiary women could also spell out

the proportion of various feed stuffs in a ration. It seems that the scheme had somewhat ensured correct knowledge of the amount of concentrates to be fed to dairy cattle. Nisha and Subramanian (1997) observed that 71 per cent of farm women had correct knowledge of feeding concentrates.

The high costs of concentrates in the state makes very essential for dairy farmers to know the correct amount of it to be fed, so as to obtain optimum productivity. A better knowledge of computation of dairy cattle ration gained under the auspices of the scheme should be capitalised by organising co-operative feed compounding. Non-beneficiaries around should participate in this so that they too learn and benefit.

5.2 KNOWLEDGE OF SCIENTIFIC CALF REARING

The results of the educational efforts under the calf feed subsidy scheme in increasing knowledge of scientific calf rearing was promising since the knowledge of scientific calf rearing, in general, among beneficiaries was one significantly higher than that of non beneficiaries. Hence it is certain that the scheme had succeeded in augmenting the knowledge of scientific calf rearing so as to enable beneficiaries to gain entail maximum benefits from the scheme. The above positive indication notwithstanding, nearly one third of beneficiary women had low knowledge of scientific calf rearing. This could be because they had not interacted with technical personnel of

the scheme with a genuine interest to learn about scientific calf rearing. Among all the studied domains of scientific calf rearing, the beneficiaries were relatively more knowledgeable about selection of calves and least knowledgeable about feeding of calves.

Realising the need to achieve optimum milk production, various educational measures to improve knowledge of scientific calf rearing has been tried under calf feed subsidy scheme, and this effort has started showing results as evident from the above findings.

5.2.1 Knowledge of calf management

Larger number of beneficiary women had acquired high knowledge of calf management practices whereas most of the non-beneficiaries had medium knowledge. Gill and Singh (1977) observed that most of the average dairy farmers had low knowledge of management practices. The positive impact of the scheme was further reinforced by the significantly higher knowledge scores of beneficiary women as compared to non-beneficiaries. It is clear that the scheme had succeeded in emphasising the importance of scientific management of calves, one of its primary objectives and still nearly one- fifth of beneficiary women had low knowledge of calf management. This could be due to their low level of contact with technical personnel of the scheme.

Item wise analysis indicated that more than ninety per cent of beneficiary women knew the management steps to be taken after the birth of a calf as well as the benefits of colostrum feeding. Past studies indicated that most farm women had correct knowledge of colostrum feeding in calves. In this regard Shreeshailaja and Veerabhadraiah (1994) observed that all the average dairy women had correct knowledge of colostrum feeding. More than three- fourth of beneficiary women knew that disease organisms could enter the body through the umbilicus. It was also seen that less than one- third knew the correct procedure of ligating the umbilical cord. Shreeshailaja and Veerabhadraiah (1994), too, observed that most farm women did not have correct knowledge of sealing the navel cord.

Imparting correct knowledge of sealing of navel cord could prevent umbilical infection and subsequent joint ill, hernia etc. This is all the more important when the high cost of treatment and the value of the animals are considered. Deliberate educational effort in this direction is clearly warranted.

5.2.2 Knowledge of calf feeding

It is certain that the functioning of calf feed subsidy scheme had resulted in an appreciable change in the knowledge of scientific feeding of calves among beneficiaries of the scheme. This was obvious from the findings that when most of non-beneficiaries had just medium knowledge about scientific feeding of calves, more than half of beneficiary women were highly knowledgeable about it. More so, beneficiaries had

significantly higher knowledge scores as compared to non-beneficiaries. It was clear that the scheme had necessitated acquiring correct knowledge of feeding of calves as part of its subsidised feed distribution programme, every month. Nevertheless, nearly one-fourth of beneficiaries had low knowledge of feeding calves, which might be because they were not critical about knowing it.

Item-wise analysis revealed that all the beneficiaries unanimously agreed to the necessity for scientific feeding of calves for optimum growth. Majority of beneficiary women knew the danger of feeding highly moist grass as well as rice gruel to calves. About three-fourth of beneficiaries knew the amount of concentrates to be fed to calves aged six and nine months as well as the advantages of feeding green grass. Most of the beneficiaries were knowledgeable about these feeding aspects yet they were comparatively less informed of higher protein content of calf starter, danger of feeding foamy milk to calves and danger of abrupt changes in feed.

In view of the above facts, measures to impart correct knowledge to less knowledgeable beneficiaries in the areas mentioned could help bringing up a healthy calf.

5.2.3. Knowledge of disease control in calves

Much as one-fifth of beneficiaries had low knowledge of disease control in calves yet nearly half of them had acquired high knowledge were only. In general, it

was seen that the beneficiaries had significantly higher knowledge over that of non-beneficiaries. The fact that a smaller section of beneficiaries had only less knowledge could be because they had not interacted enough with the technical personnel of the scheme with a genuine interest to learn about disease control measures. Knowledge of disease control is important in minimising losses due to mortality and morbidity.

Item wise analysis indicated that all the beneficiary women studied knew the signs of ill health in calves. Majority of beneficiaries could mention the signs of respiratory diseases in calves as well as the colour of urine of a healthy calf. Majority of the deficiency women knew that feeding excess amounts of milk of jackfruit, to calves should be avoided. Similarly, most beneficiary women knew the ill effects of feeding mouldy groundnut cake, the sign of anaemia in calves and the period of greatest calf mortality. Nevertheless only two- third had correct knowledge of the age to deworm calves for the first time, while half of them knew the schedule of F.M.D. vaccination in calves. The need for imparting a comprehensive knowledge about deworming and vaccination is to be emphasised.

5.2.4 Knowledge of scientific housing of calves

Regarding scientific housing of calves, beneficiary women in general had significantly higher knowledge over that of non-beneficiaries as was evidenced from 't' test. Most beneficiary women were highly knowledgeable about scientific housing of calves as compared to non-beneficiary women. Most non-beneficiary women were

having only medium knowledge. Gill and Singh (1977) observed that most dairy farmers had low knowledge of scientific housing. Since knowledge scores of beneficiaries were significantly higher than that of non-beneficiaries, it was worth appreciating the efforts made under calf feed subsidy scheme.

Item wise analysis revealed that majority of the beneficiary women knew that the floor of the calf shed should have a gentle slope and be washed daily. Shreeshailaja and Veerabhadraiah (1994) observed that most farm women studied had correct knowledge of these items. Majority of the beneficiaries knew the features of an ideal site for a calf shed. Shreeshailaja and Veerabhadraiah (1994) however, observed that majority of the farm women did not have correct knowledge of the direction of construction of sheds. Most of the beneficiary women knew the advantages of half walls as well as the ideal distance of manure pits from wells. Nevertheless, fewer women knew that sunlight was a natural germicide.

From the above discussion it is evident that most beneficiary women had correct knowledge of the important aspects of scientific housing of calves which reflected the perceptible impact of the scheme.

5.2.5 Knowledge of selection of calves

Comparatively larger percentage of beneficiary women, that too almost three fourth of them had acquired high knowledge of selection of calves. However,

knowledge scores of beneficiaries were not significantly higher than that of non-beneficiaries. Most non-beneficiary women were highly knowledgeable about selection of calves. Many studies conducted in the past had amply shown that knowledge of selection of animals was high. For instance, Gill and Singh (1977) observed that majority of dairy farmers had correct knowledge of selection of adult animals and dairy heifers. Shreeshailaja and Veerabhadraiah (1994) reported that all the farm women studied had correct knowledge about the criteria used for selecting breeds.

Item wise analysis revealed that eventhough nearly all the beneficiary women knew that cross-bred calves had less disease resistance and needed more care as compared to desi animals, the former were preferred. This finding throws light on the awareness of beneficiary women about the advantages of having crossbred animals.

5.3 ATTITUDE TOWARDS IMPROVED PRACTICES

Various authors (Smith et.al 1956) observed that attitude is a highly functional trait and people hold or express an attitude because they derive psychological benefit from it. So much so that attitude is a functional psychological trait it can determine the acceptance or rejection of an improved practice by farmers.

The results of this study indicated that most of beneficiary women had shown a highly favourable attitude towards scientific calf rearing as well as dairy

farming. Evenso, around one-fifth of them had expressed an unfavourable attitude towards scientific calf rearing as well as dairy farming. It is important to know the reasons for holding unfavourable attitude since it will tell upon adoption of scientific practices.

Rajkamal (1993) observed that most of the tribal women studied had medium level of attitude towards dairy farming. Tripathi et.al (1995) made similar observation among farm women.

5.4 ADOPTION OF DAIRY FARMING TECHNOLOGIES

Students' t test on the adoption scores of beneficiaries and non-beneficiaries showed that beneficial extent of adoption of dairy farming technologies to be significantly higher than that of non-beneficiaries. Hence it is certain that the scheme had succeeded in ensuring adoption of dairy farming technologies so as to enable beneficiaries to avail maximum benefit from dairying. The above positive induction notwithstanding, the extent of adoption among just over one fourth beneficiary women was one low. This could be due to lack of sufficient motivation knowledge etc. Among the various domains studied, beneficiary women had adopted relatively more marketing practices and fewer disease control practices. Various authors had reported that extent of adoption of dairy farm technologies was medium among farm women. Shreeshailaja

and Veerabhadraiah (1994) reported that majority of farm women were medium adopters of dairy farming technologies. Likewise Tripathi *et al.* (1995) also reported

Realising the need for achieving optimum milk productivity, promotion of improved dairy farming technologies has been tried under the calf subsidy scheme and this effort has started showing results as understood from the above finding.

5.4.1 Breeding

The results of the motivational efforts under the calf feed subsidy scheme in promoting adoption of scientific breeding practises by beneficiaries was promising since the extent of adoption of such practices, in general, among beneficiaries was one significantly higher than that of non-beneficiaries. Though beneficiaries on this account were better off the extent of adoption among almost two-thirds was one either medium or low. Intensive extension education efforts like infertility camps, seminars etc. are required for furthering the objectives regarding breeding performance. Mahipal and Kherde (1989) observed that less than one-sixth of dairy farmers in the Operation Research Project Area had high adoption of breeding technologies. The higher number of adopters in the present study reflects the impact of the scheme.

Item wise analysis revealed that majority of the beneficiary women continued to practice artificial insemination at the proper time of heat and to seek veterinary attention in cases of dystocia and retention of placenta.

Fewer women continued to seek treatment for infertile animals. Around one-third of beneficiary women continued to adopt early breeding of cows while the remaining were non-adopters. Subhadra (1979) observed that nearly half of the dairymen studied had adopted early breeding. Ingole *et al.* (1988) observed that 79 per cent of cattle owners in I.C.D.P areas had adopted early breeding of cows.

Adopting scientific breeding practices is vital to ensure breeding efficiency and ultimately production of dairy cows.

5.4.2. Nutrition

The efforts of calf feed subsidy scheme in promoting adoption of nutrition practices was reflected in the observation that the extent of adoption of these practices by nearly half of the beneficiary women was high and in general beneficiary women had significantly higher adoption scores as compared to non-beneficiaries. Various studies conducted in the past indicated that adoption of animal nutrition practices by beneficiaries of other schemes was meagre. For instance, Ingole *et al.* (1988) reported that level of adoption of animal nutrition practices among farmers in ICDP areas was very low. Mahipal and Kherde (1989) observed that just one tenth of farmers in Operation Research Project Area had high level of adoption of nutrition practices. Evidently calf feed subsidy scheme had played a pivotal role in promoting nutrition technologies among beneficiary women.

Item wise analysis revealed that most of the beneficiary women continued to feed concentrates to milch animals depending on the amount of milk produced. Fewer women continued to feed extra concentrates for heifers, animals in production and pregnant animals. Additional allowance of ration to those in production and pregnant has been an important recommendation and why beneficiaries paid little attention needs to be understood. Majority of the beneficiary women continued to feed green grass to their animals while all of them continued to provide enough drinking water to their animals.

The state is facing a serious deficiency of fodder. Hence dairy farming is not considered lucrative. Further, the high cost of concentrate feed had further compounded the situation. Therefore, feed compounding by groups of farmers and fodder cultivation are to be promoted intensively under the scheme as part of its package.

5.4.3 Management

Beneficiaries did not differ significantly from non-beneficiaries regarding the extent of adoption of selected management practices. Moreover, more than half of the beneficiaries were either medium or low level adopters. Subhadra (1979) opined that management practices required more individual initiative than government support hence adoption of these practices lagged behind. Beneficiaries were not better off, inspite of the scheme, was baffling and these facts pointed out the need for further promoting the adoption of management practices through intensive efforts.

Item analysis revealed that majority of the beneficiary women cleaned the cattle shed daily while less than half of beneficiary women continued to keep records pertaining to insemination details. Shreeshailaja and Veerabhadraiah (1994) reported that only five per cent of average dairy women had adopted record keeping. When all the beneficiary women continued to adopt pre-milking udder cleaning no one had adopted post milking teat dipping. Subhadra (1979) however observed 79 per cent of dairymen studied had adopted clean milk production. Mastitis entails heavy production losses and treating of mastitis is intolerably expensive. In view of this, the importance of adopting low cost or even no cost preventive measures like regular cleaning and teat dipping are great. Hence considerable attention need to be given to this.

Nearly all the beneficiary women continued to adopt regular milking as well as drying of animals prior to parturition. Shreeshailaja and Veerabhadraiah (1994) made similar observations. Except for a few beneficiary women nearly all had continued to adopt drying of animals 2 months prior to parturition. Shreeshailaja and Veerabhadraiah (1994) reported that all the farm women studied had partially adopted this practice.

5.4.4 Disease control

It was evident that the associated health care package of calf feed subsidy scheme was instrumental in fostering the adoption of disease control practices. The fact that nearby half of beneficiary women were high adopters of these practices coupled with their significantly higher adoption scores was appreciable. Various authors had

reported that adoption of disease control practices had not gained the required momentum. For instance Subhadra (1979) and Nair (1980) reported that nearly half of the respondents had not adopted preventive vaccinations. Mahipal and Kherde (1989) observed that just 12.4 per cent of farmers in the Operation Research Project Area were high adopters of health care practices. However, Ingole *et al.* (1988) observed that 69 per cent of cattle owners in I.C.D.P areas had adopted preventive vaccination.

Item wise analysis indicated that just over one third of beneficiary women continued to adopt vaccination of animals every six months against F.M.D. Nair (1980) observed that non-adoption of preventive vaccinations was mainly due to lack of service personnel. Majority of beneficiary women continued to seek veterinary aid for ailments. More than half of beneficiary women continued to deworm their animals regularly while slightly less than one third were non-adopters and the rest had discontinued this practise.

Ingole *et al.* (1988) observed that 80 per cent of farmers in I.C.D.P areas had adopted deworming practices. Shreeshailaja and Veerabhadraiah (1994) observed that just eight per cent of farm women had adopted timely deworming of their animals. More than half of beneficiary women continued to isolate sick animals while the rest were non-adopters. Shreeshailaja and Veerabhadraiah (1994) observed that 87 per cent of farm women had adopted this practice. Less than half of the women had adopted the

practice of reporting outbreak of a disease in the household farm, immediately to the local veterinary surgeon, while the rest of them were non-adopters.

5.4.5 Housing

The efforts of calf feed subsidy scheme in promoting the adoption of scientific housing practices was evident from the findings that majority of them were high adopters of such practices and that in general, in this regard, beneficiary women had significantly higher adoption scores as compared to non-beneficiaries.

It was indicated that more than half of beneficiary women continued to adopt the practice of providing enough floor space. Nevertheless, less than one third of them had discontinued with this practice and the rest never adopted. Just over half of beneficiary women properly constructed the floor of the shed. Shreeshailaja and Veerabhadraiah (1994) observed that 85 per cent of farm women had fully adopted proper flooring of the calf shed. Less than half of the beneficiary women continued to adopt providing proper drainage facilities thereby minimising dampness while less than one third had discontinued this practice and the rest of the women were non-adopters.

5.4.6 Marketing

It was seen that more than half of beneficiary women had adopted certain marketing practices identified for the study whereas thirty-seven per cent of non-beneficiaries adopted the same. However, beneficiary women did not differ

significantly from non-beneficiary women in this respect. It was further revealed that more than half of beneficiary women continued to avail loans from banks instead of local money lenders. Majority of beneficiary women purchased animals only after observing a milking and sold out unproductive and under productive stock in time.

Adoption of marketing practices is essential for ensuring successful dairy farming. This is all the more significant in Kerala where dairy farming has many constraints. The efforts made under calf feed subsidy scheme in promoting these practices are appreciable.

5.5 ADOPTION OF SCIENTIFIC CALF REARING TECHNOLOGIES

Results of Student's *t* test indicated that the extent of adoption of scientific calf rearing technologies by beneficiary women was significantly higher than that of non-beneficiary women. Hence it is evident that the scheme had succeeded in ensuring adoption of scientific calf rearing technologies. However, just over one-fourth of beneficiary women were low adopters of scientific calf rearing technologies. This could be due to lack of sufficient motivation, knowledge etc., Beneficiary women had adopted relatively more nutrition practices and fewer marketing practices.

Recognising the importance of scientific rearing of calves in influencing milk production, promotion of improved technologies under the auspices of the scheme

has been initiated. The above finding points to the favourable impact made in this direction.

5.5.1 Nutrition

One of the important perhaps a primary objective of the scheme has been promoting calf nutrition among beneficiaries of the scheme. Finding of the study in this regard was one justifying the efforts made in this direction since the extent of adoption of calf nutrition practices by the beneficiaries was significantly higher than that of non-beneficiaries. Moreover, among all the three categories of adopters, viz high medium and low, drawn on the basis of extent of practices adopted there were more of high adopters than either medium or low adopters among the beneficiary women. Item wise analysis revealed that all the beneficiary women continued to adopt the practise of feeding colostrum and providing continuous supply of clean drinking water to calves. Women who continued the practice of feeding concentrates, feeding milk proportionate to weight gain and feeding milk up to three months of age were a majority.

5.5.2 Calf management

Comparatively more beneficiary women were medium adopters of various calf management technologies. However, nearly one fourth of them were low adopters of there technologies. Results of Student's 't' test further indicated that beneficiary and non-beneficiary women did not differ significantly on their adoption of calf

management technologies.

Item wise analysis indicated that majority of beneficiary women continued to adopt timely control measures for diarrhoea. Shreeshailaja and Veerabhadraiah (1994) made similar observations. A good number of beneficiary women continued to wash the calf shed daily. Shreeshailaja and Veerabhadarah (1994) however, observed that most of the farm women studied had not adopted this practice. Much fewer women had adopted antiseptic application to the navel cord after birth. Ingole *et al.* (1988) observed that very few farmers of I.C.D.P areas had adopted this practice.

Successful dairy farming depends to a very large extent upon rearing calves to breedable age at a faster rate and with minimum mortality. The initial growth and management of young stock greatly determine early maturity and productivity.

5.5.3 Disease control

The activities of the calf feed subsidy scheme in propagating adoption of disease control practices have been effected through its associated health care package. The positive results of these efforts were evident from the finding that more than one third of beneficiary women were high adopters of scientific disease control practices in calves, and in general beneficiary women had significantly higher adoption scores as compared to non-beneficiaries. Nevertheless, nearly one-fifth of beneficiary women were non-adopters, which could be due to lack of a proper conviction about these

practices among these people. Various authors in the past had reported that adoption of vaccination practices in general was low, Shreeshailaja and Veerabhadraiah (1994) observed partial adoption of vaccination by all the women studied. Subhadra (1979) and Nair (1980) indicated that nearly half of the respondents had not adopted preventive vaccinations. The fact that only seventeen percent of beneficiary women were non-adopters reflects the positive impact of the scheme. Nevertheless the reasons why nearly half of the beneficiary women discontinued this practise, needs to be explored. Ingole *et al.* (1988) reported that 69 per cent of cattle owners of the I.C.D.P areas had adopted preventive vaccinations, however, Mahipal and Kherde (1989) observed that just 12.4 per cent of farmers of Operation Research Project were high adopters of health care practices.

Item wise analysis revealed that one third of beneficiary women continued to adopt vaccination of calves against F.M.D. Nevertheless nearly half of them had discontinued this practice. This could be either because of a lack of proper conviction about vaccination or that it is not being organised. Nair (1980) was reporting that lack of service personnel to be the reason for not carrying not vaccination just four per cent of women continued to vaccinate their animals against H.S., while the rest were non-adopters. Nearly one- fifth of beneficiary women continued to deworm their calves, while the rest had either discontinued this practice or had not adopted it. Ingole *et al.* (1988) observed that 80 per cent of farmers in I.C.D.P areas had adopted this practice. Mahipal and Kherde (1989) observed that just 12.4 per cent of farmers in Operation

Research Project Area were high adopters of health care practices. Shreeshailaja and Veerabhadraiah (1994) observed that just 8 per cent of farm women had fully adopted deworming. The fact that a large majority of the beneficiary women had either discontinued or not adopted this innovation could be due to various reasons such as lack of service personnel, lack of knowledge etc. Nearly half of the beneficiary women had adopted isolation of sick calves while the rest were non-adopters. Shreeshailaja and Veerabhadraiah (1994) observed that nearly 87 per cent of farm women had adopted this practice. Lack of proper awareness could be the reason behind. Most of beneficiary women continued to adopt timely veterinary aid for sick animals. Intensive efforts to promote health care practices in calves are very much essential and these efforts should not be confined alone to certain schemes of narrow coverage but should be extensive.

5.5.4 Housing of calves

None of the respondents housed calves in separate sheds but had allotted a certain area to it, within the cattle shed. Therefore, observations regarding housing of calves were made primarily on the management of this space occupied by the calves. It was seen that more beneficiary women managed this space better in terms of providing good flooring, enough space and ventilation, than non-beneficiaries. This difference between them was not statistically significant.

Accordingly, more than half of beneficiaries continued to provide proper flooring while one third discontinued this practice afterwards and the rest had never

provided it. More than half of beneficiary women had provided adequate space for calves in the cattle shed while a few had discontinued this practise and the remaining were never bothered about it at all. Further, more than half of beneficiary women had provided proper ventilation while the rest were not at all concerned about it. Adequate drainage facilities nearly half of the beneficiaries had provided. Less than one third ignored it subsequently and the rest never tired.

Scientific housing of calves is necessary for their well being. The above results indicated that though some progress had been made in this direction much remains to be done.

5.5.5 Marketing

Calf feed subsidy scheme had been a propelling force behind adoption of marketing practices as was evident from the observation that more than half of the beneficiary women were high adopters of these practices, and they differed over it significantly from non-beneficiary women.

Item wise analysis indicated that more than half of the beneficiary women continued to adopt the practice of obtaining loans from banks only and not from local money lenders. Nearly one- third of beneficiary women continued to sell bull calves earlier while two- third sold them when the dam went dry. Why should have majority of beneficiary farmers kept the bull calves throughout a lactation period of the dam the

reasons and economics of which need to be understood. If it were an inadvertent practice entailing economic loss, that would have been discouraged under the auspices of calf feed subsidy scheme.

5.6. ANIMAL BREEDING PARAMETERS

The average age at which animals in the scheme had shown the first signs of heat (puberty) and average age of first insemination were respectively 20.44 and 21.86 months, and in both cases nearly satisfying the scientifically recommended age. It was observed that age at first calving as well as second calving of the animals in the scheme was one significantly lower than that of the animals outside the scheme. Despite a not significantly differing period of post calving insemination, the intercalving period was significantly differing between the cows in the scheme and those outside the scheme, probably due to the reason that a good number of cows in the scheme conceived earlier to those outside the scheme.

SUMMARY

SUMMARY

Calf feed subsidy scheme is an important dairy promotion scheme operated by the Animal Husbandry Department of Kerala. It was implemented in the year 1976 and has been continuing ever since. But there has not been so far any effort to empirically assess the impact of the scheme on farm families. Hence, a study was undertaken to know the impact of the scheme on farm women realizing that they do most of the job related to dairying. The study was mostly based on attitude, knowledge and adoption perspectives of behavioural changes in women due to the concerted efforts made under the scheme.

The objectives of the study were as follows:

1. To study the impact of the calf feed subsidy scheme in terms of its functions of extension educational importance.
2. To identify problem areas and suggest remedial measures where needed.

The study was carried out in Thrissur district of Kerala State. Data were collected through a personal interview of 75 each of beneficiary and nonbeneficiary women since the study was mostly a micro-level analysis of the attitude, knowledge and adoption dimensions of behavioural changes as revealed from a comparison between women beneficiaries of the calf feed subsidy scheme and those non-beneficiaries.

As it was required to measure the attitude towards scientific calf rearing, knowledge of calf rearing, extent of adoption of calf rearing as well as dairy farming technologies, among other variables, suitable measuring tools were developed. In all data on 11 variables were collected with the help of a structured schedule.

It was seen that beneficiaries and non-beneficiaries were differing on their attitude towards calf rearing and dairy farming and both beneficiaries and non-beneficiaries fostered a favourable attitude towards them. However, the attitude of one fifth of beneficiary women towards calf rearing as well as dairy farming was one not favourable. These observations warranted building up of a still stronger attitude among the beneficiary women through appropriate extension educational measures or otherwise they would not be critical about the objectives of the scheme and in managing the calves, rendering the scheme ineffective.

In general, beneficiary women were highly knowledgeable about both dairy farming and scientific calf rearing. Even so, except for feeding of green fodder about which nearly one-third of beneficiaries had low knowledge, nearly one-fourth of beneficiaries had low knowledge of all domains of dairy farming. Except knowledge of selection of calves on which beneficiaries and non-beneficiaries did not differ significantly, they significantly differed on all other domains related to scientific calf rearing and the beneficiaries in general were more knowledgeable. However, one-fifth of beneficiaries had low knowledge of

management, housing and marketing while less than one-fourth had low knowledge of disease control and feeding of calves.

Relatively, beneficiary women were high adopters of both dairy farming and scientific calf rearing technologies. However, regarding dairy farming, while one-sixth were low adopters of disease control and housing technologies, one-fifth were low adopters of nutrition, management and marketing technologies. Except for the domains of marketing and management, on which beneficiaries and non-beneficiaries did not differ significantly, on all other domains viz. feeding, disease control and housing they differed significantly and beneficiaries were higher adopters. Regarding extent of adoption of various scientific calf rearing technologies, one-fourth of beneficiaries were low adopters of management and housing technologies while less than one-fifth were low adopters of disease control technologies. Though on calf management beneficiaries did not differ significantly from non-beneficiaries, yet the former were seen to be distinctly better adopters of calf rearing practices such as feeding, disease control, housing and marketing of calves.

The age at first oestrus, age at first insemination, age at first calving, age at second calving and intercalving period were significantly lower with those animals kept by the beneficiaries under the scheme. None the less, the post calving insemination period of those animals kept by beneficiaries as well as those of non-beneficiaries was one almost similar.

Itemised analysis of knowledge and adoption further revealed that beneficiary women did not have a comprehensive knowledge of infertility. About two-third of beneficiary women had not adopted treatment of infertile animals. Less than half of beneficiaries had correct knowledge of the optimum time for post-partum insemination and the body weight of a heifer for optimum benefit of AI. Two third of beneficiaries had not adopted early breeding.

Nearly half of beneficiary women did not know the schedule of vaccination against F.M.D. while one fourth of them had low knowledge of deworming. Fewer women knew the schedule of deworming in adult animals. Nearly two third of beneficiaries had either discontinued vaccination of their animals every 6 months against F.M.D. or had not adopted this practice. Less than half of beneficiaries had either not adopted or had discontinued the practice of deworming calves regularly.

Comparatively lesser number of beneficiary women were knowledgeable about the amount of green fodder to be fed to heifers, those pregnant, and dry. Adoption of feeding ration to dry animals, heifers and those pregnant was substantially less. Most beneficiary women did not know the procedure for ligating navel cord of new born calves. Adoption of this practice was meagre. None of the beneficiary women had adopted post-milking teat dipping. Fewer women had adopted record keeping. Nearly half of the beneficiary women

had not adopted the practice of prompt reporting of outbreaks to the local veterinary surgeon and had either not adopted or discontinued technologies pertaining to flooring and drainage of cattle sheds. Two-third of beneficiaries had not adopted the practice of culling bull calves at the right time.

In nutshell, beneficiaries had significantly higher knowledge of dairy farming as well as scientific calf rearing. Attitudinal disposition of majority of beneficiary women was highly favourable besides being significantly better than that of non-beneficiaries. So also, the extent of adoption of both dairy farming as well as scientific calf rearing technologies of beneficiary women was one significantly higher than that of non-beneficiaries. Almost on all breeding parameters, animals within the scheme showed better performance than those outside the scheme. The findings of this study point to the positive impact of scheme in achieving its primary objectives of extension importance.

Suggestions:

Although the calf feed subsidy scheme brought in a perceptible behavioural change among women yet it was strongly felt that women-specific educational objectives are a must irrespective of whether husband or wife is the actual beneficiary registered with the scheme. Certain specific subject matter areas also need to be emphasized. For instance, imparting a comprehensive knowledge

of infertility, promoting early post-calving insemination, significance of vaccination against foot and mouth disease, deworming of calves and adult animals, importance of feeding recommended quantity of balanced ration especially to pregnant and dry cattle, promoting fodder cultivation, organizing co-operative feed mixing units, scientific milking practices, timely culling of bull calves, enhancing the quality of paddy straw by urea treatment, silage making, keeping milking and breeding records need much emphasis in the training programmes. Wherever possible, demonstrations are to be organized to further strengthen the attitude, enhance knowledge and adoption of scientific management practices.

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**IMPACT OF CALF FEED SUBSIDY SCHEME
ON
FARM WOMEN**

**By
REEJA GEORGE PULINILKUNNATHIL**

ABSTRACT OF A THESIS
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Master of Veterinary Science
Faculty of Veterinary and Animal Sciences
Kerala Agricultural University

Department of Extension
COLLEGE OF VETERINARY AND ANIMAL SCIENCES
MANNUTHY, THRISSUR - 680651
KERALA, INDIA
1999

ABSTRACT

The impact of the calf feed subsidy scheme, a continuing dairy development scheme of the Animal Husbandry Department, Kerala, on farm women in terms of behavioural changes in the areas of attitude, knowledge and extent of adoption regarding scientific calf and dairy management practices was assessed. A static group comparison design of research was adopted. The study was carried out in Thrissur district of Kerala state, among 75 each of beneficiary and non-beneficiary women. The non-beneficiary group served as the control. Comparison was made on 11 variables and since it was required to know differences in the attitude towards scientific calf rearing, knowledge of scientific calf rearing, extent of adoption of calf rearing as well as dairy farming technologies between beneficiary and non-beneficiary groups and since ready to use measuring scales were not available to measure these variables, suitable scales were developed.

In general, beneficiary women differed significantly in their attitude, knowledge and extent of adoption of scientific calf rearing and dairy farming technologies indicating the positive impact of the scheme. However certain deficiency areas were identified which need immediate educational intervention. For instance, most beneficiary women did not have correct knowledge regarding early

breeding as well as etiology of infertility; two-third had not adopted these technologies as well. Many of beneficiary women did not have correct knowledge of the schedule of foot and mouth disease vaccination as well as deworming and a majority had either discontinued or not adopted these technologies. Fewer women had correct knowledge of the amounts of green fodder and ration to be fed to heifers, dry animals and those pregnant: adoption of these technologies was substantially low. Knowledge and adoption of the correct procedure of ligation of navel cord was one low. None of the beneficiaries had adopted post milking teat dipping while a few had adopted record keeping. Nearly half of the beneficiaries had not adopted the practice of quick reporting of out breaks and had either not adopted or discontinued technologies pertaining to flooring and drainage in cattle sheds. Two-third had not adopted the practice of culling bull calves at the right time.

To make up these deficiencies, intensive extension educational measures are to be organised under the auspices of the scheme. In all such instances, women participatory programs need emphasis. Attitude building exercises, demonstrations etc wherever required should be organised and followed up.

APPENDIX-I

KERALA AGRICULTURAL UNIVERSITY
COLLEGE OF VETERINARY AND ANIMAL SCIENCES, MANNUTHY
DEPARTMENT OF EXTENSION

INTERVIEW SCHEDULE "IMPACT OF CALF FEED SUBSIDY SCHEME ON FARM WOMEN"

IDENTIFICATION

1. Respondent No. :
2. Name and address :
3. Village :
4. Panchayat :
5. Ward :
6. House number :
7. Beneficiary :
8. Dairy cow history :
- a. Source: Homebred/purchased :
- b. Breed : CB/ND/any other :
- c. Date of birth :

| Sl.No. | Date | Year | Month | Date |
|--------|-----------------------------------|------|-------|------|
| 1 | Date of birth | | | |
| 2 | Date of first heat | | | |
| 3 | Date of first insemination | | | |
| 4 | Date of first calving | | | |
| 5 | Date of post calving insemination | | | |
| 6 | Date of second conception | | | |
| 7 | Date of second calving | | | |

I. Knowledge in dairy husbandry

A. ARTIFICIAL INSEMINATION

1. In which heat cycle a heifer should be inseminated for first time : Second (1)
any other (0)
2. How many times a cow should be inseminated in one heat cycle for optimum results : Twice (1)
any other (0)
3. What is the appropriate time for detection of heat in a cow? : Morning (1)
Any other (0)
4. After how many days does the cow repeat its heat cycle? : 20-25 days (1)
5. What are the reasons for a cow not coming in heat even after attaining puberty? : Yes (1)
No (0)
6. Nutritional deficiency : Yes (1)
No (0)
7. Heavy parasitic load : Yes (1)
No (0)
8. Due to reproductive disorders : Yes (1)
No (0)
- Why do you follow A.I. in your cow? : Correct/Incorrect
9. Desi bulls are not good : (1) (0)
10. Animal becomes pregnant without fail : (0) (1)
11. At what age does a CB heifer generally come into heat for the first time : 18-24 months (1)
Any other (0)
12. How many days after parturition should a cross bred cow be inseminated? : 45-60 days (1)
Any other (0)
13. What should be the body weight of a crossbred heifer at puberty for getting optimum benefits of A.I. : 200-250 kg (1)
Any other (0)

B. KNOWLEDGE ABOUT H.S., F.M.D.
R.P. AND VACCINATION AGAINST THEM

1. How will you dispose of the animal if it dies of H.S., F.M.D. and R.P. diseases : Bury the animal deep in the ground covered with lime (1)
any other (0)
- What are the symptoms of H.S.?
2. Diarrhoea : (0) (1)
3. Moves in a circle : Correct Incorrect
(0) (1)
- What are the symptoms of F.M.D.
4. Diarrhoea : (0) (1)
5. Frequent : (0) (1)
- What are the symptoms of R.P.?
6. Lower surface of tongue is uncerated : (1) (0)
7. Swollen in throat and lower jaw : (0) (1)
8. Shooting diarrhoea : (1) (0)
9. Breathing trouble : (0) (1)
10. Offensive smelling faeces : (1) (0)
11. What do you know about vaccination?
- a) It is a treatment against certain diseases : (0)
- b) It stops all the disease : (0)
- c) It is a prophylactic measure against a disease : (1)
12. When an animal is vaccinated against H.S. it develops : Swelling (1)
any other (0)
13. How long does it generally take for the swelling to subside after vaccination?
- a) Less than one week : (1)
- b) One week : (0)
- c) More than one week : (0)

14. When an animal is vaccinated against F.M.D. it develops : Temperature (1)
Any other (0)
15. How long does it generally take for the temperature to subside after vaccination? : Correct Incorrect
- a) 1-2 days : (1)
- b) 3-5 days : (0)
- c) More than 5 years : (0)
16. When an animal is vaccinated against R.P. it develops : Temperature (1)
Any other (0)
17. How long does it generally take for the temperature to subside after vaccination : Correct Incorrect
- a) 1-2 days : (1)
- b) 3-5 days : (0)
- c) More than 5 years : (0)
18. How many times H.S. vaccination should be given? : Once in a year (1)
Any other (0)
- In which age-group H.S. vaccination can be given : Correct Incorrect
19. All age group of animals : (0) (1)
20. All animals except pregnant cows : (1) (0)
21. How many times R.P. vaccination should be given : One in 3 years (1)
any other (0)
22. When is vaccination against R.P. done? : During winter (1)
Any other (0)
- What is the schedule of vaccination Against F.M.D.?
23. First vaccination : Below 1 month of age (1)
any other (0)
24. Second vaccination : 2 months of age (1)
any other (0)
25. Third vaccination : 5 months of age (1)

- any other (0)
26. Fourth vaccination : One year of age (1)
any other (0)
27. Subsequent vaccinations : Repeat yearly (1)
any other (0)
28. When is vaccination against F.M.D. done? : Before the onset of monsoon (1)
Any other (0)

C. KNOWLEDGE ABOUT DEWORMING

1. Why deworming should be followed : Correct Incorrect
- a) To reduce the parasitic load of the animal : (1)
- b) Medicines are available free of cost : (0)
- c) Doctor says : (0)
2. How do you administer coccidiostat to young calves : Orally (1)
Any other (0)
3. When do you administer? : Correct Incorrect
- a) 4th – 5th day after birth : (1)
- b) 15th days after birth : (0)
- c) One month after birth : (0)

What is the schedule of deworming in cattle?

4. Monthly interval for first 3 months : Yes/No
5. Quarterly interval upto one year of age : Yes/No
6. Every 6 month interval before or after rainy season : Yes/No
7. In adult one year interval : Yes/No
8. How can internal parasites be controlled: Deworming regularly (1)

Any other (0)

D. KNOWLEDGE ABOUT FEEDING OF GREEN FODDER

What is the appropriate quantity of green fodder to be fed to the animals per day?

Milch

1. Cow : 30-40 kg (1)
Any other (0)

Dry

2. Cow : 30-40 kg (1)
Any other (0)

Young

3. Heifer : 15-20 kg (1)
any other (0)

Pregnant

4. Cow : 30-40 kg (1)
Any other (0)

Small

5. Calf : 5-10 kg (1)
Any other (0)

E. KNOWLEDGE ABOUT FEEDING OF CONCENTRATES

1. During summer at what time of the day should concentrate mixtures be fed to animals : Cooler part of the day (1)
Any other (0)

What are the cereals used for computation of rations for cows? : Correct/Incorrect

2. Maize : Correct/Incorrect

3. Tapioca chips : Correct/Incorrect

4. Cottonseed : Correct/Incorrect

5. Tamarind seed : Correct/Incorrect

What are the oil cakes used for Computation of rations for cows? : Correct/Incorrect

6. Groundnut cake : Correct/Incorrect

7. Coconut cake : Correct/Incorrect

What are the pulse/grains used for :

- computation of rations for cows
8. .Horse gram : Correct/Incorrect
9. Bengal gram : Correct/Incorrect
- What are the brans used for
Computation for rations for cows?
10. Rice bran :
11. How much cereal is required to
formulate concentrate mixtures for
cow? : 25-35% (1)
Any other (0)
12. How much oil cakes is required in
formulate conc. mixture for cows? :
13. How much bran is required to
formulate conc. mix. for cows? : 10-25% (1)
Any other (0)
14. How much pulses/grams is required to
formulate concentrate mixtures for cows : 5-10% (1)
Any other (0)

What is the appropriate quantity of
concentrate mixture to be fed to the
animals/day?

Milch

15. Cow : 1.5 kg + 50-30% of milk yield (1)
Any other (0)
- Dry
16. Cow : 1.5 (1)
Any other (0)

Young

17. Heifer : 1.0 (1)
Any other (0)

Pergnant

18. Cow : 2.0 (1)
Any other (0)

Small

19. Calf : 0.5 (1)
Any other (0)

II. ATTITUDE TOWARDS DAIRY HUSBANDRY

| Sl. No. | Statement | Agree | Response undecided | Disagree |
|---------|---|-------|--------------------|----------|
| 1 | In dairy farming AI is a good breeding practice | 3 | 2 | 1 |
| 2 | In dairy farming milch animals in dry period can be neglected in the matter of feeding | 1 | 2 | 3 |
| 3 | Through scientific feeding of milk yield of dairy animals can be increased | 3 | 2 | 1 |
| 4 | Vaccination against H.S., R.P. in milch animals is not regularly needed | 1 | 2 | 3 |
| 5 | In dairy farming drenching of CB animals for internal parasites every year is a good practice | 3 | 2 | 1 |
| 6 | In dairy farming it is good to keep animals loose in an enclosure | 3 | 2 | 1 |
| 7 | Milch animals do not need green fodder to their fill | 3 | 2 | 3 |
| 8 | In dairy farming CB cows are not better than buffaloes | 2 | 2 | 3 |

III. KNOWLEDGE IN SCIENTIFIC CALF REARING

A. KNOWLEDGE ABOUT MANAGEMENT

1. If the new born fails to breathe, its : Yes/No
should be pressed gently
2. If the umbilical cord is not broken and :
the newborn is not separated, what shall
you do?
 - a) Cut the cord
 - b) Leave the new borne as such and let the cord break off naturally
 - c) Tie the cord at two points, two inches away from the calf's body and cut
between the knots

3. Disease organisms can gain entry : Yes/No
through the umbelical cord at the time
of birth

What are the merits of feeding colostrum to calves?

- 4 It is a laxative : Yes/No

- 5 It contains certain important constituents which give the calf protection from
diseases

6) The approximate birth weight of a healthy cross bred calf is kg

- 7) A cross bred calf should be around : Yes/No
2.5-3.0 kg of colostrum on the first
day of life

- 8) The total amount of colostrum to be : Correct/Incorrect
fed to a calf should be given in small
amounts distributed through the day

- 9) A cow fed about 15 kg green grass : Yes/No
during the last three months of
pregnancy will produce Vitamin A
rich colostrum

B. KNOWLEDGE ABOUT FEEDING

1. A good calf starter should contain : Yes/No
higher amount of animal protein
2. If there is large amounts of foam on : Yes/No
the surface of milk it should be removed
before being fed to a calf
3. Large quantities of starch rich ricegruel : Correct/Incorrect
should never be fed to calves below one
month of age
4. For optimum growth a calf should be : Yes/No
fed scientifically prescribed amounts
of concentrates and green grass
5. Green grass is a rich source of : Yes/No
Vitamin A

6. At the age of six months a calf should : Yes/No
be fed 1 kg concentrates and 3-5 kg
green grass
7. Highly moist and tender grass should : Correct/Incorrect
be wilted or mixed with straw and fed
to calves
8. By the age of 9 months a calf should : Yes/No
be fed 1.5 kg concentrated and 5-10
kg green grass
9. Abrupt changes in feed is not : Yes/No
detrimental to calves

C. KNOWLEDGE ABOUT DISEASE CONTROL

Which of the following are general signs of ill health in calves.

1. Animal shows weariness. : Yes/No
2. Animal is disinterested in its surroundings: Yes/No
3. Animal does not drink milk/eat with relish: Yes/No
4. Urine of a healthy calf is clear and pale
yellow : Yes/No

Serious respiratory diseases in calves are evidenced by

5. Cough : Yes/No
6. Nasal discharge : Yes/No
7. Fever : Yes/No
8. To protect a calf against F.M.D., it should: Yes/No
be vaccinated at 4 months.
9. Vaccination against F.M.D. should be : Yes/No
repeated every 6months.

10. Period of greatest calf mortality is from : Yes/No
birth to 3 months

11. Feeding large amounts of jack fruit and : Yes/No
gruel is not dangerous

Chronic digestive disorders in calves :
are characterised by

12. Stunted growth : Yes/No

13. Pot belly : Yes/No

14. In cases of severe diarrhoea in young : Yes/No
calves the calf should be given more
milk to reduce dehydration

15. Difficulty to get up and walk is an : Yes/No
important sign of anaemia in calves

Feeding of mouldy GNC can lead to

16. Lack of appetite : Yes/No

17. Death : Yes/No

18. At what age should calves be first :
dewormed?

D. KNOWLEDGE ABOUT SCIENTIFIC HOUSING

1. A site with plenty of trees around is : Yes/No
ideal for constructing a calf shed

2. Floor of the calf shed should
 - a. have a gentle slope to facilitate drainage :
 - b. be washed only once a week :
 3. Half walls permit the flow of fresh air into the shed : Correct/Incorrect
 4. Sunlight is a natural germicide : Yes/No
 5. Manure should be stored in a manure pit to avoid fly manace :
 6. Manure pit should be located at a minimum distance of 10 m from wells : Yes/No
- The following managerial practices should be undertaken in care of suckling calves
7. They need not be bathed, but should be brushed daily : Yes/No
 8. They should be protected from cold winds and rain : Yes/No

E. KNOWLEDGE ABOUT SELECTION

Cross-bred calves are preferred desi calves as

1. they have greater disease resistance : Yes/No
2. they do not need much care : Yes/No

IV. ATTITUDE TOWARDS SCIENTIFIC CALF REARING

| Sl. No. | Statement | Response | | |
|---------|--|----------|-----------|----------|
| | | Agree | Undecided | Disagree |
| 1 | I feel scientific calf rearing is labour intensive and not worth and efforts | 1 | 2 | 3 |
| 2 | I would prefer modern medicines in place of indigenous medicines | 3 | 2 | 1 |
| 3 | If there is an opportunity I shall cultivate | 3 | 2 | 1 |

| | | | | |
|----|---|---|---|---|
| | green fodder and feed the calf enough of it | | | |
| 4 | Cleanlines of the calf shed has no meaning as animals withstand dirty conditions and so is the calf | 1 | 2 | 3 |
| 5 | Calves can be reared even in an open yard or under the shade of a tree without such protection from sun rain and wind | 1 | 2 | 3 |
| 6 | Even if the drinking water is unclear it cannot harm the calf | 1 | 2 | 3 |
| 7 | Scientific calf rearing endeavour as it will bring more returns to the farmer | 3 | 2 | 1 |
| 8 | I do not prefer rearing calves as the climate here is not suitable for calves | 1 | 2 | 3 |
| 9 | One should periodically examine the dung of calves at the veterinary hospital for any worm infestation | 3 | 2 | 1 |
| 10 | Better not to house the calf separately rather leave it with its mother, the natural way | 1 | 2 | 3 |
| 11 | Bringing up calves is difficult as mothers may contract mastitis | 1 | 2 | 3 |
| 12 | Colostrum has to be fed to new born calves as it builds up immunity | 3 | 2 | 1 |
| 13 | I dare not keep calves as mortality due to diseases is high | 1 | 2 | 3 |
| 14 | Vitamins and minerals are important to humans and not to calves | 1 | 2 | 3 |
| 15 | Let the calf suckle whatever is left after milking | 1 | 2 | 3 |
| 16 | I shall not advice my fried to keep calves as these crossbreds are susceptible to many a disease | 1 | 2 | 3 |

V. EXTENT OF ADOPTION OF DAIRY FARMING TECHNOLOGIES

| | | Continued adoption | Discontinued | Not adopted |
|--------------------------------|--|--------------------|--------------|-------------|
| | | 3 | 2 | 1 |
| I. Breeding Practices | | | | |
| 1 | Practicing AI at the proper time of heat | | | |
| 2 | Treatment of infertile animals by a veterinarian | | | |
| 3 | Heaving the cow inseminated 60-90 days after calving | | | |
| 4 | Seeking veterinary attention in cases of dystocia | | | |
| 5 | Seeking vet. attention in retention of placenta | | | |
| II. Nutrition practices | | | | |
| 1 | Feeding concentrates in relation to production | | | |
| 2 | Feeding concentration for growing animals in production | | | |
| 3 | Feeding extra concentrates from 6 months of pregnancy | | | |
| 4 | Feeding enough green grass | | | |
| 5 | Continuous supply of clean drinking water | | | |
| 6 | Feeding enough concentrates to heifers | | | |
| III. Management | | | | |
| 1 | Daily removal of dung from cattle shed | | | |
| 2 | Record keeping/keeping of A.I. receipt to know date of AI and possible date of calving | | | |
| 3 | Premilking udder cleaning | | | |
| 4 | Post milking teat dipping | | | |

| | | | | |
|---------------------|---|--|--|--|
| 5 | Regular milking of animals | | | |
| 6 | Drying the cow minimum 2 months prior to parturition | | | |
| IV. Disease control | | | | |
| 1 | Vaccination every 6 months against F.M.D | | | |
| 2 | Seeking veterinary aid for ailments | | | |
| 3 | Regular deworming of animals | | | |
| 4 | Isolation of sick animals | | | |
| V. Housing | | | | |
| 1 | Enough floor space in the shed | | | |
| 2 | Proper construction of floor | | | |
| 3 | Proper drainage and minimum dampness of floor | | | |
| VI. Marketing | | | | |
| 1 | Obtaining loans from banks instead of local money lenders | | | |
| 2 | Purchasing animals after observing a milking | | | |
| 3 | Timely culling of unproductive stock | | | |

VI. EXTENT OF ADOPTION OF CALF BEARING TECHNOLOGIES

| Statement | | Continued adoption | Rejected after adoption | Not adopted |
|------------------------|---|--------------------|-------------------------|-------------|
| | | 3 | 2 | 1 |
| I. Nutrition practices | | | | |
| 1 | Feeding colostrum to calves | | | |
| 2 | Feeding concentrates according to age of calf | | | |
| 3 | Continuous supply of clean drinking water to calves | | | |
| 4 | Milk feeding to calves proportionate to | | | |

| | | | | |
|---------------------------------|--|--|--|--|
| | weight gain | | | |
| 5 | Milk feeding upto 3 months | | | |
| II. Management practices | | | | |
| 1 | Feeding colostrum within 30 minutes after birth | | | |
| 2 | Timely control methods for diarrhoea | | | |
| 3 | Daily washing of calf shed | | | |
| 4 | Antiseptic application to navel birth | | | |
| III. Disease control | | | | |
| 1 | Vaccination of calves against F.M.D. | | | |
| 2 | Vaccination of calves against H.S. | | | |
| 3 | Regular deworming of calves | | | |
| 4 | Isolation of sick calves | | | |
| 5 | Treatment of sick animals by a vet. | | | |
| IV. Housing | | | | |
| 1 | Proper floor in calf shed | | | |
| 2 | Adequate space for calves | | | |
| 3 | Proper ventilation of calf shed | | | |
| 4 | Adequate drainage and minimum dampness of floor | | | |
| V. Marketing | | | | |
| 1 | Obtain loans from banks and not from local money lenders | | | |
| 2 | Sale of bull calves | | | |

V. EXTENT OF ADOPTION OF DAIRY FARMING TECHNOLOGIES

| | | Continued adoption | Discontinued | Not adopted |
|--------------------------------|--|--------------------|--------------|-------------|
| | | 3 | 2 | 1 |
| I. Breeding Practices | | | | |
| 1 | Practicing AI at the proper time of heat | | | |
| 2 | Treatment of infertile animals by a veterinarian | | | |
| 3 | Heaving the cow inseminated 60-90 days after calving | | | |
| 4 | Seeking veterinary attention in cases of dystocia | | | |
| 5 | Seeking vet. attention in retention of placenta | | | |
| II. Nutrition practices | | | | |
| 1 | Feeding concentrates in relation to production | | | |
| 2 | Feeding concentration for growing animals in production | | | |
| 3 | Feeding extra concentrates from 6 months of pregnancy | | | |
| 4 | Feeding enough green grass | | | |
| 5 | Continuous supply of clean drinking water | | | |
| 6 | Feeding enough concentrates to heifers | | | |
| III. Management | | | | |
| 1 | Daily removal of dung from cattle shed | | | |
| 2 | Record keeping/keeping of A.I. receipt to know date of AI and possible date of calving | | | |
| 3 | Pre-milking udder cleaning | | | |
| 4 | Post milking teat dipping | | | |

| | | | | |
|---------------------|---|--|--|--|
| 5 | Regular milking of animals | | | |
| 6 | Drying the cow minimum 2 months prior to parturition | | | |
| IV. Disease control | | | | |
| 1 | Vaccination every 6 months against F.M.D | | | |
| 2 | Seeking veterinary aid for ailments | | | |
| 3 | Regular deworming of animals | | | |
| 4 | Isolation of sick animals | | | |
| V. Housing | | | | |
| 1 | Enough floor space in the shed | | | |
| 2 | Proper construction of floor | | | |
| 3 | Proper drainage and minimum dampness of floor | | | |
| VI. Marketing | | | | |
| 1 | Obtaining loans from banks instead of local money lenders | | | |
| 2 | Purchasing animals after observing a milking | | | |
| 3 | Timely culling of unproductive stock | | | |

VI. EXTENT OF ADOPTION OF CALF BEARING TECHNOLOGIES

| Statement | Continued adoption | Rejected after adoption | Not adopted |
|------------------------|---|-------------------------|-------------|
| | 3 | 2 | 1 |
| I. Nutrition practices | | | |
| 1 | Feeding colostrum to calves | | |
| 2 | Feeding concentrates according to age of calf | | |
| 3 | Continuous supply of clean drinking water to calves | | |
| 4 | Milk feeding to calves proportionate to | | |

| | | | | |
|---------------------------------|--|--|--|--|
| | weight gain | | | |
| 5 | Milk feeding upto 3 months | | | |
| II. Management practices | | | | |
| 1 | Feeding colostrum within 30 minutes after birth | | | |
| 2 | Timely control methods for diarrhoea | | | |
| 3 | Daily washing of calf shed | | | |
| 4 | Antiseptic application to navel birth | | | |
| III. Disease control | | | | |
| 1 | Vaccination of calves against F.M.D. | | | |
| 2 | Vaccination of calves against H.S. | | | |
| 3 | Regular deworming of calves | | | |
| 4 | Isolation of sick calves | | | |
| 5 | Treatment of sick animals by a vet. | | | |
| IV. Housing | | | | |
| 1 | Proper floor in calf shed | | | |
| 2 | Adequate space for calves | | | |
| 3 | Proper ventilation of calf shed | | | |
| 4 | Adequate drainage and minimum dampness of floor | | | |
| V. Marketing | | | | |
| 1 | Obtain loans from banks and not from local money lenders | | | |
| 2 | Sale of bull calves | | | |

APPENDIX-II

Difficulty indices (P) and discrimination indices (E 1/3) of the 123 items of knowledge test on scientific calf rearing

| Sl. No. | Frequencies of correct answers for each group of respondents N=12 for each group | | | | Difficulty index (P) | Discrimination index (E 1/3) |
|---------|---|----------------|----------------|----------------|----------------------|------------------------------|
| | G ₁ | G ₂ | G ₃ | G ₄ | | |
| 1 | 12 | 12 | 12 | 9 | 62.5 | 0.13 |
| 2 | 12 | 11 | 11 | 6 | 55.5 | 0.29 |
| 3 | 11 | 11 | 12 | 2 | 50.0* | 0.33 |
| 4 | 11 | 8 | 7 | 1 | 37.5* | 0.42 |
| 5 | 12 | 11 | 10 | 3 | 48.0* | 0.33 |
| 6 | 12 | 12 | 11 | 6 | 56.9 | 0.29 |
| 7 | 11 | 6 | 4 | 0 | 29.1 | 0.54 |
| 8 | 11 | 5 | 5 | 0 | 29.1 | 0.46 |
| 9 | 12 | 7 | 7 | 1 | 37.5* | 0.50 |
| 10 | 12 | 10 | 8 | 6 | 50.0* | 0.33 |
| 11 | 11 | 6 | 7 | 5 | 40.2 | 0.21 |
| 12 | 12 | 9 | 6 | 4 | 43.0* | 0.46 |
| 13 | 12 | 3 | 6 | 2 | 31.9 | 0.29 |
| 14 | 12 | 9 | 7 | 4 | 44.4* | 0.42 |
| 15 | 12 | 10 | 12 | 8 | 58.3 | 0.08 |
| 16 | 13 | 2 | 8 | 5 | 38.5 | 0.04 |
| 17 | 11 | 3 | 7 | 6 | 37.5 | 0.04 |
| 18 | 10 | 4 | 7 | 2 | 31.9 | 0.21 |
| 19 | 12 | 10 | 10 | 11 | 59.2 | 0.04 |
| 20 | 11 | 4 | 6 | 2 | 31.9 | 0.29 |
| 21 | 12 | 12 | 12 | 10 | 63.8 | 0.08 |
| 22 | 12 | 12 | 8 | 8 | 55.5* | 0.3 |
| 23 | 12 | 8 | 8 | 7 | 48.6 | 0.21 |
| 24 | 11 | 9 | 5 | 3 | 38.8* | 0.50 |
| 25 | 11 | 9 | 8 | 7 | 48.6 | 0.21 |
| 26 | 12 | 7 | 6 | 6 | 43.0 | 0.29 |
| 27 | 12 | 12 | 10 | 11 | 62.5 | 0.13 |
| 28 | 12 | 11 | 9 | 8 | 40.0 | 0.25 |
| 29 | 12 | 10 | 12 | 10 | 61.1 | 0 |
| 30 | 12 | 9 | 8 | 7 | 50.0 | 0.21 |
| 31 | 12 | 10 | 10 | 7 | 54.2 | 0.21 |
| 32 | 10 | 0 | 8 | 1 | 26.4 | 0.04 |
| 33 | 12 | 11 | 9 | 8 | 55.5 | 0.25 |
| 34 | 12 | 10 | 8 | 5 | 48.6 | 0.38 |
| 35 | 12 | 10 | 8 | 6 | 50.0* | 0.33 |

| | | | | | | |
|----|----|----|----|----|-------|------|
| 36 | 11 | 12 | 8 | 10 | 56.9 | 0.21 |
| 37 | 10 | 12 | 7 | 9 | 52.8 | 0.25 |
| 38 | 11 | 12 | 5 | 6 | 47.2* | 0.50 |
| 39 | 2 | 11 | 9 | 9 | 43.1 | 0.29 |
| 40 | 10 | 11 | 6 | 9 | 50.0 | 0.25 |
| 41 | 8 | 11 | 9 | 8 | 48.0 | 0.08 |
| 42 | 11 | 12 | 4 | 9 | 50.0* | 0.42 |
| 43 | 12 | 12 | 6 | 10 | 55.5* | 0.33 |
| 44 | 12 | 11 | 1 | 6 | 41.6 | 0.66 |
| 45 | 11 | 12 | 5 | 10 | 52.7* | 0.33 |
| 46 | 10 | 11 | 6 | 8 | 48.6 | 0.29 |
| 47 | 9 | 12 | 4 | 6 | 43.1* | 0.46 |
| 48 | 12 | 12 | 7 | 12 | 59.7 | 0.21 |
| 49 | 5 | 10 | 4 | 8 | 37.5 | 0.13 |
| 50 | 9 | 12 | 2 | 9 | 44.4* | 0.42 |
| 51 | 12 | 12 | 6 | 12 | 58.3 | 0.20 |
| 52 | 12 | 12 | 7 | 8 | 54.2* | 0.38 |
| 53 | 9 | 12 | 4 | 8 | 45.8* | 0.38 |
| 54 | 11 | 12 | 3 | 12 | 52.7* | 0.38 |
| 55 | 11 | 10 | 1 | 8 | 41.6* | 0.33 |
| 56 | 11 | 10 | 5 | 9 | 48.6* | 0.50 |
| 57 | 12 | 12 | 8 | 12 | 63.8 | 0.25 |
| 58 | 6 | 12 | 2 | 7 | 37.5 | 0.16 |
| 59 | 1 | 10 | 1 | 7 | 00.7 | 0.38 |
| 60 | 11 | 12 | 5 | 9 | 51.4 | 0.13 |
| 61 | 11 | 11 | 4 | 9 | 48.6* | 0.38 |
| 62 | 9 | 12 | 3 | 7 | 43.1* | 0.38 |
| 63 | 12 | 12 | 11 | 11 | 63.8* | 0.46 |
| 64 | 11 | 12 | 10 | 9 | 58.3 | 0.08 |
| 65 | 11 | 12 | 10 | 9 | 58.3 | 0.16 |
| 66 | 12 | 12 | 7 | 9 | 55.5* | 0.33 |
| 67 | 3 | 11 | 0 | 6 | 27.7 | 0.33 |
| 68 | 10 | 11 | 4 | 10 | 48.6 | 0.29 |
| 69 | 11 | 12 | 5 | 9 | 51.3* | 0.38 |
| 70 | 11 | 11 | 6 | 9 | 51.3 | 0.29 |
| 71 | 10 | 12 | 11 | 9 | 58.3 | 0.42 |
| 72 | 0 | 9 | 2 | 1 | 4.16 | 0.25 |
| 73 | 12 | 12 | 10 | 11 | 62.5 | 0.13 |
| 74 | 10 | 12 | 11 | 9 | 58.3* | 0.42 |
| 75 | 12 | 12 | 3 | 8 | 48.6* | 0.54 |
| 76 | 10 | 12 | 6 | 12 | 55.5 | 0.16 |
| 77 | 9 | 12 | 4 | 9 | 47.2* | 0.46 |

| | | | | | | |
|-----|----|----|----|----|-------|------|
| 78 | 12 | 12 | 5 | 10 | 54.2 | 0.63 |
| 79 | 10 | 11 | 8 | 10 | 54.2 | 0.13 |
| 80 | 12 | 12 | 5 | 10 | 54.2 | 0.37 |
| 81 | 8 | 11 | 7 | 8 | 47.2 | 0.17 |
| 82 | 9 | 11 | 6 | 6 | 44.4 | 0.29 |
| 83 | 11 | 12 | 3 | 8 | 33.3* | 0.50 |
| 84 | 12 | 12 | 6 | 8 | 52.7* | 0.42 |
| 85 | 12 | 12 | 3 | 8 | 48.6* | 0.54 |
| 86 | 11 | 12 | 3 | 8 | 33.3* | 0.50 |
| 87 | 8 | 10 | 2 | 9 | 40.3 | 0.29 |
| 88 | 12 | 12 | 7 | 12 | 59.7 | 0.21 |
| 89 | 12 | 12 | 8 | 11 | 59.7 | 0.21 |
| 90 | 12 | 11 | 7 | 8 | 52.8* | 0.33 |
| 91 | 11 | 12 | 4 | 11 | 52.8* | 0.33 |
| 92 | 11 | 12 | 4 | 11 | 52.8* | 0.33 |
| 93 | 0 | 10 | 2 | 1 | 18.1 | 0.33 |
| 94 | 7 | 11 | 4 | 0 | 30.5 | 0.58 |
| 95 | 11 | 11 | 10 | 8 | 54.2 | 0.17 |
| 96 | 10 | 12 | 5 | 12 | 54.2 | 0.21 |
| 97 | 12 | 12 | 9 | 9 | 58.3 | 0.25 |
| 98 | 10 | 10 | 5 | 7 | 44.4* | 0.33 |
| 99 | 3 | 9 | 2 | 0 | 19.4 | 0.43 |
| 100 | 8 | 10 | 5 | 6 | 38.6 | 0.29 |
| 101 | 0 | 10 | 1 | 0 | 14.6 | 0.38 |
| 102 | 5 | 12 | 2 | 0 | 25.3 | 0.63 |
| 103 | 12 | 13 | 7 | 9 | 55.5* | 0.33 |
| 104 | 9 | 11 | 5 | 7 | 44.4* | 0.33 |
| 105 | 5 | 10 | 3 | 4 | 30.5* | 0.33 |
| 106 | 11 | 11 | 6 | 11 | 54.2 | 0.21 |
| 107 | 11 | 10 | 2 | 2 | 34.7* | 0.38 |
| 108 | 12 | 12 | 8 | 11 | 59.7 | 0.16 |
| 109 | 11 | 12 | 6 | 10 | 54.2 | 0.29 |
| 110 | 9 | 12 | 6 | 8 | 45.6 | 0.29 |
| 111 | 7 | 11 | 1 | 0 | 26.3 | 0.63 |
| 112 | 10 | 11 | 3 | 8 | 44.4* | 0.42 |
| 113 | 11 | 12 | 4 | 6 | 45.8* | 0.54 |
| 114 | 2 | 11 | 6 | 0 | 26.4 | 0.33 |
| 115 | 11 | 12 | 1 | 10 | 47.2* | 0.50 |
| 116 | 11 | 12 | 5 | 11 | 54.2 | 0.29 |
| 117 | 9 | 12 | 6 | 8 | 48.6 | 0.29 |
| 118 | 12 | 12 | 8 | 12 | 61.1 | 0.16 |
| 119 | 10 | 11 | 3 | 6 | 41.6* | 0.50 |

| | | | | | | |
|-----|----|----|---|---|-------|------|
| 120 | 11 | 12 | 4 | 6 | 45.8* | 0.54 |
| 121 | 10 | 11 | 0 | 6 | 37.5 | 0.63 |
| 122 | 12 | 12 | 8 | 8 | 55.5* | 0.33 |
| 123 | 7 | 11 | 3 | 6 | 37.5* | 0.38 |

*Items selected

APPENDIX-III(a)
Attitude towards scientific calf rearing

Key

- 1 - Agree
- 2 - Undecided
- 3 - Disagree

| Sl. No. | Statement | 1 | 2 | 3 |
|---------|--|---|---|---|
| 1 | I feel scientific calf rearing is labour intensive and not worth the efforts | | | |
| 2 | I dissuade anyone who is to separate the calf from its mother and feed enough milk in pails | | | |
| 3 | I would prefer modern medicines in place of indigenous medicines in case my calf suffers from a serious illness | | | |
| 4 | As veterinary services are inadequate, I don't feel like keeping calves | | | |
| 5 | I am sure that calves with scientific upbringing would yield more milk later | | | |
| 6 | I realise that green fodder is as important to calves as concentrates | | | |
| 7 | If there is an opportunity, I shall cultivate green fodder and feed the calf enough of it | | | |
| 8 | Cleanliness of cattle shed has no meaning as animals withstand dirty conditions and so is the calf | | | |
| 9 | Calves can be reared even in an open yard or under the shade of a tree without much protection from sun, rain and wind | | | |
| 10 | Even if the drinking water is unclean it cannot harm the calf | | | |
| 11 | Scientific calf rearing is a promising endeavour as it will bring more returns to the farmer | | | |
| 12 | Scientific calf rearing can effectively utilise otherwise idle | | | |

| | | | | |
|----|--|--|--|--|
| | farming labour | | | |
| 13 | I do not prefer rearing calves as the climate here is not suitable for calves | | | |
| 14 | One should periodically examine the dung of calves at the veterinary hospital for any worm infestation | | | |
| 15 | Better not to house the calf separately rather leave it along with its mother, the natural way | | | |
| 16 | A farmer should be critical about ticks mites, fleas and flies infesting the calf and premises | | | |
| 17 | I amply realise that "Today's calf is Tomorrow's milch cow", therefore I should manage it properly | | | |
| 18 | I do not consider feeding cod liver oil to calves as good for its health | | | |
| 19 | One has to start feeding concentrates to calves the first week itself | | | |
| 20 | Bringing up calves is difficult as mothers may contract mastitis | | | |
| 21 | Colostrum has to be fed to new born calves as it builds up immunity | | | |
| 22 | One should scientifically feed the calf as it can advance the age at maturity | | | |
| 23 | I prefer vaccinating my calves as I believe "Prevention is better than cure" | | | |
| 24 | I feel, scientific management of calves can prevent many diseases as calf scour, pneumonia etc. | | | |
| 25 | I dare not keep calves as mortality due to diseases is high | | | |
| 26 | One should not hesitate to insure calves as it helps cover risks due to deadly diseases | | | |

| | | | | |
|----|--|--|--|--|
| 27 | Vitamins and minerals are important to humans and not to calves | | | |
| 28 | Periodic deworming does not help keep the calf healthy | | | |
| 29 | There are many other farming options to farmers more rewarding than scientific calf rearing | | | |
| 30 | Why should I bother about grooming the calves occasionally | | | |
| 31 | Let the calf suckle what ever is left after milking all the four quarters | | | |
| 32 | I shall not advice my friend to keep calves as these cross-breds are susceptible to many a disease | | | |
| 33 | Scientific calf rearing is attractive as it ensures quality milk for my family | | | |
| 34 | Nutrition of the dam during gestation is not important for a healthy vigorous calf | | | |

APPENDIX-III(b)

`t' values of attitude statements of scientific calf rearing

| Sl. No. | Statement | `t' value |
|---------|--|-----------|
| 1 | Feel scientific calf rearing is labour intensive and not worth the efforts | 3.475* |
| 2 | I dissuade anyone who is to separate the calf from its mother and feed enough milk in pails | 4.227* |
| 3 | I would prefer modern medicines in place of indigenous medicines in case my calf suffers from a serious illness | 0.7533 |
| 4 | As veterinary services are inadequate, I don't feel like keeping calves | 0 |
| 5 | I am sure that calves without scientific upbringing would yield more milk later | 1.00 |
| 6 | I realise that green fodder is as important to calves as concentrates | 0.68 |
| 7 | If there is an opportunity, I shall cultivate green fodder and feed the calf enough of it | 3.3269* |
| 8 | Cleanliness of cattle shed has no meaning as animals withstand dirty conditions and so is the calf | 1.8712* |
| 9 | Calves can be reared even in an open yard or under the shade of a tree without much protection from sun, rain and wind | 2.2563* |
| 10 | Even if the drinking water is unclean it cannot harm the calf | 2.6469* |
| 11 | Scientific calf rearing is a promising endeavour as it will bring more returns to the farmer | 1.4258* |
| 12 | Scientific calf rearing can effectively utilise otherwise idle farming labour | 0.7339 |
| 13 | I do not prefer rearing calves as the climate here is not suitable for calves | 4.5829* |

| | | |
|----|--|---------|
| 14 | One should periodically examine the dung of calves at the veterinary hospital for any worm infestation | 1.5276* |
| 15 | Better not to house the calf separately rather leave it along with its mother, the natural way | 3.035* |
| 16 | A farmer should be critical about ticks mites, fleas and flies infesting the calf and premises | 0 |
| 17 | I amply realise that "Today's calf is Tomorrow's milch cow", therefore I should manage it properly | 0 |
| 18 | I do not consider feeding cod liver oil to calves as good for its health | 0.6071 |
| 19 | One has to start feeding concentrates to calves the first week itself | 0.7979 |
| 20 | Bringing up calves is difficult as mothers may contract mastitis | 2.50* |
| 21 | Colostrum has to be fed to new born calves as it builds up immunity | 1.5276* |
| 22 | One should scientifically feed the calf as it can advance the age at maturity | 0 |
| 23 | I prefer vaccinating my calves as I believe "Prevention is better than cure" | 0 |
| 24 | I feel, scientific management of calves can prevent many diseases as calf scour, pucumonia etc. | 0.7850 |
| 25 | I dare not keep calves as mortality due to diseases is high | 2.9661* |
| 26 | One should not hesitate to insure calves as it helps cover risks due to deadly diseases | 0 |
| 27 | Vitamins and minerals are important to humans and not to calves | 1.9296* |
| 28 | Periodic deworming does not help keep the calf healthy | 1.128 |
| 29 | There are many other farming options to farmers more rewarding than scientific calf rearing | 0.5029 |

| | | |
|----|--|---------|
| 30 | Why should I bother about grooming the calves occasionally | 0 |
| 31 | Let the calf suckle what ever is left after milking all the four quarters | 1.6552* |
| 32 | I shall not advice my friend to keep calves as these cross-breds are susceptible to many a disease | 2.3764* |
| 33 | Scientific calf rearing is attractive as it ensures quality milk for my family | 1.0 |
| 34 | Nutrition of the dam during gestation is not important for a healthy vigorous calf | 0.7070 |

*Statements selected

| | | | | |
|----|--|--|--|--|
| 27 | Vitamins and minerals are important to humans and not to calves | | | |
| 28 | Periodic deworming does not help keep the calf healthy | | | |
| 29 | There are many other farming options to farmers more rewarding than scientific calf rearing | | | |
| 30 | Why should I bother about grooming the calves occasionally | | | |
| 31 | Let the calf suckle what ever is left after milking all the four quarters | | | |
| 32 | I shall not advice my friend to keep calves as these cross-breds are susceptible to many a disease | | | |
| 33 | Scientific calf rearing is attractive as it ensures quality milk for my family | | | |
| 34 | Nutrition of the dam during gestation is not important for a healthy vigorous calf | | | |

APPENDIX-III(b)

't' values of attitude statements of scientific calf rearing

| Sl. No. | Statement | 't' value |
|---------|--|-----------|
| 1 | Feel scientific calf rearing is labour intensive and not worth the efforts | 3.475* |
| 2 | I dissuade anyone who is to separate the calf from its mother and feed enough milk in pails | 4.227* |
| 3 | I would prefer modern medicines in place of indigenous medicines in case my calf suffers from a serious illness | 0.7533 |
| 4 | As veterinary services are inadequate, I don't feel like keeping calves | 0 |
| 5 | I am sure that calves without scientific upbringing would yield more milk later | 1.00 |
| 6 | I realise that green fodder is as important to calves as concentrates | 0.68 |
| 7 | If there is an opportunity, I shall cultivate green fodder and feed the calf enough of it | 3.3269* |
| 8 | Cleanliness of cattle shed has no meaning as animals withstand dirty conditions and so is the calf | 1.8712* |
| 9 | Calves can be reared even in an open yard or under the shade of a tree without much protection from sun, rain and wind | 2.2563* |
| 10 | Even if the drinking water is unclean it cannot harm the calf | 2.6469* |
| 11 | Scientific calf rearing is a promising endeavour as it will bring more returns to the farmer | 1.4258* |
| 12 | Scientific calf rearing can effectively utilise otherwise idle faming labour | 0.7339 |
| 13 | I do not prefer rearing calves as the climate here is not suitable for calves | 4.5829* |

| | | |
|----|--|---------|
| 14 | One should periodically examine the dung of calves at the veterinary hospital for any worm infestation | 1.5276* |
| 15 | Better not to house the calf separately rather leave it along with its mother, the natural way | 3.035* |
| 16 | A farmer should be critical about ticks mites, fleas and flies infesting the calf and premises | 0 |
| 17 | I amply realise that "Today's calf is Tomorrow's milch cow", therefore I should manage it properly | 0 |
| 18 | I do not consider feeding cod liver oil to calves as good for its health | 0.6071 |
| 19 | One has to start feeding concentrates to calves the first week itself | 0.7979 |
| 20 | Bringing up calves is difficult as mothers may contract mastitis | 2.50* |
| 21 | Colostrum has to be fed to new born calves as it builds up immunity | 1.5276* |
| 22 | One should scientifically feed the calf as it can advance the age at maturity | 0 |
| 23 | I prefer vaccinating my calves as I believe "Prevention is better than cure" | 0 |
| 24 | I feel, scientific management of calves can prevent many diseases as calf scour, pucumonia etc. | 0.7850 |
| 25 | I dare not keep calves as mortality due to diseases is high | 2.9661* |
| 26 | One should not hesitate to insure calves as it helps cover risks due to deadly diseases | 0 |
| 27 | Vitamins and minerals are important to humans and not to calves | 1.9296* |
| 28 | Periodic deworming does not help keep the calf healthy | 1.128 |
| 29 | There are many other farming options to farmers more rewarding than scientific calf rearing | 0.5029 |

| | | | | |
|----|--|--|--|--|
| 27 | Vitamins and minerals are important to humans and not to calves | | | |
| 28 | Periodic deworming does not help keep the calf healthy | | | |
| 29 | There are many other farming options to farmers more rewarding than scientific calf rearing | | | |
| 30 | Why should I bother about grooming the calves occasionally | | | |
| 31 | Let the calf suckle what ever is left after milking all the four quarters | | | |
| 32 | I shall not advice my friend to keep calves as these cross-breds are susceptible to many a disease | | | |
| 33 | Scientific calf rearing is attractive as it ensures quality milk for my family | | | |
| 34 | Nutrition of the dam during gestation is not important for a healthy vigorous calf | | | |

APPENDIX-III(b)
't' values of attitude statements of scientific calf rearing

| Sl. No. | Statement | 't' value |
|---------|--|-----------|
| 1 | Feel scientific calf rearing is labour intensive and not worth the efforts | 3.475* |
| 2 | I dissuade anyone who is to separate the calf from its mother and feed enough milk in pails | 4.227* |
| 3 | I would prefer modern medicines in place of indigenous medicines in case my calf suffers from a serious illness | 0.7533 |
| 4 | As veterinary services are inadequate, I don't feel like keeping calves | 0 |
| 5 | I am sure that calves without scientific upbringing would yield more milk later | 1.00 |
| 6 | I realise that green fodder is as important to calves as concentrates | 0.68 |
| 7 | If there is an opportunity, I shall cultivate green fodder and feed the calf enough of it | 3.3269* |
| 8 | Cleanliness of cattle shed has no meaning as animals withstand dirty conditions and so is the calf | 1.8712* |
| 9 | Calves can be reared even in an open yard or under the shade of a tree without much protection from sun, rain and wind | 2.2563* |
| 10 | Even if the drinking water is unclean it cannot harm the calf | 2.6469* |
| 11 | Scientific calf rearing is a promising endeavour as it will bring more returns to the farmer | 1.4258* |
| 12 | Scientific calf rearing can effectively utilise otherwise idle farming labour | 0.7339 |
| 13 | I do not prefer rearing calves as the climate here is not suitable for calves | 4.5829* |

| | | |
|----|--|---------|
| 14 | One should periodically examine the dung of calves at the veterinary hospital for any worm infestation | 1.5276* |
| 15 | Better not to house the calf separately rather leave it along with its mother, the natural way | 3.035* |
| 16 | A farmer should be critical about ticks mites, fleas and flies infesting the calf and premises | 0 |
| 17 | I amply realise that "Today's calf is Tomorrow's milch cow", therefore I should manage it properly | 0 |
| 18 | I do not consider feeding cod liver oil to calves as good for its health | 0.6071 |
| 19 | One has to start feeding concentrates to calves the first week itself | 0.7979 |
| 20 | Bringing up calves is difficult as mothers may contract mastitis | 2.50* |
| 21 | Colostrum has to be fed to new born calves as it builds up immunity | 1.5276* |
| 22 | One should scientifically feed the calf as it can advance the age at maturity | 0 |
| 23 | I prefer vaccinating my calves as I believe "Prevention is better than cure" | 0 |
| 24 | I feel, scientific management of calves can prevent many diseases as calf scour, pneumonia etc. | 0.7850 |
| 25 | I dare not keep calves as mortality due to diseases is high | 2.9661* |
| 26 | One should not hesitate to insure calves as it helps cover risks due to deadly diseases | 0 |
| 27 | Vitamins and minerals are important to humans and not to calves | 1.9296* |
| 28 | Periodic deworming does not help keep the calf healthy | 1.128 |
| 29 | There are many other farming options to farmers more rewarding than scientific calf rearing | 0.5029 |

| | | |
|----|--|---------|
| 30 | Why should I bother about grooming the calves occasionally | 0 |
| 31 | Let the calf suckle what ever is left after milking all the four quarters | 1.6552* |
| 32 | I shall not advice my friend to keep calves as these cross-breds are susceptible to many a disease | 2.3764* |
| 33 | Scientific calf rearing is attractive as it ensures quality milk for my family | 1.0 |
| 34 | Nutrition of the dam during gestation is not important for a healthy vigorous calf | 0.7070 |

*Statements selected

APPENDIX-IV
KERALA AGRICULTURAL UNIVERSITY
COLLEGE OF VETERINARY AND ANIMAL SCIENCES
MANNUTHY

Sir,

Please indicate the importance of the following practices for their adoption by farmers in a three point continuum viz., very important (VI), important (I) and not so important (NI). Kindly tick mark in the appropriate column against each practice.

A IMPROVED DAIRY HUSBANDRY PRACTICE

| I. Breeding practices | | VI | I | NI |
|-------------------------|--|----|---|----|
| 1 | Having done AI at the proper time of heat | | | |
| 2 | Having pregnancy diagnosis done 60 days after AI | | | |
| 3 | Treatment of infertile animals by a veterinarian | | | |
| 4 | Having the cow inseminated 60-90 days after calving | | | |
| 5 | Seeking veterinary attention in cases of dystocia | | | |
| 6 | Seeking veterinary attention in cases of retention of placenta | | | |
| 7 | Gynaecological examination of heifers not showing first heat by 15-18 months by a veterinarian | | | |
| II. Nutrition practices | | | | |
| 1 | Feeding concentrates in relation to production | | | |
| 2 | Feeding extra concentrates for growing animals in production | | | |
| 3 | Feeding extra concentrates from 6 month of pregnancy | | | |
| 4 | Feeding enough roughage | | | |
| 5 | Feeding enough green grass | | | |
| 6 | Continuous supply of clean drinking water | | | |
| 7 | Feeding mineral supplements to pregnant animals | | | |
| 8 | Feeding laxative diet after calving | | | |
| 9 | Compounding of balanced rations using locally available ingredients | | | |
| 10 | Cultivation of green fodder | | | |

| III. Management | | VI | I | NI |
|---------------------|---|----|---|----|
| 1 | Daily washing of animals | | | |
| 2 | Daily removal of dung from cattle shed | | | |
| 3 | Scientific disposal of dung in covered manure pit | | | |
| 4 | Exercise for pregnant animals | | | |
| 5 | Feeding only after milking | | | |
| 6 | Record keeping/keeping AI receipt to know dt. of AI and possible dt. of calving | | | |
| 7 | Pre-milking under cleaning | | | |
| 8 | Post-milking teat-dipping | | | |
| 9 | Regular milking of animals | | | |
| 10 | Drying the cow prior to parturition, for minimum 2 months | | | |
| 11 | Measures for summer protection | | | |
| IV. Disease control | | | | |
| 1 | Vaccination every 6 months against F.M.D. | | | |
| 2 | Vaccination annually against H.S. | | | |
| 3 | Seeking veterinary aid for ailments | | | |
| 4 | Footbath as a preventive measure | | | |
| 5 | Periodic examination for dung of animals for intestinal parasites | | | |
| 6 | Regular deworming of animals | | | |
| 7 | Use of fly-repellants/acaricides against tick/fly infestation | | | |
| 8 | Isolation of sick animals | | | |
| 9 | Prompt reporting of an outbreak of a contagious disease to the local veterinarian | | | |
| V. Housing | | | | |
| 1 | Enough floor space in shed | | | |

| | | | | |
|---------------|---|--|--|--|
| 2 | Proper construction of floor | | | |
| 3 | Proper drainage and minimum dampness of floor | | | |
| 4 | Adequate manger-facility | | | |
| 5 | Presence of urine pit | | | |
| 6 | Presence of dung channel | | | |
| 7 | Disposal of dung in covered manure pit | | | |
| 8 | Proper roofing | | | |
| VI. Marketing | | | | |
| 1 | Purchase of animals after veterinary checkup/opinion | | | |
| 2 | Obtaining loans from nationalised banks instead of village money lender | | | |
| 3 | Purchasing animals after looking for breed qualities | | | |
| 4 | Purchasing animals after observing a milking | | | |
| 5 | Purchasing animals after observing udder appearance | | | |
| 6 | Timely culling of unproductive/under productive stock | | | |

B. IMPROVED CALF REARING PRACTICES

| I. Nutrition practices | | VI | I | NI |
|------------------------|---|----|---|----|
| 1 | Feeding of colostrum to calves | | | |
| 2 | Feeding of concentrates from first week | | | |
| 3 | Feeding of concentrates according to age of calf | | | |
| 4 | Feeding of green grass from first week of life | | | |
| 5 | Feeding of green grass according to age of calf | | | |
| 6 | Continuous supply of clean drinking water to calves | | | |
| 7 | Milk feeding calves proportionate to weight gain | | | |
| 8 | Milk feeding upto 3 months | | | |
| 9 | Cultivation of green fodder to feed to calves | | | |
| 10 | Compounding of balanced rations for calves | | | |
| 11 | Feeding cod-liver oil (5 ml) to calves daily | | | |

| | | | | |
|----------------------|--|--|--|--|
| 12 | Feeding minerals to calves | | | |
| II. Management | | | | |
| 1 | Periodic weight recording | | | |
| 2 | Feeding colostrum within 30 minutes after birth | | | |
| 3 | Brushing of calves daily | | | |
| 4 | Timely control methods for diarrhoea | | | |
| 5 | Daily removal of dung from calf shed | | | |
| 6 | Daily washing of calf shed | | | |
| 7 | Dehorning of calves | | | |
| 8 | Measures for summer protection | | | |
| 9 | Antiseptic application to navel at birth | | | |
| 10 | Weaning | | | |
| III. Disease control | | | | |
| 1 | Vaccination of calves against F.M.D. | | | |
| 2 | Vaccination of calves against H.S. | | | |
| 3 | Regular deworming of calves | | | |
| 4 | Periodic examination of dung of calves | | | |
| 5 | Isolation of sick calves | | | |
| 6 | Treatment of sick animals by a veterinarian | | | |
| IV. Housing | | | | |
| 1 | Proper floor in calf shed | | | |
| 2 | Adequate space for calves | | | |
| 3 | Storing manure in covered pits | | | |
| 4 | Adequate manger facilities | | | |
| 5 | Properly constructed roof | | | |
| 6 | Proper ventillation of calf-shed | | | |
| 7 | Presence of dung channel | | | |
| 8 | Adequate drainage and minimum moisture/dampness of floor | | | |

| | | | | |
|--------------|---|--|--|--|
| V. Marketing | | | | |
| 1 | Purchase of calves after veterinary checkup/opinion | | | |
| 2 | Obtaining loans from nationalised banks instead of village money lender | | | |
| 3 | Sale of bull calves | | | |

APPENDIX-V

Mean scores of various practices included in constructing the scale to measure extent of adoption of dairy farming technologies

A IMPROVED DAIRY HUSBANDRY PRACTICE

| I. Breeding practices | | Mean score |
|-------------------------|--|------------|
| 1 | Having done AI at the proper time of heat | 2.96 |
| 2 | Having pregnancy diagnosis done 60 days after AI | 2.36 |
| 3 | Treatment of infertile animals by a veterinarian | 2.68 |
| 4 | Having the cow inseminated 60-90 days after calving | 2.64 |
| 5 | Seeking veterinary attention in cases of dystocia | 2.64 |
| 6 | Seeking veterinary attention in cases of retention of placenta | 2.60 |
| 7 | Gynaecological examination of heifers not showing first heat by 15-18 months by a veterinarian | 2.28 |
| II. Nutrition practices | | |
| 1 | Feeding concentrates in relation to production | 2.96 |
| 2 | Feeding extra concentrates for growing animals in production | 2.88 |
| 3 | Feeding extra concentrates from 6 month of pregnancy | 2.80 |
| 4 | Feeding enough roughage | 2.72 |
| 5 | Feeding enough green grass | 2.80 |
| 6 | Continuous supply of clean drinking water | 2.40 |
| 7 | Feeding mineral supplements to pregnant animals | 2.44 |
| 8 | Feeding laxative diet after calving | 2.04 |
| 9 | Compounding of balanced rations using locally available ingredients | 2.24 |
| 10 | Cultivation of green fodder | 2.12 |
| III. Management | | |
| 1 | Daily washing of animals | 2.00 |
| 2 | Daily removal of dung from cattle shed | 2.64 |
| 3 | Scientific disposal of dung in covered manure pit | 1.88 |
| 4 | Exercise for pregnant animals | 1.76 |
| 5 | Feeding only after milking | 1.76 |

| | | |
|---------------------|---|------|
| 6 | Record keeping/keeping AI receipt to know dt. of AI and possible dt. of calving | 1.80 |
| 7 | Pre-milking under cleaning | 2.64 |
| 8 | Post-milking teat-dipping | 2.48 |
| 9 | Regular milking of animals | 2.52 |
| 10 | Drying the cow prior to parturition, for minimum 2 months | 2.80 |
| 11 | Measures for summer protection | 1.96 |
| IV. Disease control | | |
| 1 | Vaccination every 6 months against F.M.D. | 2.60 |
| 2 | Vaccination annually against H.S. | 2.36 |
| 3 | Seeking veterinary aid for ailments | 2.68 |
| 4 | Footbath as a preventive measure | 1.60 |
| 5 | Periodic examination for dung of animals for intestinal parasites | 1.92 |
| 6 | Regular deworming of animals | 2.80 |
| 7 | Use of fly-repellants/acaricides against tick/fly infestation | 2.04 |
| 8 | Isolation of sick animals | 1.60 |
| 9 | Prompt reporting of an outbreak of a contagious disease to the local veterinarian | 2.88 |
| V. Housing | | |
| 1 | Enough floor space in shed | 2.60 |
| 2 | Proper construction of floor | 2.52 |
| 3 | Proper drainage and minimum dampness of floor | 2.72 |
| 4 | Adequate manger-facility | 2.12 |
| 5 | Presence of urine pit | 1.96 |
| 6 | Presence of dung channel | 2.04 |
| 7 | Disposal of dung in covered manure pit | 2.28 |
| 8 | Proper roofing | 2.36 |

| VI. Marketing | | |
|---------------|---|------|
| 1 | Purchase of animals after veterinary checkup/opinion | 2.24 |
| 2 | Obtaining loans from nationalised banks instead of village money lender | 2.48 |
| 3 | Purchasing animals after looking for breed qualities | 2.24 |
| 4 | Purchasing animals after observing a milking | 2.68 |
| 5 | Purchasing animals after observing udder appearance | 2.16 |
| 6 | Timely culling of unproductive/under productive stock | 2.72 |

APPENDIX-VI

Mean scores of various practices included in constructing the scale to measure extent of adoption of scientific calf rearing technologies

| I. Nutrition practices | | Mean score |
|------------------------|---|------------|
| 1 | Feeding of colostrum to calves | 3.00 |
| 2 | Feeding of concentrates from first week | 1.32 |
| 3 | Feeding of concentrates according to age of calf | 2.24 |
| 4 | Feeding of green grass from first week of life | 1.44 |
| 5 | Feeding of green grass according to age of calf | 2.20 |
| 6 | Continuous supply of clean drinking water to calves | 2.60 |
| 7 | Milk feeding calves proportionate to weight gain | 2.68 |
| 8 | Milk feeding upto 3 months | 2.64 |
| 9 | Cultivation of green fodder to feed to calves | 1.96 |
| 10 | Compounding of balanced rations for calves | 2.00 |
| 11 | Feeding cod-liver oil (5 ml) to calves daily | 1.92 |
| 12 | Feeding minerals to calves | 2.00 |
| II. Management | | |
| 1 | Periodic weight recording | 1.80 |
| 2 | Feeding colostrum within 30 minutes after birth | 2.60 |
| 3 | Brushing of calves daily | 1.64 |
| 4 | Timely control methods for diarrhoea | 2.68 |
| 5 | Daily removal of dung from calf shed | 2.20 |
| 6 | Daily washing of calf shed | 2.36 |
| 7 | Dehorning of calves | 1.40 |
| 8 | Measures for summer protection | 2.00 |
| 9 | Antiseptic application to navel at birth | 2.56 |
| 10 | Weaning of calves | 1.28 |

| | | |
|----------------------|---|------|
| III. Disease control | | |
| 1 | Vaccination of calves against F.M.D. | 2.72 |
| 2 | Vaccination of calves against H.S. | 2.28 |
| 3 | Regular deworming of calves | 2.80 |
| 4 | Periodic examination of dung of calves | 2.16 |
| 5 | Isolation of sick calves | 2.52 |
| 6 | Treatment of sick animals by a veterinarian | 2.88 |
| IV. Housing | | |
| 1 | Proper floor in calf shed | 2.44 |
| 2 | Adequate space for calves | 2.36 |
| 3 | Storing manure in covered pits | 2.12 |
| 4 | Adequate manger facilities | 1.80 |
| 5 | Properly constructed roof | 2.16 |
| 6 | Proper ventilation of calf-shed | 2.24 |
| 7 | Presence of dung channel | 2.24 |
| 8 | Adequate drainage and minimum moisture/dampness of floor | 2.04 |
| V. Marketing | | |
| 1 | Purchase of calves after veterinary checkup/opinion | 2.12 |
| 2 | Obtaining loans from nationalised banks instead of village money lender | 2.36 |
| 3 | Sale of bull calves | 2.20 |