# COMPARATIVE EFFECTIVENESS OF EXTENSION COMMUNICATION MEDIA USED UNDER THE DAIRY DEVELOPMENT PROGRAMME AND EXTENT OF ADOPTION OF IMPROVED DAIRY HUSBANDRY PRACTICES BY MEMBERS OF MILK COOPERATIVES IN SELECTED AREAS IN TRICHUR TALUK

BY

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## THESIS

Submitted in partial fulfilment
of the requirement for the degree

MASTER OF VETERINARY SCIENCE
Faculty of Veterinary and Animal Sciences
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## DECLARATION

I hereby declare that the thesis entitled "COMPARATIVE EFFECTIVENESS OF EXTENSION COMMUNICATION MEDIA USED UNDER DAIRY DEVELOPMENT PROGRAMME AND EXTENT OF ADOPTION OF IMPROVED DAIRY HUSBANDRY PRACTICES BY MEMBERS OF MILK COOPERATIVES IN SELECTED AREAS IN TRICHUR TALUK" 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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Mannuthy,
28-12-1979.

## CERTIFICATE

Certified that the thesis entitled "COMPARATIVE EFFECTIVENESS OF EXTENSION COMMUNICATION MEDIA USED UNDER DAIRY DEVELOPMENT PROGRAMME AND EXTENT OF ADOPTION OF IMPROVED DAIRY HUSBANDRY PRACTICES BY MEMBERS OF MILK CO-OPERATIVES IN SELECTED AREAS IN TRICHUR TALUK" is a record of research work done independently by Smt.M.R.Subhadra, under my guidance and supervision and that it has not previously formed the basis for the award of any degree, diploma, associateship or fellowship to her.

Mannuthy,
28-12-'79.

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D E D I C A T E D

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# INTRODUCTION

# INTRODUCTION

The population of cattle and buffaloes in India is considered to be the largest in the World. It was recorded in the year 1972 that there were 179 million cattle and 58 million buffaloes (National Commission on Agriculture, 1976) in India. Considering the population of cattle and buffaloes in the year 1951, there has been an increase of 23.6 million cows and 14.6 million buffaloes during the period from 1951 to 1972 (Bansil, 1977). The total breedable milch animals including cows and buffaloes available in the year 1972 was 150.37 million (National Commission on Agriculture, 1976).

Though the cattle and buffalo population has been the largest in the World, the annual milk production recorded is only 23.2 million tonnes during 1973-74 and the per capita availability of milk per day stood at 110 g (National Commission on Agriculture, 1976). The low production of milk in India compared to other milk producing countries in the World is due to the extremely low production potential of the animals combined with inadequate level of nutrition and insufficient health coverage available to the animals.

Kerala State, located in the South Western corner of the Indian sub-continent has the highest density of human population in India. The State is delimited by the Western ghats on the east and the Arabian Sea on the West. The longstrip of land has three regions, namely, the eastern hilly tract, the central plains and the western coastal areas. It has a tropical vegetation and groves of coconut palms intermingled with several other crops especially paddy. The main soil of the State is red laterite. The State has a heavy rainfall and correspondingly paddy is cultivated on the plains and the staple food of the people is rice. On the basis of rainfall, temperature and soil which influence the nature and quality of livestock, Kerala has been grouped under coastal region. There are a good number of rivers flowing down from the Western ghats in the east to the Arabian Sea in the West. The entire State gives the appearance of a village with small size holdings entirely brought under cultivation. Out of a total area of 3,885,000 Hectares, only 2,931,000 Hectares are available for cultivation (Subramanyan and Nair, 1979). The entire area available around each household is utilised for cultivating a variety of crops. Livestock and poultry form an integral part of this mixed farming pattern of Kerala. Rice being the staple food of the

people, the paddy straw is fed to cattle. The Kerala State has a highly literate population. The human population in the State is 213.47 lakhs in 1972 which is 3.90 per cent of the Indian population (Bureau of Economics and Statistics, 1978).

According to the Livestock Census in 1972, there were 2.85 million cattle and 4.7 lakh buffaloes in Kerala (Farm Information Bureau, 1979). There has been no appreciable change in the cattle and buffalo population from 1961 to 1972. The total breedable milch animals including cows and buffaloes has been enumerated as 2.45 million according to the Livestock Census of 1977 (Farm Information Bureau, 1979). Since Kerala had only non-descript type of cattle with very low milk yield, the first and foremost task was to upgrade the stock of cattle through grading up programmes. The method of artificial insemination was introduced in the year 1951 and a massive campaign of erradication of scrub bulls was also undertaken simultaneously. Artificial insemination of cows, an accepted policy of the State Government, with the exotic germ-plasm from pure-bred Jersey bulls was subsequently introduced from 1952-53 with a view to increasing the production potentialities of local cattle.

The dairy farmers have also largely accepted the introduction of Jersey blood compared to other Indian breeds due to several advantages. Today there is a very large number of cross-bred cattle in Kerala. Even with half of the dairy population forming improved stock of milch cattle, the productivity of the animals remained low compared to that in many other States in India. In 1966 the total milk production recorded was 0.27 million tons and the daily per capita availability of milk was 40 g (Livestock Census, 1966). During 1975-76 the milk produced was estimated to be 0.55 million tons with an average per capita availability of 65 g (Subramanyan and Nair, 1979). The requirement of milk to be consumed per day is 284 g as per National Advisory Committee's recommendation (Patel, 1976).

The income from and status of the Animal Husbandry Sector in Kerala do not compare well with those of other States in India. It is a common feature with the majority of cattle owners in Kerala to maintain only one or two milch animals as an integral part of the mixed farming pattern of the farming sector. Dairying existed mainly as a rural and subsidiary occupation and only as complementary to crop production although the income from milk

also formed a very important part of the earning. But dairying has not yet assumed commercial proportions. With the extremely low size of holding in the State dairying has ample scope for development on scientific lines for increasing milk supply and providing employment opportunities to the vast educated unemployed.

Dairying was taken up on an intensive scale under the intensive rural development programme during the year 1952. The Key Village Scheme was started in the State with Key Village Centres established as part of the centrally sponsored scheme. Artificial insemination centres functioned under these Key Village Schemes. The Animal Husbandry Department of the State and Key Village Officers (Veterinary Surgeons) under it implemented the programme. Subsequently the Intensive Cattle Development Projects (I.C.D.P.) were taken up during 1964-65 in selected areas in the State and replacing Key Villages. The Veterinary Surgeons and the Stockmen (Livestock Assistants) were the field staff under the I.C.D.P. Prior to this, with the establishment of the National Extension Service Blocks (N.E.S. Blocks) under the Community Development programme, the Animal Husbandry Extension Officers (Veterinary Surgeons) and the Stockmen (Livestock Assistants) were also involved in the dairy development programmes in

the block areas. Thus it would seem that the dairy development programme was initiated by the Animal Husbandry and the Development Departments of the State in close collaboration and cooperation. The necessity for a comprehensive development in the dairy sector was keenly felt and the Dairy Development Department was established to tackle the various problems related to it. The various aspects of dairy management along with adequate protection to the marketing of milk through the establishment of milk plants were taken up. The dairy sector was also properly organised on cooperative lines through the establishment of milk cooperatives. The programme of dairy development implemented by the Dairy Development Department of the State is channalised through a network of registered Milk Supply Cooperative Societies. Meanwhile the Small Farmers Development Agency programme (S.F.D.A.) also came into being in 1971 with the objective of assisting the Small and Marginal Farmers and Agricultural Labourers. Through the S.F.D.A. programme milch cattle are purchased and supplied to interested dairy farmers against loans made available to them from nationalised commercial banks. The S.F.D.A. programme is integrated with the programme of the N.E.S. Blocks in as much as the beneficiaries are primarily selected by the Village Extension Officers (Gram

Sevaks) of the Blocks concerned and the milch animals supplied to the farmers are selected by the Veterinary Surgeons attached to the E.E.S. Blocks concerned. These Veterinary Surgeons provide the necessary technical assistance and guidance to the dairy farmers under the S.F.D.A. The necessity for providing adequate facilities to the dairy farmer in the proper bringing up of the cross-bred calves born to the milch cattle supplied under the S.F.D.A. programme was keenly felt. As a result, the Animal Husbandry Department of the State has implemented under the special Animal Husbandry programme through the S.F.D.A. to supply balanced feed at subsidised rates for feeding the cross-bred calves of the small farmers, Marginal Farmers and the Agricultural Labourers for a specific period of time (18 months) from calf-hood to production time. This programme has adequately taken care of the need of nutritional requirements for the build up of a better productive milch cattle base in the State.

The network of Milk Supply Cooperative Societies spread through the villages provide a very effective machinery for connecting the dairy farmer with the various implementing agencies and lending institutions. In addition, the Societies also take care of the input requirements of the dairy farmer with ample

protection to marketing of milk through milk collection and payments in cash with part adjustment of the cost of milk against loans. The dairy farmers are thus benefited by the Milk Supply Cooperative Societies which provide them with credit facilities, marketing facilities and supply of commercial feeds. The Dairy Development Department has further strengthened the societies by providing veterinary services to the dairy farmers who are members of the Societies concerned through the Veterinary Surgeons attached to that Department as well as through supply of green fodder slips free of cost to the dairy farmers for augmenting fodder production in farmers' own plots. The Dairy Development Department has an organised set up consisting of the Assistant Directors, Veterinary Surgeons, Dairy Extension Officers, Dairy Farm Instructors and Cattle Improvement Assistants of which the Assistant Directors, and Veterinary Surgeons are technical personnel while Dairy Extension Officers and Cattle Improvement Assistants are para-technical personnel. The Dairy Farm Instructors and the Cattle Improvement Assistants are the village level contact persons in the programme. The Village Extension Officers of the N.E.S. Blocks also serve as contact persons in the field while the Livestock Assistants of the Animal Husbandry Department attached

to the Veterinary Institution also serve as the contact persons in a limited manner.

The different personnel who are in immediate contact with the dairy farmers employed by the various agencies have been using various extension teaching methods for the dissemination of information on various aspects of dairying and has been recommending various improved practices for adoption. The Radio has been a very effective medium of information communication and the Lesson Series broadcast by the All India Radio, Trichur on "Economic Milk Production" under the Krishi Padhom programme (Programme for broadcasting series of lessons on a particular topic related to agriculture) has been very effective in transferring useful and practical information to the dairy farmers. The Lesson Series published in the local vernacular papers from the Kerala Agricultural University on dairying has also been very useful to the dairy farmers. In addition to these lesson series, articles also appear in "Kalpadhenu", the official Malayalam publication of the Kerala Agricultural University and the "Kerala Karshakan", the official Malayalam publication of the Farm Information Bureau of the Government of Kerala. Several agencies have also been conducting seminars either directly in

connection with a dairy programme or as a part of an agricultural programme. Field Film shows organised and conducted by the various agencies like the Field Publicity Wing of the Government of India, Public Relations Department of the Government of Kerala and the Extension Department of the College of Veterinary and Animal Sciences of the Kerala Agricultural University have contributed substantially to arousing the enthusiasm of the dairy farmers. Fodder demonstration in Farmers' own plots, demonstration on clean milk production and on deworming of calves have been conducted occasionally by the implementing agencies. Cattle shows, calf rallies and milk yield competitions are also occasionally conducted. Kissan Melas, Cattle Shows and Field days are organised once in a year with village level exhibition, seminar and demonstrations for the benefit of farmers. Periodical vaccination campaigns with supply of extension literature are carried out.

The present study will help to assess the role played by the Extension Communication Media at the awareness and the adoption stages in Dairying. The study is expected to locate the specific personal and socio-economic characteristics influencing the adoption of improved practices. The study is also aimed at formulating suitable recommendations and suggestions that may be necessary for effective

information communication leading to early adoption of improved dairy husbandry practices by dairy farmers who are members of milk supply cooperative societies.

The objectives of the study are (1) to know the effectiveness of various extension communication media used in dairy development programmes for disseminating improved dairy husbandry practices (2) to measure the extent of adoption of selected improved dairy husbandry practices and (3) to understand the influence of personal and socio-economic characteristics on the adoption of improved dairy husbandry practices.

# REVIEW OF LITERATURE

## REVIEW OF LITERATURE

The literature reviewed revealed that considerable number of studies have been conducted in the field of innovations relating to crops. Studies pertaining to diffusion and adoption of this study had, therefore, to rely heavily on the techniques and findings in the field of agricultural practices.

Rao and Rao (1970) reported that film-strips was superior to all the other selected audio-visuals in helping farmers in acquiring and in retaining the knowledge on foliar spray of urea for wheat crop.

Joon, Singh and Rana (1970) observed that only 3 per cent of the farmers were adopting all the six practices for HYV of Wheat and Bajra. The rest of them were adopting 2 to 5 practices. It was revealed that of the factors they had studied, size of the land-holding and the extent of the social participation were found to be significantly and positively associated with the adoption of the high yielding varieties. Age and education were not found to be the differentiating characteristics between the participants and non-participants.

Kar, Misra and Choudhuri (1970) stated that the extent of adoption was greatly influenced by the number of contacts made by the extension personnel. Higher the number of contacts made, greater was the rate of adoption. It was also found that farmers within the age group of 41 to 51 years adopted maximum number of innovations. Farmers belonging to the upper and middle caste groups and having education up to the metric standard were found to adopt a maximum number of innovations.

Rajaguru and Satapathy (1971) reported that different sources of information had varied degree of influence on the farmers to take up innovations. For instance, field agents of University Extension Service and neighbours and friends had significant role in disseminating information about the cultivation of high yielding varieties of wheat, rice and maize. Among the mass media agencies literature and radio proved to be most effective information sources. At the adoption stage also, field agents were the most influential sources of information followed by neighbours and literature.

Nair (1971) found that Agricultural Scientists and

extension workers were more utilised by adopter farmers of Hybrid-4 cotton. Age was not related with adoption behaviour of farmers. More number of adopters were from intermediate castes while education and size of holding were found to be positively related to adoption behaviour. Adopter farmers had more number of contacts with Gramsevaks and Agricultural Extension Officers than non-adopter farmers.

Thankamani (1972) observed that neighbourhood sources were the most utilized sources at the awareness stage for the practice selection of seed material. But for the practices, fertilizer application and plant protection measures, government sources were the most effective sources of information at the awareness stage. Agricultural Assistant and Village Level Worker were the sources utilised at the adoption stage.

Reddy and Reddy (1972) reported that age was not an influencing factor with regard to the adoption of improved agricultural practices for paddy and jowar. Farm size was positively associated with the adoption of practices. The level of education had influence on level of adoption.

Jha and Shaktawat (1972) found that caste and size of landholding were not significantly related to adoption behaviour of farmers. Education and degree of contact with the extension agency were found to have positive and significant relationship with the adoption of Hybrid bajra.

Karim and Mahboob (1974) reported that age had no relation with adoption of fertilisers. The higher the organisational participation of the growers, the higher was their adoption of fertilisers.

Sharma and Nair (1974) observed that size of landholding, social participation and contact with extension agency were positively and significantly related with adoption. Education had no significant relationship with adoption.

Vellapandian (1974) in his study reported that mass media was the best important source in influencing farmers belonging to the different adopter categories at the adoption stage of each practice for IR 20 rice cultivation. Out of 120 respondents, majority of the farmers were adopting all the three practices studied. Among the six socio-personal characteristics

namely, age, education, economic condition, social participation, media participation and extension agents' contact, all except age were associated with the extent of adoption.

Anbalagan (1974) observed that adopters were more among young farmers followed by middle and old age groups for HYV of paddy. Adopters were found more among farmers with college education, followed by secondary, primary and illiterate farmers for almost all the practices except spacing, in which the percentage of adopters was the least among the farmers with the highest education. It was also revealed that as the income and the years of experience increased the percentage for adoption of the practices also increased. Percentage of adopters for practices other than seed rate was more among the social participants.

Jothiraj (1974) reported that 11 per cent of the respondents were adopting all the four selected practices; 18 per cent, three practices; 61 per cent, two practices; 8 per cent, at least one practice while 2 per cent of the respondents were not adopting even a single recommended practice pertaining to dairy husbandry. Age of the adopters was found to be negatively correlated

with the extent of adoption of selected dairy husbandry practices. Education, social participation and gross income were positively correlated with the extent of adoption of practices.

Pushkaran (1975) reported that among the major sources of information through which poultry farmers came to know about scientific poultry farming, mass media was highly significant.

Muthiah, Somasundaram and Subaranthnam (1975) observed that indirect influence and individual contact method were on par and were significantly superior to other extension methods in the adoption of high yielding varieties of paddy. Use of radio had also very great influence among the farmers.

Muthiah and Duraiswamy (1975) found that individual contact and indirect influence ranked higher than the other two namely radio and literature for all the plant protection practices. For seed treatment, individual contact was significantly superior to indirect influence. But for dusting and spraying, both methods were on par with regard to their effectiveness.

Menon and Duraiswamy (1975) observed that neighbours and relatives played a dominant role in diffusing the practice of plant protection among small farmers. Group contact methods like agricultural meetings and trainings were found responsible for diffusing the practices such as improved implements, improved seeds and use of fertilisers. Exhibition and filmshow were also effective to some extent in diffusing practices. But extension methods like demonstrations, tours and printed materials had not helped in diffusing practices among small farmers.

Manjaiyan[illegible], Srinivasan and Oliver (1975) observed that radio was effective media for adoption of package of practices for sugarcane. Neighbours and friends ranked second.

Sundaraswamy and Duraiswamy (1975) reported that the majority of the farmers did not adopt all the recommended practices for hybrid Sorghum cultivation. Twentyone per cent of the farmers adopted 10 to 40 per cent of practices, 62 per cent of the farmers adopted 50 to 90 per cent and only 17 per cent adopted 90 to 100 per cent of practices. It was also revealed that rise in education level, higher social participation and contact with extension agency had significant association with

the adoption of recommended practices. But age of the farmer and the number of practices adopted by him had no association.

Subramanyan and Menon (1975) observed that characteristics like larger holding, higher education, higher income, more social participation were significantly and positively associated with the adoption of IR-8 rice by farmers.

Subramanyan, Sundaram, Balakrishnan and Anbalagan (1975) observed that the institutionalized source had played important role in the adoption of artificial insemination. Only 60 per cent of the farmers continuously adopted this practice and a sizeable portion of farmers accounting for 40 per cent had either not tried or discontinued after trial.

Hussian, Menon and Annamalai (1975) reported that individual contact was most effective for the adoption of all the package of practices for IR-8 paddy. Individual contact was found to influence 42 per cent of the farmers to adopt almost all the package of practices while training camp, group discussion and method demonstration influenced 30 per cent, 16 per cent and 12 per cent of farmers respectively.

Muthiah, Somasundaram and Subarathnam (1975) observed that indirect influence caused awareness in 54.48 of the farmers. Individual contact method caused awareness in 44.48 per cent of the farmers. The use of visual material, literature and illustrated talk caused only negligible influence in creating awareness and adoption of high yielding varieties of rice.

Sundaram and Chandrakandan (1975) reported that the individual contact was more effective method than group contact and mass contact in plant protection practices.

Oliver and Basha (1975) observed that individual contact was superior than other extension methods in fertilizer application for cotton. The adoption was high (60 per cent) through individual contact, lecture with flash cards (40 per cent), tape recorded speech (40 per cent) and lecture alone (30 per cent).

Oliver, Annamalai and Parthasarathy (1975) stated that characteristics like age, education and farm income were significantly and positively associated with the adoption of high yielding varieties in agriculture.

Chandrakandan and Subramanyan (1975) observed that of the

six socio-personal factors of farmers studied; except age, all the remaining five factors: viz., education, income, farm size, social participation and media participation had shown significant positive association with adoption of selected farm practices.

Oliver, Duraiswamy and Menon (1975) found that the socio-economic factors like education, income and farm size had significant bearing on learning and adoption of practices of paddy through newspaper 'Dinamani'. The other factors like age and occupation had no association with the adoption of practices.

Menon and Rao (1975) observed that there was no association between the farmers' personal characteristics such as education, economic status, social participation, media participation, age and caste and the adoption of demonstrated improved agricultural practices.

Subramanian (1976) in his study stated that 42 per cent of the respondents had adopted all the seven selected practices; 22 per cent six practices; 16 per cent five practices; 16 per cent four practices and 4 per cent three practices and none of the respondents adopted less than three practices. Age and gross income was found to be negatively correlated with the extent of

adoption of improved poultry practices. Education and farm size were positively correlated with the extent of adoption. It was also revealed that 47 per cent were influenced by government agencies, 28 per cent by neighbourhood agencies, 20 per cent by mass media and 5 per cent by commercial agencies.

Vijayaraghavan (1977) observed that there was wide variation in extent of adoption of all practices for high yielding varieties of paddy except seed rate among small and in all practices among marginal farmers. The correlation coefficients of age, farm size, social participation, socio-economic status, contact with extension agency, knowledge, economic motivation, attitude and scientific orientation with adoption were positive and significant in the case of small farmers.

Sharma (1977) found that the farmers' age, education, income, caste and level of contact with the extension agency had significant association with the adoption of high yielding varieties of wheat. No significant association was found between the farmers' organizational participation and adopters.

Bhatnagar (1978) reported that interpersonal channels

were the most important ones through which farmers got information regarding chemical fertilisers.

Pillai (1978) in his study observed that only one practice out of the 19 practices was fully adopted by all the swine farmers. Fifty per cent and above were full adopters of four practices. Age, education, farm size, caste, social participation and number of pigs had no correlation with the extent of adoption.

Mohanandasan (1979) stated that education was positively and significantly related with adoption of practices for potato in case of big farmers whereas its relationship with adoption in case of small farmers was nonsignificant. Farm size correlated significantly and positively in both the cases. Social participation of small farmers was positively and significantly related to adoption, while that of big farmers it did not show any significant relationship with their adoption. Contact with extension agency and material possession in both the cases, were found to be positively and significantly correlated with the adoption rate.

Annamalai (1979) reported that of all the sources Deputy

Agricultural Officer was used most frequently by the farmers for all the three practices of I.R. 20 paddy at adoption stage. Demonstration, field visits and radio were also utilised by a majority of the farmers.

Narayanappa (1979) in his study observed that neighbours and relatives were the most important sources at awareness stage of farmers growing (PISUM SATIVAM) peas. Education and size of farm were associated with adoption of recommended practices of peas. However age was not associated with adoption.

Sharmukhappa (1979) found that five out of ten recommended practices of arecanut were adopted by more than 90 per cent of the respondents. The personal characteristics like age and education had no significant association with the adoption behaviour of the respondents. Land-holding and social participation were found to be significantly associated with the adoption behaviour.

# MATERIALS AND METHODS

## MATERIALS AND METHODS

The materials and methods have been presented under the following sub-headings:

1. Selection of the study area.
2. Selection of practices.
3. Selection of communication media.
4. Selection of variables and their measurements.
5. Selection of respondents.
6. Methods of investigation.
7. Analytical procedures.
8. Explanation of terms.

### 1. Selection of the study area

The Trichur Taluk consists of four development blocks. The Ollukkara Block area was selected purposively based on the following criteria:

1) Existence of milk supply cooperative societies for over 10 years.

2) Proximity to the Veterinary College for possibility

of adoption of practices when compared to other areas.

3) Existence of relatively larger number of subject matter specialists.

4) Dairy Development programmes were initiated (during 1st Five Year Plan) in this block area earlier than in other areas.

5) Intensive Rural Development Programme has been introduced in this block.

The milk supply cooperative societies selected were as shown below with membership as on 30-6-1979.

| Sl. No. | Name of the Society | Register number | Date of Registration | Membership details. |
|---|---|---|---|---|
| 1. | Mulayam Kootala | R 213 | 1-6-1962 | 227 |
| 2. | Peechi | R 214 | 1-6-1962 | 273 |
| 3. | Vashakumpara | R 267 | 20-1-1965 | 174 |
| 4. | Alpara | R 269 | 20-1-1965 | 309 |
| 5. | Vanniyampara | R 270 | 20-1-1965 | 242 |
| 6. | Chuvannamannu | R 273 | 6-5-1965 | 225 |
| 7. | Mannumangalam | R 278 | 29-7-1965 | 654 |
| | GRAND TOTAL | | | 2104 |

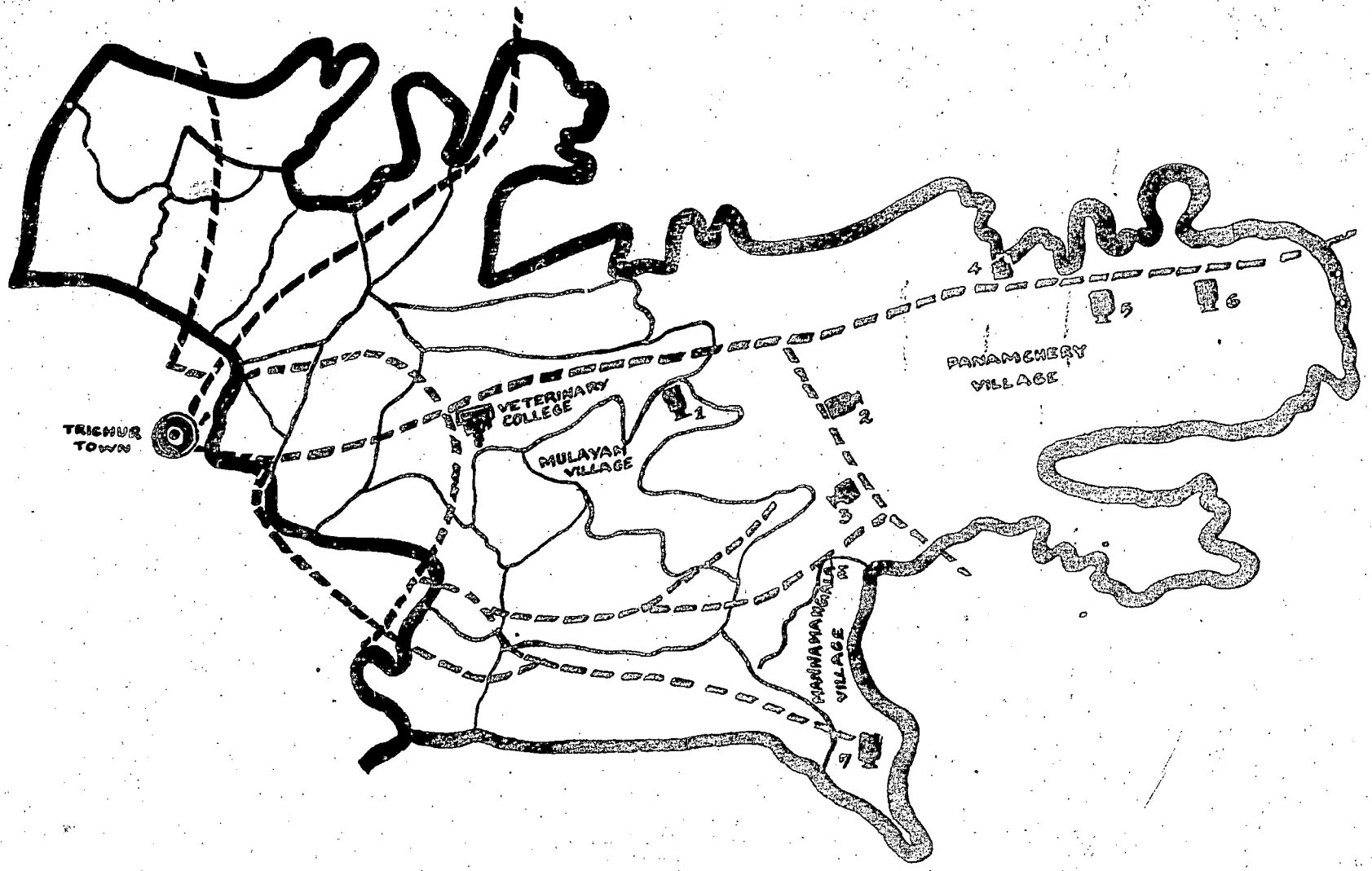


Fig.1. Map showing location of selected Milk Supply Cooperative Societies in National Extension Service Block - Ollukkara .

Block boundary

Village boundary

Road line

1. Mulayam Kootala
2. Alpara
3. Peechi
4. Chuvanna mannu
5. Vazhakkumpara
6. Vahiyam para
7. Mannamangalam.

The selected area and milk supply cooperative societies are shown in the map.

## 2. Selection of practices

The following 10 major improved practices relating to dairy husbandry were selected from the package of practices recommended to farmers and in consultation with experts in the related fields of livestock improvement.

1. Artificial breeding.
2. Early breeding.
3. Proper housing.
4. Feeding Commercial cattle feed.
5. Feeding feed supplements.
6. Feeding fodder.
7. Deworming of calf.
8. Clean Milk Production.
9. Vaccination against contageous diseases.
10. Timely veterinary aid.

## 3. Selection of Communication Media

Communication media have been classified into three following categories:

1. Personal cosmopolite - Communication - extension agents.

2. Personal localite - Communication - friends, relatives and neighbours.

3. Mass Media - Newspaper, radio, printed material, seminar and exhibition.

All the extension communication media in existance in the diffusion of dairy husbandry practices have been considered in the study. The various media grouped under the major categories were as follows:

1. Government agencies (Personal Cosmopolite)

   a) Extension Officer.

   b) Veterinary Surgeon.

   c) Village Extension Officer.

   d) Dairy Farm Instructor.

   e) Livestock Assistant.

   f) Cattle Improvement Assistant.

2. Neighbourhood agencies (Personal localite)

   a) Neighbours, Friends and Relatives.

   b) Milk Supply Cooperative Societies.

3. Mass Media

a) Radio

b) Newspaper

c) Exhibition

d) Demonstration

e) Poster

f) Filmshow

g) Seminar

h) Literature.

4. Selection of variables and their measurements

Age.

Number of completed years by the respondent at the time of interview was considered as the age of the respondent.

The respondents were classified as follows:

a) Young - 35 years and below.

b) Middle - above 35 upto 45 years

c) Old - Above 45 years.

Education.

The respondents were categorised into four groups as follows:

a) Illiterate - One who cannot read and write.

b) Primary - One who is educated upto standard V.

c) Middle - One who had education in standards V, VI and VII.

d) High School - One who had education in standards VIII, IX and X.

Caste.

The respondents were categorised based on the classification by State Government for purposes of educational, economic and other concessions (Kerala Gazette, 1979).

The three categories are as follows:

a) Scheduled Caste.

b) Backward Caste.

c) Others.

Income.

Based on the gross annual income of the family through all sources including dairying the respondents were classified as follows:

a) Low income group - Below Rs.5000 per annum.

b) Medium income group - Rs.5000 to below Rs.10,000 per annum.

c) High income group - Rs.10,000 and above.

Landholding size.

The classification based on size of holding was adopted after the classification of Small Farmers Development Agencies who have fixed criteria for extending aid to farmers.

| | | |
|---|---|---|
| a) Large farmer | - | Above 2 hectares. |
| b) Small farmer | - | 1 to 2 hectares. |
| c) Marginal farmer | - | Below 1 hectare. |
| d) Agricultural labourer | - | 10 cents and below. |

Farming experience.

The duration of dairying carried out by respondents prior to the interview was taken as a measure of dairy farming experience.

The categories into which respondents were grouped are as follows:

| | | |
|---|---|---|
| a) Below 2 years | - | Least experienced. |
| b) 2 to 5 years | - | Less experienced. |
| c) 5 to 10 years | - | Experienced. |
| d) 10 years and above | - | Highly experienced. |

Herd size.

The herd size, in general, in the area was very small and cannot be truely called full-fledged dairy enterprise. Most of the farmers in the area maintained cattle as a supplementary source of income. Hence a very restricted classification had to be resorted to. The respondents were classified as follows:

a) Small - Those with herd strength 2 and below.

b) Medium - Those with herd strength of 3 to 4.

c) Large - Those with herd strength 5 and above.

Social participation.

It is the level of participation of respondents in various organisations as either members and or office bearers. Since the respondents selected were members of Milk Supply Cooperative Societies, this level of participation was assigned the lowest value. The categories adopted were as follows:

a) Low - Membership in one organisation.

b) Medium - Membership in more than one organisation.

c) High - Office bearer in one or more organisation.

Contact with extension agencies.

It is the degree of contact of respondents with the various extension agencies. Based on the importance and technical competency of the agency weights were assigned to calculate the scores of individual respondents to indicate the intensity of contact with extension agencies. The weight given to contacts with technical personnel was two and para-technical personnel one. For frequency of contact the scoring procedure was for often-three; occasionally - two and rarely - one. The scores for each of the 5 extension agencies mentioned were added to obtain the total score for each respondent to assess the degree of contact. The scoring procedure adopted follows that of John Knight (1975) with modifications to suit the present study.

Grouping of respondents was done as follows:

a) Less frequent - Scores upto 7.

b) Frequent - Scores between 8 - 14.

c) More frequent - Scores 15 and above.

5. Selection of respondents

One hundred respondents were selected through a process

of stratified random sampling technique with probability proportional to the number of members. The society-wise distribution of the 100 respondents were as follows:

| | | |
|---|---|---|
| Mulayam Kootala | - | 11 |
| Poochi | - | 13 |
| Vazhakumpara | - | 8 |
| Alpara | - | 14 |
| Vanniyampara | - | 12 |
| Chuvannamannu | - | 11 |
| Mannamangalam | - | 31 |
| GRAND TOTAL | - | 100 |

## 6. Methods of investigation

Data were collected on well-structured and pretested interview schedule through personal interview of the respondents. Adequate care was taken to translate the questionnaire into respondents' mothertongue (Malayalam) and at their own level of understanding. Besides the oral response the actual adoption of practices was assessed through careful observation also. Data from sample were recorded in schedules as shown in appendix

## 7. Analytical procedures

Percentage.

Simple comparison and relationship were made on percentage basis. Percentages were corrected upto two decimal places.

Chisquare.

Chisquare test was applied to test the homogenity in the effectiveness of the communication media and to test the effectiveness of the communication media in influencing adoption of improved practices.

The formula used was as follows (Dixon and Massey, 1957)

$$\chi^2 = \sum_{i=1}^{K} \frac{(Oi - Ei)^2}{Ei} \text{ for } (K - 1) \text{ degrees of freedom.}$$

Whereas O = Observed frequency.

E = Expected frequency.

K = Number of observations.

In order to find out the association or otherwise between the various personal and socio economic characteristics and the

adoption of recommended practices a chisquare test was computed from the two way contingency tables of size r x c. Respondents were first classified into adopters and non-adopters with regard to various practices and these two categories were then studied in relation to the personal and socio-economic characteristics. The aggregate of the adopters in the various personal and socio economic groups were also studied in relation to the aggregate practices adopted through chi-square analysis.

The formula used for computing chisquare values was as follows (Dixon and Massey, 1957 and Mueller, and Schuessler, 1969).

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

Where $(r - 1) (c - 1)$ = Degrees of freedom of a r x c table for the chisquare value calculated.

O = Observed frequency.

E = Expected frequency.

r = number of rows.

c = number of columns.

Paired 't'.

Paired 't' test was applied to compare communication media in their effectiveness on the aggregate of the respondents and practices.

The formula used for this was as follows (Dixon and Massey, 1957)

$$t = \frac{\bar{d} - 0}{\sqrt{S} / \sqrt{N}}$$

Where $\bar{d}$ = Mean difference between the paired observations.

$S^2$ = Variance of the differences.

N = Number of observations.

Normality distribution.

Frequency distribution of extent of adoption (adoption quotient) was used for fitting a normal curve. Mean and standard deviation which are the two parameters of the normal curve were calculated. The normal curve fitted was

$$p(x) = \frac{1}{\sqrt{2\,\Pi} \times 20.58} \cdot \left\{ - \frac{(x - 60.8)^2}{2 \times 20.58} \right\}$$

$$-\infty < x < +\infty$$

(Dixon and Massey, 1957)

Where

p = probability density (constant)

x = adoption quotient

e = exponential function (constant)

The goodness of fit of the normal curve to the empirical distribution was carried out using the Chi-square test criterion.

The normal curve fitted to the frequency distribution was drawn with number of respondents on the Y axis and adoption quotient on X axis.

Adoption quotient.

Adoption is a decision to continue full use of the recommended practice. Extent of adoption was measured in terms of the adoption quotient.

Jothiraj (1974) calculated the adoption quotient as

No. of practices adopted X 100. This formula was adopted for
No. of practices selected
calculating the extent of adoption.

8. Explanation of the terms

Communication media.

Vehicles for passing on information such as through

personal media (extension and neighbourhood agencies) and through impersonal media (mass media).

Effectiveness.

Influence of the media on the farmers in making them to accept the recommended practices.

Awareness stage.

At the awareness stage the individual is exposed to the innovation but lacks complete information about it. The individual is aware of the innovation, but is not yet motivated to seek further information (Rogers, 1962).

Adoption stage.

At the adoption stage the individual decides to continue the full use of the innovation (Rogers, 1962).

Adopter.

A respondent who has accepted the recommended practice.

Non-adopter.

A respondent who has not accepted the recommended practice.

Artificial breeding.

Inseminating the cow artificially which is the accepted policy of the Kerala State Animal Husbandry Department for cattle improvement.

Early breeding.

Inseminating the cow in the second heat but within three months after calving.

Proper housing.

Accommodation of cattle in well-ventilated cattle shed with impervious flooring having sufficient slope and provided with drains to drain away the urine.

Feeding commercial cattle feed.

Feeding of cattle with cattle feed available in ready to feed form from the market.

Feeding feed supplements.

Feeding of nutrient supplements like mineral mixture and vitamins.

Feeding of fodder.

Feeding of improved varieties of grasses and legumes either purchased or home grown.

Deworming of calf.

Routine administration of medicines for removing the intestinal worms.

Clean milk production.

Observing hygiene and sanitation in the production and handling of milk.

Vaccination against contagious diseases.

Protective inoculations against diseases like Foot and Mouth, Haemorrhagic Septicaemia and Anthrax.

Timely Veterinary Aid.

Consulting the Veterinarian soon after an animal is found sick.

# RESULTS

# RESULTS

The results based on the objectives for study have been presented under three major sections, viz.,

1. Extension Communication media used by the respondents at awareness and adoption stages.

2. Extent of adoption of practices.

3. Influence of personal and socio-economic characteristics on the adoption of recommended practices.

## 1. Extension communication media used by the respondents at awareness and adoption stages

The information sources, grouped into three major categories, used by the respondents at the awareness and adoption stages for the practices studied were as shown in Table 1.

Awareness stage.

All the 100 respondents were aware of the practice "Artificial breeding" while 43 per cent heard the practice from Neighbourhood agencies, 29 per cent from Mass media and 28 per cent

Table 1. Extension Communication Media used by the respondents at awareness and adoption stages for the improved dairy husbandry practices.

| Sl. No. | Practices | Awareness Sources | | | | Adoption | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Government Agencies | Neighbourhood Agencies | Mass Media | Total | Government Agencies | Neighbourhood Agencies | Mass Media | Total |
| 1. | Artificial breeding | 28(28) | 43(43) | 29(29) | 100(100) | 35(53.85) | 14(21.54) | 16(24.61) | 65(65) |
| 2. | Early breeding | 28(30.77) | 38(41.76) | 25(27.47) | 91(91) | 29(61.70) | 13(27.66) | 5(10.64) | 47(47) |
| 3. | Proper housing | 25(26.59) | 43(45.75) | 26(27.66) | 94(96) | 14(35.00) | 19(47.50) | 7(17.50) | 40(40) |
| 4. | Feeding Commercial Cattle feed | 4(4) | 89(89) | 7(7) | 100(100) | 3(3.80) | 69(87.34) | 7(8.86) | 79(79) |
| 5. | Feeding feed supplements | 16(19.28) | 61(73.49) | 6(7.23) | 83(83) | 20(50.00) | 20(50.00) | 0.0 | 40(40) |
| 6. | Feeding fodder | 20(22.21) | 53(58.89) | 17(18.90) | 90(90) | 18(54.54) | 11(33.34) | 4(12.12) | 33(33) |
| 7. | Deworming of calf | 77(79.38) | 12(12.38) | 8(8.24) | 97(97) | 73(93.59) | 3(3.85) | 2(2.56) | 78(78) |
| 8. | Clean milk production | 9(9.78) | 40(43.48) | 43(46.73) | 92(92) | 15(19.00) | 23(29.12) | 41(51.88) | 79(79) |
| 9. | Vaccination against contageous diseases | 50(50.50) | 24(24.25) | 25(25.25) | 99(99) | 41(77.35) | 8(15.10) | 4(7.55) | 53(53) |
| 10. | Timely veterinary aid | 94(94) | 5(5) | 1(1) | 100(100) | 94(100) | 0.0 | 0.0 | 94(94) |

Figures in parentheses denote the percentage.

from Government agencies.

"Early breeding" practice was known to 91 respondents. Of these, Neighbourhood agencies were used by 41.76 per cent followed by Government agencies (30.77 per cent) and Mass media (27.47 per cent).

"Proper housing" practice was known to 94 respondents. Of these, Neighbourhood agencies were used by 45.75 per cent followed by Mass media (27.66 per cent) and Government agencies (26.59 per cent).

All the 100 respondents were aware of the practice "Feeding Commercial Cattle feed" while 89 per cent heard the practice from Neighbourhood agencies, 7 per cent from Mass media and 4 per cent from Government agencies.

"Feeding feed supplements" practice was known to 83 respondents. Of these, Neighbourhood agencies were used by 75.49 per cent followed by Government agencies (19.23 per cent) and Mass media (7.23 per cent).

"Feeding fodder" practice was known to 90 respondents.

Of these, Neighbourhood agencies were used by 58.89 per cent followed by Government agencies (22.21 per cent) and Mass media (18.90 per cent).

"Deworming of calf" practice was known to 97 respondents. Of these, Government agencies were used by 79.38 per cent followed by Neighbourhood agencies (12.38 per cent) and Mass media (8.24 per cent).

"Clean milk production" practice was known to 92 respondents. Of these, Mass media were used by 46.73 per cent followed by Neighbourhood agencies (43.48 per cent) and Government agencies (9.78 per cent).

"Vaccination against contageous diseases" practice was known to 99 respondents. Of these, Government agencies were used by 50.50 per cent followed by Mass media (25.25 per cent) and Neighbourhood agencies (24.25 per cent).

All the 100 respondents were aware of the practice "Timely veterinary aid" while 94 per cent heard the practice from Government agencies, 5 per cent from Neighbourhood agencies and 1 per cent from Mass media.

Adoption stage.

"Artificial breeding" practice was adopted by 65 per cent of respondents. The Communication media that influenced the adoption of this practice were Government agencies (53.05 per cent), Mass media (24.61 per cent) and Neighbourhood agencies (21.54 per cent).

"Early breeding" practice was adopted by 47 per cent of respondents. Government agencies had influenced the adoption by 61.70 per cent, Government agencies by 27.66 per cent and Mass media by 10.64 per cent.

"Proper housing" practice was adopted by 40 per cent of respondents. Of these, Neighbourhood agencies had influenced the adoption by 47.50 per cent, Government agencies by 35 per cent and Mass media by 17.50 per cent.

"Feeding Commercial cattle feed" practice was adopted by 79 per cent of respondents. The Communication media that influenced the adoption of this practice were Neighbourhood agencies (87.34 per cent), Mass media (8.86 per cent) and Government agencies (3.80 per cent).

"Feeding feed supplements" practice was adopted by 40 per cent of respondents. Government agencies and Neighbourhood agencies had equally influenced the 40 respondents.

"Feeding fodder" practice was adopted by 33 per cent of respondents. The Communication media that influenced the adoption of this practice were Government agencies (54.54 per cent), Neighbourhood agencies (33.34 per cent) and Mass media (12.12 per cent).

"Deworming of calf" practice was adopted by 78 per cent of respondents. Government agencies had influenced the adoption by 93.59 per cent, Neighbourhood agencies by 3.85 per cent and Mass media by 2.56 per cent.

"Clean milk production" practice was adopted by 79 per cent of respondents. The Communication media that influenced the adoption of this practice were Mass media (51.03 per cent), Neighbourhood agencies (29.12 per cent) and Government agencies (19 per cent).

"Vaccination against contageous diseases" practice was adopted by 53 per cent of respondents. Government agencies had

influenced the adoption by 77.35 per cent, Neighbourhood agencies 15.10 per cent and Mass media 7.55 per cent.

"Timely veterinary aid" practice was adopted by 94 respondents. The Communication media that influenced the adoption of this practice were Government agencies only (100 per cent).

Paired comparison of the Communication media in the adoption of recommended practices.

Results of the chi-square analysis on comparison of pairs of Communication media used at the adoption stage for the selected practices were as shown in Table 2.

Pairing was done between Government agencies and Neighbourhood agencies; Government agencies and Mass media and Neighbourhood agencies and Mass media.

1. Analysis of the three media in the aggregate (last column of Table 2) for different practices revealed high significance in the use of media for practices like "Artificial breeding", "Early breeding", "Feeding commercial cattle feed", "Feeding feed supplements", "Deworming of calf", "Clean milk

Table 2. Paired comparison of the communication media used by respondents in the adoption of dairy husbandry practices.

| Sl. No. | Practices | Chi-square values | | | |
|---|---|---|---|---|---|
| | | Government Agencies Vs. Neighbourhood Agencies | Government Agencies Vs. Mass media | Neighbourhood Agencies Vs. Mass media | Aggregate of agencies. |
| 1. | Artificial Breeding | 9.00 ** | 7.08 ** | 0.13 | 12.40 ** |
| 2. | Early breeding | 6.10 * | 16.94 ** | 3.56 | 19.06 ** |
| 3. | Proper housing | 0.76 | 2.33 | 5.54 * | 5.45 |
| 4. | Feeding commercial cattle feed | 60.50 ** | 1.60 | 50.58 ** | 104.00 ** |
| 5. | Feeding feed supplements | 0.0 | 20.00 ** | 20.00 ** | 20.00 ** |
| 6. | Feeding fodder | 1.69 | 8.91 ** | 3.27 | 8.91 * |
| 7. | Deworming of calf | 64.47 ** | 67.21 ** | 0.20 | 127.46 ** |
| 8. | Clean Milk Production | 1.60 | 12.07 ** | 5.06 * | 13.47 ** |
| 9. | Vaccination against contageous Diseases | 22.32 ** | 30.42 ** | 1.35 | 46.68 ** |
| 10. | Timely Veterinary Aid | 94.00 ** | 94.00 ** | 0 | 188.00 ** |

** Highly significant $P < 0.01$
* Significant $P < 0.05$

production", "Vaccination against contageous diseases" and "Timely Veterinary aid"; Significant for "Feeding fodder" and no significance for the practice "Proper housing".

2. Government agencies Vs. Neighbourhood agencies.

For the practices "Artificial breeding", "Feeding commercial cattle feed", "Deworming of calf", "Vaccination against contageous diseases" and "Timely Veterinary aid" the Chi-square values were found to be significant at 1 per cent level and for the practice "Early breeding" significant at 5 per cent level. For the practices "Proper housing", "Feeding feed supplements", "Feeding fodder" and "Clean milk production" the chi-square values were not significant.

3. Government agencies Vs. Mass media.

The calculated chi-square values for all the recommended practices except "Proper housing" and "Feeding commercial cattle feed" were found to be significant at 1 per cent level. For these two practices the results were not significant.

4. Neighbourhood agencies Vs. Mass media.

For the practices "Feeding commercial cattle feed" and

"Feeding feed supplements" the difference between the two media was highly significant while for "Proper housing" and "Clean milk production" the difference was significant at 5 per cent level. For the rest six practices the chi-square values were found to be not significant.

Media used by respondents at awareness and adoption stages of the recommended practices in the aggregate.

The extent of use of Communication media in the awareness and adoption of the 10 practices in the aggregate were as shown in Table 3.

At the awareness stage Neighbourhood agencies accounted for 43.13 per cent followed by Government agencies, 37.10 per cent and Mass media, 19.77 per cent. Veterinary Surgeons were found to be the almost the principal source of information with Government agencies. Within the Neighbourhood agencies Milk Supply Cooperative Societies ranked first. Radio and Seminar dominated among the Mass media sources. The sources of information that played an insignificant role (less than 2 per cent) at the awareness stage were Village Extension Officers, Livestock Assistants and Cattle Improvement Assistants among Government agencies and

Table 3. Distribution of respondents according to Communication Media used at awareness and adoption stages for improved dairy husbandry practices in the aggregate.

| Media | Awareness stage | | Adoption stage | |
|---|---|---|---|---|
| | No. of respondents | Per cent to total | No. of respondents | Per cent to total |
| **Government agencies** | | | | |
| Extension Officer | 29 | 3.07 | 13 | 2.14 |
| Veterinary Surgeon | 273 | 28.86 | 289 | 47.53 |
| Village Extension Officer | 16 | 1.69 | 8 | 1.32 |
| Dairy Farm Instructor | 21 | 2.22 | 24 | 3.95 |
| Livestock Assistant | 8 | 0.84 | 6 | 0.99 |
| Cattle Improvement Assistant | 4 | 0.42 | 2 | 0.33 |
| TOTAL | 351 | 37.10 | 342 | 56.26 |
| **Neighbourhood agencies** | | | | |
| Neighbours, Friends and Relatives | 171 | 18.08 | 56 | 9.21 |
| Milk Supply Cooperative Societies | 237 | 25.05 | 124 | 20.39 |
| TOTAL | 408 | 43.13 | 180 | 29.60 |
| **Mass media** | | | | |
| Radio | 93 | 9.83 | 33 | 5.43 |
| Newspaper | 7 | 0.74 | 6 | 0.99 |
| Exhibition | 0 | 0 | 0 | 0 |
| Poster | 10 | 1.06 | 1 | 0.16 |
| Demonstration | 14 | 1.48 | 10 | 1.64 |
| Seminar | 56 | 5.92 | 25 | 4.11 |
| Filmshow | 7 | 0.74 | 11 | 1.81 |
| Literature | 0 | 0 | 0 | 0 |
| TOTAL | 187 | 19.77 | 86 | 14.14 |
| GRAND TOTAL | 946 | 100.00 | 608 | 100.00 |

Government agencies Vs. Neighbourhood agencies.
t value = 1.16 (Not significant)
Government agencies Vs. Mass media.
t value = 2.19 significant at 5 per cent level

Newspaper, Poster, demonstration, filmshow and literature among mass media.

At the adoption stage Government agencies accounted for 56.26 per cent followed by Neighbourhood agencies, 29.60 per cent and Mass media, 14.14 per cent. Veterinary Surgeons were found to be the powerful media at the adoption stage within Government agencies. Within the Neighbourhood agencies Milk Supply Cooperative Societies ranked first. Among the Mass media radio and seminar were found to be superior to others. The sources of information that played an insignificant role (less than 2 per cent) at the adoption stage were Village Extension Officers, Livestock Assistants and Cattle Improvement Assistants among Government agencies and Newspaper, poster, demonstration, filmshow and literature among Mass media.

The paired 't' test applied to the data of Table 3 for the aggregate of practices at the adoption stage revealed significant difference between Government agencies and Mass media only in the adoption of dairy husbandry practices. No significant difference in the effectiveness was exhibited either between Government agencies and Neighbourhood agencies or between Neighbourhood agencies and Mass media.

## 2. Extent of adoption of practices

The dairy husbandry practices were first grouped into four major subjectwise categories, viz., Disease control, Breeding, Management and Feeding and the extent of adoption studied as shown in Table 4. Disease control constituted two practices, viz., "Vaccination against contageous diseases" and "Timely Veterinary aid"; breeding comprised of two practices, viz., "Artificial breeding" and "Early breeding"; management comprised of three practices, viz., "Proper housing", "Deworming of calf", "Clean milk production" and feeding comprised of three practices, viz., "Feeding commercial cattle feed", "Feeding feed supplements" and "Feeding fodder". Fiftyone per cent of 100 respondents had totally adopted the disease control category while 35 per cent breeding, 29 per cent management and 12 per cent feeding. On the whole there were only 5 per cent of the respondents who have adopted all the 10 practices.

Based on the number of practices adopted and adoption quotient respondents were grouped as shown in table 5.

The results indicated that only 5 per cent of the respondents had adoption quotient of 100; 8 per cent 90; 11 per cent 80; 20 per

Table 4. Respondents who have adopted fully the selected practices under major categories in dairy husbandry.

| Sl. No. | Major category | Number of practices selected | No. of adopters | Per cent to total respondents (N = 100) |
|---|---|---|---|---|
| 1. | Disease control | 2 | 51 | 51 |
| 2. | Breeding | 2 | 35 | 35 |
| 3. | Management | 3 | 29 | 29 |
| 4. | Feeding | 3 | 12 | 12 |
| 5. | All the practices | 10 | 5 | 5 |

Table 5. Extent of adoption of recommended practices.

| Sl. No. | No. of practices adopted | Adoption quotient | Respondents (No. & %) | Cumulative Percentage of respondents |
|---|---|---|---|---|
| 1. | All the ten practices | 100 | 5 | 5 |
| 2. | Nine practices | 90 | 8 | 13 |
| 3. | Eight practices | 80 | 11 | 24 |
| 4. | Seven practices | 70 | 20 | 44 |
| 5. | Six practices | 60 | 17 | 61 |
| 6. | Five practices | 50 | 18 | 79 |
| 7. | Four practices | 40 | 8 | 87 |
| 8. | Three practices | 30 | 9 | 96 |
| 9. | Two practices | 20 | 3 | 99 |
| 10. | One practice only | 10 | 1 | 100 |

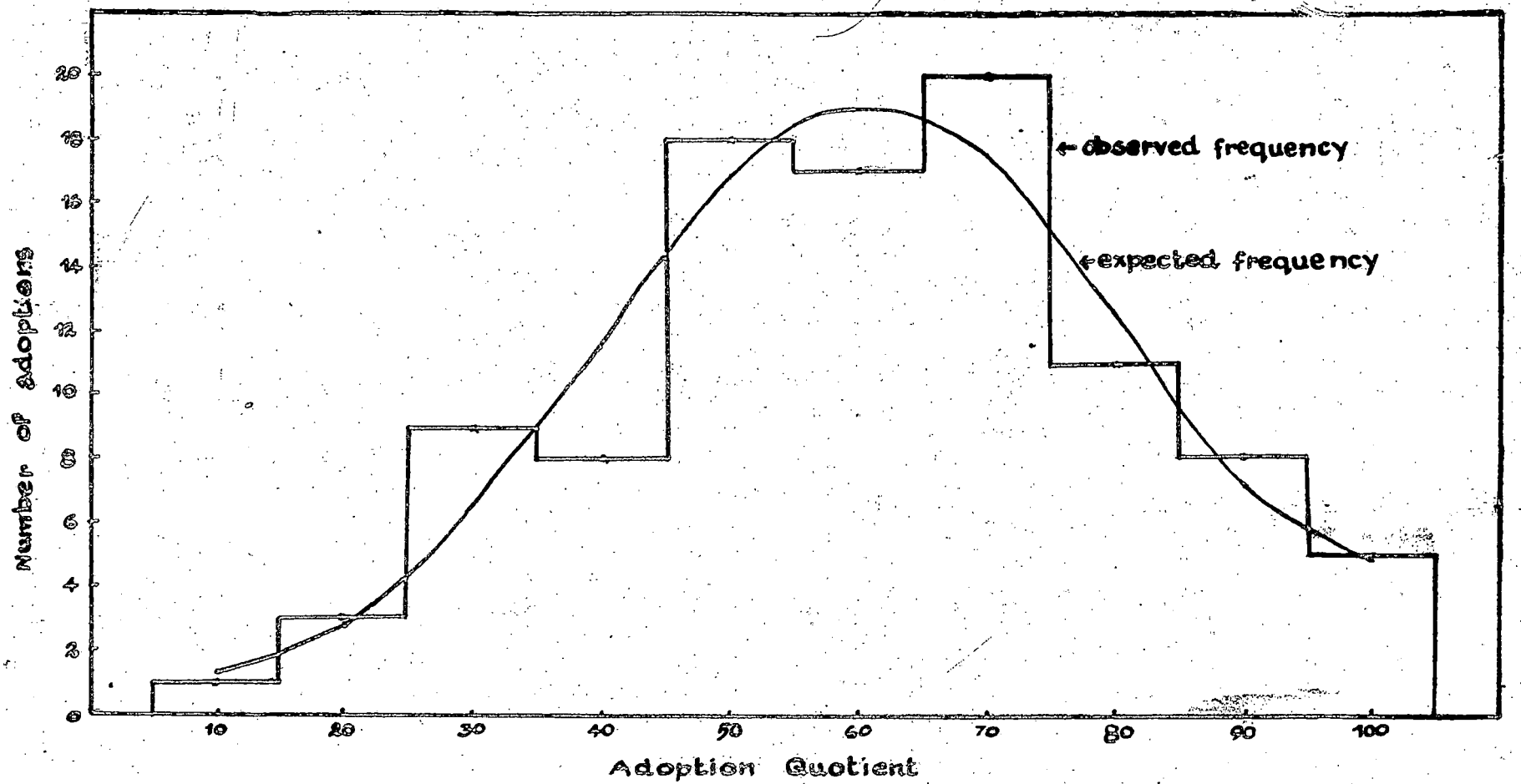


Fig.2: Normal curve fitted to the frequency distribution of adopters

cent 70; 17 per cent 60; 18 per cent 50; 8 per cent 40; 9 per cent 30; 3 per cent 20 and 1 per cent 10. Cumulative percentage of respondents indicated was that all the 100 respondents had adopted at least one practice.

Empirical distribution of adopters to test goodness of fit to normal distribution (Table 6).

The empirical distribution of adopters based on adoption quotient was analysed to test whether the distribution confirms to normal distribution of adopters or deviates from normality. The chi-square test showed no significant difference. The normal curve fitted was as shown in fig.2.

## 3. Influence of personal and socio-economic characteristics on the adoption of recommended practices

The nine personal and socio-economic characteristics studied in relation to adoption behaviour were age, education, caste, income, land-holding size, farming experience, herd size, social participation and contact with extension agencies.

### 1. Age Vs. Adoption of practices.

Respondents were classified into three age groups, viz.,

Table 6. Chi-square analysis of emperical distribution of adopters to test goodness of fit to Normal Curve.

| No. of practices adopted | Adoption quotient | Respondents | |
|---|---|---|---|
| | | Observed | Expected |
| One practice only | 10 | 1 | 1.29 |
| Two practices | 20 | 3 | 2.80 |
| Three practices | 30 | 9 | 6.47 |
| Four practices | 40 | 8 | 11.50 |
| Five practices | 50 | 18 | 16.91 |
| Six practices | 60 | 17 | 18.95 |
| Seven practices | 70 | 20 | 17.56 |
| Eight practices | 80 | 11 | 12.61 |
| Nine practices | 90 | 8 | 7.05 |
| Ten practices | 100 | 5 | 4.85 |
| GRAND TOTAL | | 100 | 100.00 |

$X^2$(4 df.) = 2.25 (Not significant)

young, middle and old. There were 23, 28 and 49 per cent in the three groups respectively. Distribution of the respondents according to age group and practice adopted was as shown in Table 7 and Fig.3.

Analysing through chi-square the adopter category in the aggregate of practices adopted and age groups showed no significance.

"Artificial breeding" practice was adopted by 65 respondents comprising of 51 per cent old, 29 per cent middle and 20 per cent young adopters. The 35 non-adopters included 45 per cent old, 26 per cent middle and 29 per cent young respondents. The chi-square analysis revealed no significant difference.

"Early breeding" practice was adopted by 47 respondents comprising of 42 per cent old, 28 per cent middle and 30 per cent young adopters. The 53 non-adopters included 55 per cent old, 28 per cent middle and 17 per cent young respondents. The chi-square analysis revealed no significant difference.

"Proper housing" practice was adopted by 40 respondents comprising of 40 per cent old, 32 per cent middle and 28 per cent

Fig.3. Bar chart showing the influence of Age on adoption of recommended dairy husbandry practices.

young

middle

old

Table 7. Age Vs. Adoption of practices

| Sl. No. | Recommended practices | Adopters | | | | Non-adopters | | | | Chi-square value |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Young | Middle | Old | Total | Young | Middle | Old | Total | |
| 1. | Artificial Breeding | 13 (20) | 19 (29) | 33 (51) | 65 (100) | 10 (29) | 9 (26) | 16 (45) | 35 (100) | 0.946 |
| 2. | Early breeding | 14 (30) | 13 (28) | 20 (42) | 47 (100) | 9 (17) | 15 (28) | 29 (55) | 53 (100) | 2.532 |
| 3. | Proper housing | 11 (28) | 13 (32) | 16 (40) | 40 (100) | 12 (20) | 15 (25) | 33 (55) | 60 (100) | 2.171 |
| 4. | Feeding commercial cattle feed | 20 (25) | 25 (32) | 34 (43) | 79 (100) | 3 (14) | 3 (14) | 15 (72) | 21 (100) | 5.392 * |
| 5. | Feeding feed supplements | 9 (22) | 14 (35) | 17 (43) | 40 (100) | 14 (23) | 14 (23) | 32 (54) | 60 (100) | 1.749 |
| 6. | Feeding fodder | 9 (27) | 13 (39) | 11 (34) | 33 (100) | 14 (21) | 15 (22) | 38 (57) | 67 (100) | 5.142 * |
| 7. | Deworming of calf | 19 (24) | 24 (31) | 35 (45) | 78 (100) | 4 (18) | 4 (18) | 14 (64) | 22 (100) | 2.489 |
| 8. | Clean milk production | 18 (23) | 21 (27) | 40 (50) | 79 (100) | 5 (24) | 7 (33) | 9 (43) | 21 (100) | 0.482 |
| 9. | Vaccination against contagecous diseases | 13 (25) | 16 (30) | 24 (45) | 53 (100) | 10 (21) | 12 (26) | 25 (53) | 47 (100) | 0.625 |
| 10. | Timely Veterinary aid | 20 (21) | 27 (29) | 47 (50) | 94 (100) | 3 (50) | 1 (17) | 2 (33) | 6 (100) | 2.636 |

Figures in parantheses denote the percentage
$X^2$ value for adopter category = 6.64 (18 d.f)

*** Significant at 1 per cent level.
** Significant at 5 per cent level.
* Significant at 10 per cent level.

young adopters. The 60 non-adopters included 55 per cent old, 25 per cent middle and 20 per cent young respondents. The chi-square analysis revealed no significant difference.

"Feeding commercial cattle feed" practice was adopted by 79 respondents compriaing of 43 per cent old, 32 per cent middle and 25 per cent young adopters. The 21 non-adopters included 72 per cent old and 14 per cent each middle and young respondents. The chi-square value was significant at 10 per cent level.

"Feeding feed supplements" practice was adopted by 40 respondents comprising of 43 per cent old, 35 per cent middle and 22 per cent young adopters. The 60 non-adopters included 54 per cent old and 23 per cent each middle and young respondents. The chi-square analysis revealed no significant difference.

"Feeding fodder" practice was adopted by 33 respondents comprising of 34 per cent old, 39 per cent middle and 27 per cent young adopters. The 67 non-adopters included 57 per cent old, 22 per cent middle and 21 per cent young respondents. The chi-square value was significant at 10 per cent level.

"Deworming of calf" practice was adopted by 78 respondents comprising of 45 per cent old, 31 per cent middle and 24 per cent young adopters. The 22 non-adopters including 64 per cent old and 18 per cent each middle and young respondents. The chi-square analysis revealed no significant difference.

"Clean milk production" practice was adopted by 79 respondents comprising of 50 per cent old, 27 per cent middle and 23 per cent young adopters. The 21 non-adopters included 43 per cent old, 33 per cent middle and 24 per cent young respondents. The chi-square analysis revealed no significant difference.

"Vaccination against contageous diseases" practice was adopted by 53 respondents comprising of 45 per cent old, 30 per cent middle and 25 per cent young adopters. The 47 non-adopters included 53 per cent old, 26 per cent middle and 21 per cent young respondents. The chi-square analysis revealed no significant difference.

"Timely veterinary aid" practice was adopted by 94 respondents comprising of 50 per cent old, 29 per cent middle and 21 per cent young adopters. The 6 non-adopters included

2 old, 1 middle and 3 young respondents. The chi-square analysis revealed no significant difference.

2. Education Vs. Adoption of practices.

Respondents were classified into four groups based on level of education attained, viz., illiterate, primary, secondary and high school. There were 7,39,35 and 19 per cent in the four groups respectively. There were no collegiates among the respondents. Distribution of the respondents according to educational group and practice adopted was as shown in Table 8 and Fig.4.

Analysing through chi-square the adopter category in the aggregate of practices adopted and educational groups showed no significance.

"Artificial breeding" practice was adopted by 65 respondents comprising of 6 per cent illiterate, 45 per cent primary, 29 per cent middle and 20 per cent high school adopters. The 35 non-adopters included 9 per cent illiterate, 29 per cent primary, 46 per cent middle and 16 per cent high school respondents. The chi-square analysis revealed no significant difference.

g.4. Bar chart showing the influence of Education on adoption of recommended dairy husbandry practices.

Table 8. Education Vs. Adoption of practices.

| Sl. No. | Recommended practices | Adopters | | | | | Non-adopters | | | | | Chi-square value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Illiterate | Primary | Middle | High School | Total | Illiterate | Primary | Middle | High School | Total | |
| 1. | Artificial breeding | 4 (6) | 29 (45) | 19 (29) | 13 (20) | 65 (100) | 3 (9) | 10 (29) | 16 (46) | 6 (16) | 35 (100) | 3.55 |
| 2. | Early breeding | 2 (4) | 15 (32) | 20 (43) | 10 (21) | 47 (100) | 5 (9) | 24 (45) | 15 (28) | 9 (18) | 53 (100) | 3.78 |
| 3. | Proper housing | 1 (2) | 10 (25) | 17 (43) | 12 (30) | 40 (100) | 6 (10) | 29 (48) | 18 (30) | 7 (12) | 60 (100) | 10.59 |
| 4. | Feeding commercial cattle feed | 4 (5) | 29 (37) | 30 (38) | 16 (20) | 79 (100) | 3 (14) | 10 (48) | 5 (24) | 3 (14) | 21 (100) | 3.78 |
| 5. | Feeding feed supplements | 1 (2) | 15 (38) | 18 (45) | 6 (15) | 40 (100) | 6 (10) | 24 (40) | 17 (28) | 13 (22) | 60 (100) | 4.45 |
| 6. | Feeding fodder | 0 (-) | 12 (36) | 15 (45) | 6 (19) | 33 (100) | 7 (10) | 27 (40) | 20 (30) | 13 (20) | 67 (100) | 5.09 |
| 7. | Deworming of calf | 4 (5) | 29 (37) | 28 (36) | 17 (22) | 78 (100) | 3 (14) | 10 (45) | 7 (32) | 2 (9) | 22 (100) | 3.61 |
| 8. | Clean milk production | 4 (5) | 33 (42) | 25 (32) | 17 (21) | 79 (100) | 3 (14) | 6 (29) | 10 (48) | 2 (9) | 21 (100) | 5.22 |
| 9. | Vaccination against contageous diseases | 4 (8) | 20 (38) | 19 (36) | 10 (18) | 53 (100) | 3 (6) | 19 (40) | 16 (34) | 9 (20) | 47 (100) | 0.11 |
| 10. | Timely veterinary aid | 6 (6) | 38 (40) | 33 (35) | 17 (19) | 94 (100) | 1 (17) | 1 (17) | 2 (33) | 2 (33) | 6 (100) | 2.36 |

$X^2$ value for adopter category = 14.29 (27 d.f)

Figures in parentheses denote the percentage

*** Significant at 1 per cent level.
** Significant at 5 per cent level.
* Significant at 10 per cent level.

"Early breeding" practice was adopted by 47 respondents comprising of 4 per cent illiterate, 32 per cent primary, 43 per cent middle and 21 per cent high school adopters. The 53 non-adopters included 9 per cent illiterate, 45 per cent primary, 28 per cent middle and 18 per cent high school respondents. The chi-square analysis revealed no significant difference.

"Proper housing" practice was adopted by 40 respondents comprising of 2 per cent illiterate, 25 per cent primary, 43 per cent middle and 30 per cent high school adopters. The 60 non-adopters included 10 per cent illiterate, 48 per cent primary, 30 per cent middle and 12 per cent high school adopters. The chi-square value was significant at 10 per cent level.

"Feeding commercial cattle feed" practice was adopted by 79 respondents comprising of 4 per cent illiterate, 37 per cent primary, 38 per cent middle and 20 per cent high school adopters. The 21 non-adopters included 14 per cent illiterate, 48 per cent primary, 24 per cent middle and 14 per cent high school respondents. The chi-square analysis revealed no significant difference.

"Feeding feed supplements" practice was adopted by 40 respondents comprising of 2 per cent illiterate, 38 per cent

primary, 45 per cent middle and 15 per cent high school adopters. The 60 non-adopters included 10 per cent illiterate, 40 per cent primary, 28 per cent middle and 22 per cent high school respondents. The chi-square analysis revealed no significant difference.

"Feeding fodder" practice was adopted by 33 respondents comprising of 36 per cent primary, 45 per cent middle and 19 per cent high school adopters. None of the adopters were illiterate. The 67 non-adopters included 10 per cent illiterate, 40 per cent primary, 30 per cent middle and 20 per cent high school respondents. The chi-square analysis revealed no significant difference.

"Deworming of calf" practice was adopted by 78 respondents comprising of 5 per cent illiterate, 37 per cent primary, 36 per cent middle and 22 per cent high school adopters. The 22 non-adopters included 14 per cent illiterate, 45 per cent primary, 32 per cent middle and 9 per cent high school respondents. The chi-square analysis revealed no significant difference.

"Clean milk production" practice was adopted by 79 respondents comprising of 5 per cent illiterate, 42 per cent

primary, 32 per cent middle and 21 per cent high school adopters. The 21 non-adopters included 14 per cent illiterate, 29 per cent primary, 48 per cent middle and 9 per cent high school respondents. The chi-square analysis revealed no significant difference.

"Vaccination against contageous diseases" practice was adopted by 53 respondents comprising of 8 per cent illiterate, 38 per cent primary, 36 per cent middle and 18 per cent high school adopters. The 47 non-adopters included 6 per cent illiterate, 40 per cent primary, 34 per cent middle and 20 per cent high school respondents. The chi-square analysis revealed no significant difference.

"Timely veterinary aid" practice was adopted by 94 respondents comprising of 6 per cent illiterate, 40 per cent primary, 35 per cent middle and 19 per cent high school adopters. The 6 non-adopters included 1 each illiterate and primary and 2 each middle and high school respondents. The chi-square analysis revealed no significant difference.

3. Caste Vs. Adoption of practices.

Respondents were classified into three caste groups, viz.,

scheduled, backward and others. There were 4,22 and 74 per cent in the three groups respectively. Distribution of the respondents according to caste group and practice adopted was as shown in Table 9 and Fig.5.

Analysing through Chi-square the adopted category in the aggregate of practices adopted and caste groups showed no significance.

"Artificial breeding" practice was adopted by 65 respondents comprising of 5 per cent scheduled, 18 per cent backward and 77 per cent others. The 35 non-adopters included 2 per cent scheduled, 29 percent backward and 69 per cent others. The chi-square analysis revealed no significant difference.

"Early breeding" practice was adopted by 47 respondents comprising of 21 per cent backward and 79 per cent others. None of the adopters belonged to scheduled caste. The 53 non-adopters included 2 per cent scheduled, 29 per cent backward and 69 per cent others. The chi-square analysis revealed no significant difference.

"Proper housing" practice was adopted by 40 respondents comprising of 18 per cent backward and 82 per cent others. None

Fig. 5. Bar chart showing the influence of Caste on adoption of recommended dairy husbandry practices.

Table 9. Caste Vs. Adoption practices

| Sl. No. | Recommended practices | Adopters | | | | Non-adopters | | | | Chi-square value |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Scheduled | Backward | Others | Total | Scheduled | Backward | Others | Total | |
| 1. | Artificial breeding | 3 (5) | 12 (18) | 50 (77) | 65 (100) | 1 (2) | 10 (29) | 24 (69) | 35 (100) | 1.448 |
| 2. | Early breeding | 0 (-) | 10 (21) | 37 (79) | 47 (100) | 4 (8) | 12 (23) | 37 (69) | 53 (100) | 3.936 |
| 3. | Proper housing | 0 (-) | 7 (18) | 33 (82) | 40 (100) | 4 (7) | 15 (25) | 41 (68) | 60 (100) | 3.931 |
| 4. | Feeding commercial cattle feed | 2 (3) | 17 (21) | 60 (76) | 79 (100) | 2 (10) | 5 (24) | 14 (66) | 21 (100) | 2.260 |
| 5. | Feeding feed supplements | 1 (5) | 4 (10) | 35 (85) | 40 (100) | 3 (5) | 18 (30) | 39 (65) | 60 (100) | 6.381 ** |
| 6. | Feeding fodder | 2 (6) | 5 (15) | 26 (79) | 33 (100) | 2 (3) | 17 (25) | 48 (72) | 67 (100) | 1.725 |
| 7. | Deworming of calf | 4 (5) | 14 (18) | 60 (77) | 78 (100) | 0 (-) | 8 (36) | 14 (64) | 22 (100) | 4.185 |
| 8. | Clean milk production | 4 (5) | 13 (16) | 62 (79) | 79 (100) | 0 (-) | 9 (43) | 12 (57) | 21 (100) | 7.340** |
| 9. | Vaccination against contageous diseases | 3 (6) | 8 (15) | 42 (79) | 53 (100) | 1 (2) | 14 (30) | 32 (68) | 47 (100) | 3.641 |
| 10. | Timely Veterinary aid | 4 (4) | 17 (18) | 73 (78) | 94 (100) | 0 (-) | 5 (83) | 1 (17) | 6 (100) | 14.001*** |

Figures in parentheses denote the percentage.
$\chi^2$ value for adopter category = 9.01 (18 d.f)

*** Significant at 1 per cent level.
** Significant at 5 per cent level.
* Significant at 10 per cent level.

of the adopters belonged to scheduled caste. The 60 non-adopters included 7 per cent scheduled, 25 per cent backward and 68 per cent others. The chi-square analysis revealed no significant difference.

"Feeding commercial cattle feed" practice was adopted by 79 respondents comprising of 3 per cent scheduled, 21 per cent backward and 76 per cent others. The 21 non-adopters included 10 per cent scheduled, 24 per cent backward and 66 per cent others. The chi-square analysis revealed no significant difference.

"Feeding feed supplements" practice was adopted by 40 respondents comprising of 5 per cent scheduled, 10 per cent backward and 85 per cent others. The 60 non-adopters included 5 per cent scheduled, 30 per cent backward and 65 per cent others. The chi-square value was significant at 5 per cent level.

"Feeding fodder" practice was adopted by 33 respondents comprising of 6 per cent scheduled, 15 per cent backward and 79 per cent others. The 67 non-adopters included 3 per cent scheduled, 25 per cent backward and 72 per cent others. The chi-square analysis revealed no significant difference.

"Deworming of calf" practice was adopted by 78 respondents comprising of 5 per cent Scheduled, 18 per cent backward and 77 per cent others. The 22 non-adopters included 36 per cent backward and 64 per cent others. None of the respondents belonged to scheduled caste among non-adopters. The chi-square analysis revealed no significant difference.

"Clean milk production" was adopted by 79 respondents comprising of 5 per cent scheduled, 16 per cent backward and 79 per cent others. The 21 non-adopters included 43 per cent backward and 57 per cent others. The chi-square value was significant at 5 per cent level.

"Vaccination against contageous diseases" practice was adopted by 53 respondents comprising of 6 per cent Scheduled, 15 per cent backward and 17 per cent others. The 47 non-adopters included 2 per cent scheduled, 30 per cent backward and 68 per cent others. The chi-square analysis revealed no significant difference.

"Timely veterinary aid" practice was adopted by 94 respondents comprising of 4 per cent scheduled, 18 per cent backward and 73 per cent others. The 6 non-adopters included 5 backward and 1 others. The chi-square value was significant at 1 per cent level.

4. Income Vs. Adoption of practices.

Respondents were classified into three income groups, viz., low, medium and high. There were 57, 31 and 12 per cent in the three groups respectively. Distribution of the respondents according to income group and practice adopted was as shown in table 10 and Fig.6

Analysing through chi-square the adopter category in the aggregate of practices adopted and income groups showed no significance.

"Artificial breeding" practice was adopted by 65 respondents comprising of 51 per cent low, 32 per cent medium and 17 per cent high. The 35 non-adopters included 69 per cent low, 29 per cent medium and 2 per cent high. The chi-square value was significant at 10 per cent level.

"Early breeding" practice was adopted by 47 respondents comprising of 53 per cent low, 36 per cent medium and 11 per cent high. The 53 non-adopters included 60 per cent low, 26 per cent medium and 14 per cent high. The chi-square analysis revealed no significant difference.

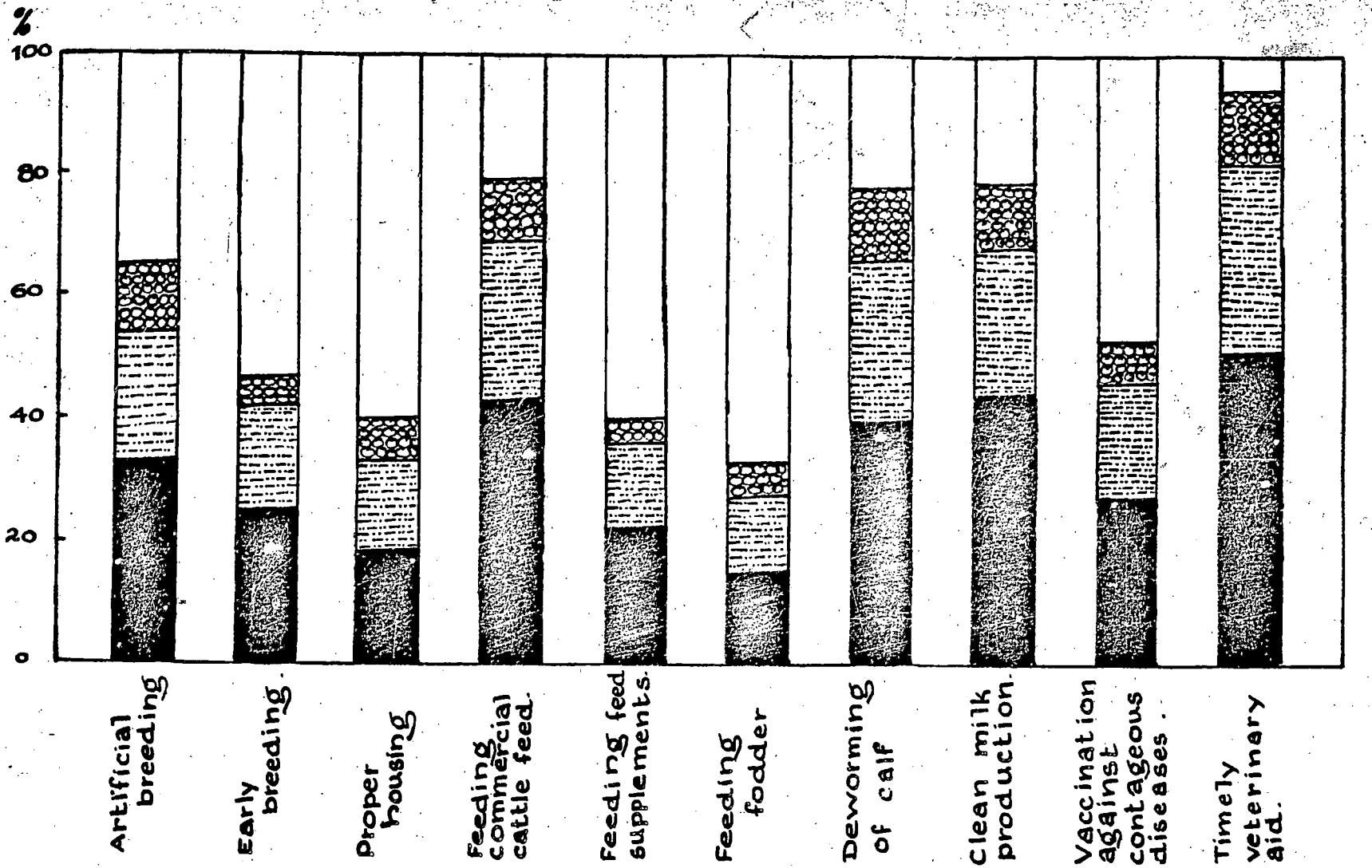


Fig. 6. Bar chart showing the influence of Income on adoption of recommended dairy husbandry practices.

Table 10. Income Vs. Adoption of practices

| Sl. No. | Recommended practices | Adopters | | | | Non-adopters | | | | Chisquare value. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Low | Medium | High | Total | Low | Medium | High | Total | |
| 1. | Artificial breeding | 33 (51) | 21 (32) | 11 (17) | 65 (100) | 24 (69) | 10 (29) | 1 (2) | 35 (100) | 5.118* |
| 2. | Early breeding | 25 (53) | 17 (36) | 5 (11) | 47 (100) | 32 (60) | 14 (26) | 7 (14) | 53 (100) | 1.127 |
| 3. | Proper housing | 18 (45) | 15 (38) | 7 (17) | 40 (100) | 39 (65) | 16 (27) | 5 (8) | 60 (100) | 4.275 |
| 4. | Feeding commercial cattle feed | 43 (54) | 26 (32) | 10 (14) | 79 (100) | 14 (67) | 5 (24) | 2 (9) | 21 (100) | 1.015 |
| 5. | Feeding feed supplements | 22 (55) | 14 (35) | 4 (10) | 40 (100) | 35 (58) | 17 (28) | 8 (14) | 60 (100) | 0.746 |
| 6. | Feeding fodder | 15 (45) | 12 (36) | 6 (19) | 33 (100) | 42 (63) | 19 (28) | 6 (9) | 67 (100) | 3.177 |
| 7. | Deworming of calf | 40 (51) | 26 (33) | 12 (16) | 78 (100) | 17 (77) | 5 (23) | 0 (-) | 22 (100) | 4.623* |
| 8. | Clean milk production | 44 (56) | 24 (30) | 11 (14) | 79 (100) | 13 (62) | 7 (33) | 1 (5) | 21 (100) | 1.319 |
| 9. | Vaccination against contageous diseases | 27 (51) | 19 (36) | 7 (13) | 53 (100) | 30 (64) | 12 (26) | 5 (10) | 47 (100) | 0.072 |
| 10. | Timely veterinary aid | 51 (54) | 31 (33) | 12 (13) | 94 (100) | 6 (100) | 0 (-) | 0 (-) | 6 (100) | 4.815 * |

Figures in parentheses denote the percentage.

$X^2$ value for adopter category = 4.22 (18 d.f)

*** Significant at 1% level.

** Significant at 5% level.

* Significant at 10% level.

"Proper housing" practice was adopted by 40 respondents comprising of 45 per cent low, 38 per cent medium and 17 per cent high. The 60 non-adopters included 65 per cent low, 27 per cent medium and 8 per cent high. The chi-square analysis revealed no significant difference.

"Feeding commercial cattle feed" practice was adopted by 79 respondents comprising of 54 per cent low, 32 per cent medium and 14 per cent high. The 21 non-adopters included 67 per cent low, 24 per cent medium and 9 per cent high. The chi-square analysis revealed no significant difference.

"Feeding feed supplements" practice was adopted by 40 respondents comprising of 55 per cent low, 35 per cent medium and 10 per cent high. The 60 non-adopters included 58 per cent low, 28 per cent medium and 14 per cent high. The chi-square analysis revealed no significant difference.

"Feeding fodder" practice was adopted by 33 respondents comprising of 45 per cent low, 36 per cent medium and 19 per cent high. The non-adopters included 63 per cent low, 28 per cent medium and 9 per cent high. The chi-square analysis revealed no significant difference.

"Deworming of calf" practice was adopted 78 respondents comprising of 51 per cent low, 33 per cent medium and 16 per cent high. The 22 non-adopters included 77 per cent low and 23 per cent medium. The chi-squqre value was significant at 10 per cent level.

"Clean milk production" practice was adopted by 79 respondents comprising of 56 per cent low, 30 per cent medium and 14 per cent high. The 21 non-adopters included 62 per cent low, 23 per cent medium and 5 per cent high. The chi-square analysis revealed no significant difference.

"Vaccination against contageous diseases" practice was adopted by 53 respondents comprising of 51 per cent low, 36 per cent medium and 13 per cent high. The 47 non-adopters included 64 per cent low, 26 per cent medium and 10 per cent high. The chi-squqre analysis revealed no significant difference.

"Timely veterinary aid" practice was adopted by 94 respondents comprising of 54 per cent low, 33 per cent medium and 13 per cent high. The 6 non-adopters were low income group. The chi-square value was significant at 10 per cent level.

5. Land-holding size Vs. Adoption of practices.

Respondents were classified into four groups based on the size of land-holding possessed, viz., large farmer, small farmer, marginal farmer and agricultural labourer. There were 4, 27, 64 and 5 per cent in the four groups respectively. Distribution of the respondents according to land-holding size group and practice adopted was shown in Table 11 and Fig.7.

Analysing through chi-square the adopter category in the aggregate of practices adopted and land-holding size groups showed no significance.

"Artificial breeding" practice was adopted by 65 respondents comprising of 5 per cent large farmer, 32 per cent small farmer, 60 per cent marginal farmer and 3 per cent agricultural labourer. The 35 non-adopters included 35 large farmer, 3 per cent small farmer, 17 per cent marginal farmer and 9 per cent agricultural labourer. The chi-square analysis revealed no significant difference.

"Early breeding" practice was adopted by 47 respondents comprising of 6 per cent large farmer, 30 per cent small farmer, 57 per cent marginal farmer and 7 per cent agricultural labourer.

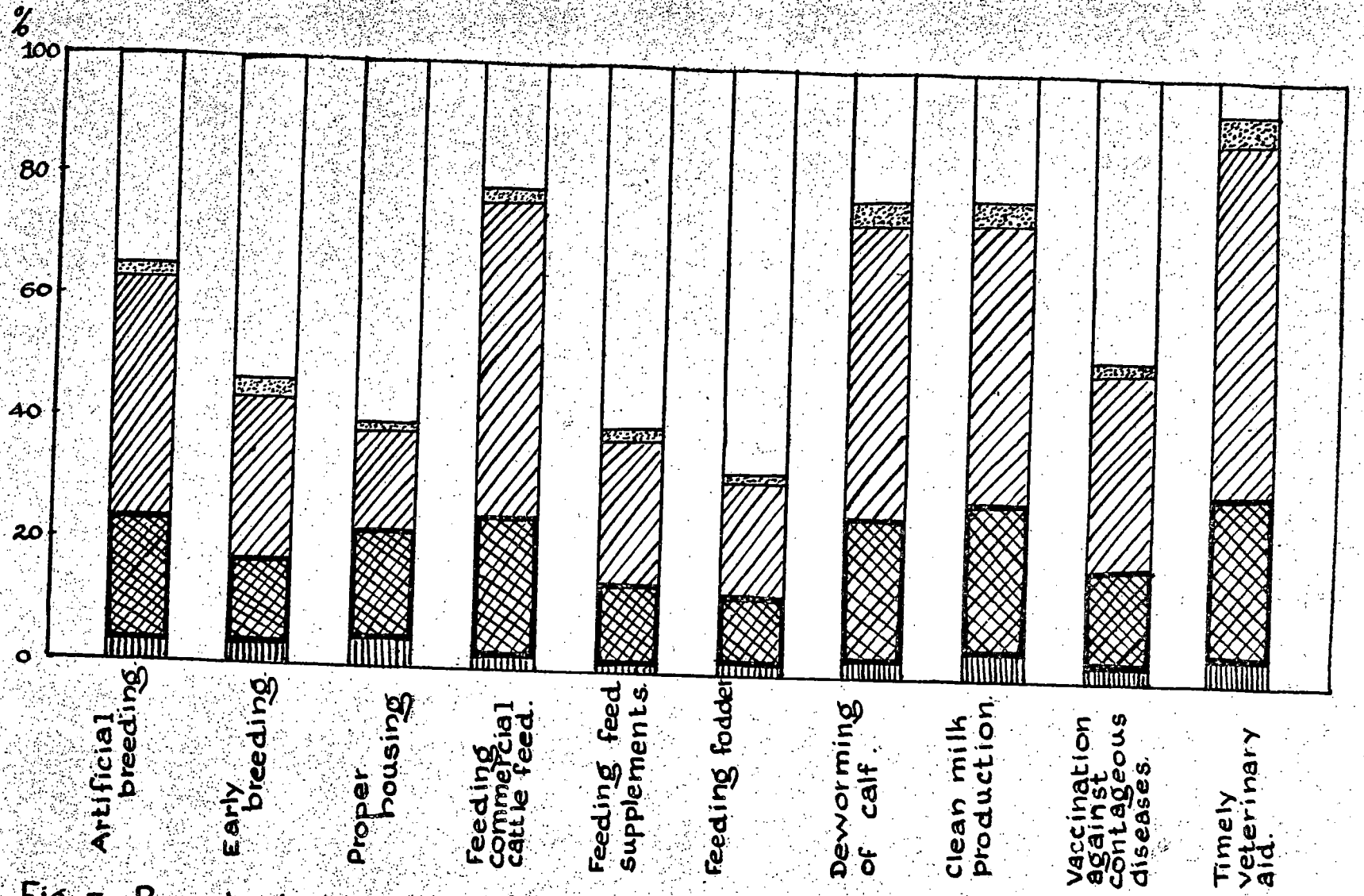


Fig. 7. Bar chart showing the influence of Land holding size on adoption of recommended dairy husbandry practices.

large farmer. small farmer. marginal farmer. Agricultural labourer. non-adopter.

Table 11. Land-holding size Vs. Adoption of practices.

| Sl. No. | Recommended practices | Adopters | | | | | Non-adopters | | | | | Chisquare value. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | L.F. | S.F. | M.F. | A.L. | Total | L.F. | S.F. | M.F. | A.L. | Total | |
| 1. | Artificial breeding | 3 (5) | 21 (32) | 39 (60) | 2 (3) | 65 (100) | 1 (3) | 6 (17) | 25 (71) | 3 (9) | 35 (100) | 3.951 |
| 2. | Early breeding | 3 (6) | 14 (30) | 27 (57) | 3 (7) | 47 (100) | 1 (2) | 13 (25) | 37 (70) | 2 (3) | 53 (100) | 2.317 |
| 3. | Proper housing | 4 (10) | 18 (45) | 17 (43) | 1 (2) | 40 (100) | 0 (-) | 9 (15) | 47 (78) | 4 (7) | 60 (100) | 19.648 *** |
| 4. | Feeding commercial cattle feed | 2 (3) | 23 (29) | 52 (66) | 2 (2) | 79 (100) | 2 (10) | 4 (19) | 12 (57) | 3 (14) | 21 (100) | 7.430 * |
| 5. | Feeding feed supplements | 1 (3) | 13 (33) | 24 (60) | 2 (4) | 40 (100) | 3 (5) | 14 (23) | 40 (67) | 3 (5) | 60 (100) | 1.289 |
| 6. | Feeding fodder | 2 (6) | 11 (33) | 19 (58) | 1 (3) | 33 (100) | 2 (3) | 16 (24) | 45 (67) | 4 (6) | 67 (100) | 1.954 |
| 7. | Deworming of calf | 3 (4) | 23 (29) | 48 (62) | 4 (5) | 68 (100) | 1 (5) | 4 (18) | 16 (73) | 1 (4) | 22 (100) | 1.181 |
| 8. | Clean milk production | 4 (5) | 25 (32) | 46 (58) | 4 (5) | 79 (100) | 0 (-) | 2 (10) | 18 (86) | 1 (4) | 21 (100) | 6.032 |
| 9. | Vaccination against contageous diseases | 2 (4) | 16 (30) | 33 (62) | 2 (4) | 53 (100) | 2 (4) | 11 (23) | 31 (66) | 3 (7) | 47 (100) | 0.831 |
| 10. | Timely veterinary aid | 4 (4) | 27 (29) | 58 (62) | 5 (5) | 94 (100) | 0 (-) | 0 (-) | 6 (100) | 0 (-) | 6 (100) | 3.590 |

Figures in parentheses denote the percentage.

$X^2$ value for adopter category = 12.23 (27 d.f)

*** Significant at 1% level.
** Significant at 5% level.
* Significant at 10% level.

The 53 non-adopters included 2 per cent large farmer, 25 per cent small farmer, 70 per cent marginal farmer and 3 per cent agricultural labourer. The chi-square analysis revealed no significant difference.

"Proper housing" practice was adopted by 40 respondents comprising of 10 per cent large farmer, 45 per cent small farmer, 43 per cent marginal farmer and 2 per cent agricultural labourer. The 60 non-adopters included 15 per cent small farmer, 78 per cent marginal farmer and 7 per cent agricultural labourer. The chi-square value was significant at 1 per cent level.

"Feeding commercial cattle feed" practice was adopted by 79 respondents comprising of 3 per cent large farmer, 29 per cent small farmer, 66 per cent marginal farmer and 2 per cent agricultural labourer. The 21 non-adopters included 10 percent large farmer, 19 per cent small farmer, 57 per cent marginal farmer and 14 per cent agricultural labourer. The chi-square value was significant at 10 per cent level.

"Feeding feed supplements" practice was adopted by 40 respondents comprising of 3 per cent large farmer, 33 per cent small farmer, 60 per cent marginal farmer and 4 per cent agricultural labourer.

The 60 non-adopters included 5 per cent large farmer, 23 per cent small farmer, 67 per cent marginal farmer and 5 per cent agricultural labourer. The chi-square analysis revealed no significant difference.

"Feeding fodder" practice was adopted by 33 respondents comprising of 6 per cent large farmer, 33 per cent small farmer, 58 per cent marginal farmer and 3 per cent agricultural labourer. The 67 non-adopters included 3 per cent large farmer, 24 per cent small farmer, 67 per cent marginal farmer and 6 per cent agricultural labourer. The chi-square analysis revealed no significant difference.

"Deworming of calf" practice was adopted by 78 respondents comprising of 4 per cent large farmer, 29 per cent small farmer, 62 per cent marginal farmer and 5 per cent agricultural labourer. The 22 non-adopters included 5 per cent large farmer, 18 per cent small farmer, 73 per cent marginal farmer and 4 per cent agricultural labourer. The chi-square analysis revealed no significant difference.

"Clean milk production" practice was adopted by 79 respondents comprising of 5 per cent large farmer, 32 per cent small farmer,

58 per cent marginal farmer and 5 per cent agricultural labourer. The 21 non-adopters included 10 per cent small farmer, 86 per cent marginal farmer and 4 per cent agricultural labourer. The chi-square analysis revealed no significant difference.

"Vaccination against contageous diseases" practice was adopted by 53 respondents comprising of 4 per cent large farmer, 30 per cent small farmer, 62 per cent marginal farmer and 4 per cent agricultural labourer. The 47 non-adopters included 4 per cent large farmer, 23 per cent small farmer, 66 per cent marginal farmer and 7 per cent agricultural labourer. The chi-square analysis revealed no significant difference.

"Timely veterinary aid" practice was adopted by 94 respondents comprising of 4 per cent large farmer, 29 per cent small farmer, 62 per cent marginal farmer and 5 per cent agricultural labourer. The 6 non-adopters were marginal farmers. The chi-square analysis revealed no significant difference.

6. Farming experience Vs. Adoption of practices.

Respondents were classified into four groups based on the duration of dairying carried out by them, viz., least experienced,

less experienced, experienced and highly experienced. There were 7, 14, 27 and 52 per cent in the four groups respectively. Distribution of the respondents according to farming experienced group and practice adopted was as shown in Table 12 and Fig.8.

Analysing through chi-square the adopter category in the aggregate of practices adopted and farming experienced groups showed no significance.

"Artificial breeding" practice was adopted by 65 respondents comprising of 3 per cent least experienced, 12 per cent less experienced, 26 per cent experienced and 59 per cent highly experienced adopters. The 35 non-adopters included 14 per cent least experienced, 17 per cent less experienced, 29 per cent experienced and 40 per cent highly experienced respondents. The chi-square analysis revealed no significant difference.

"Early breeding" practice was adopted by 47 respondents comprising of 6 per cent least experienced, 13 per cent less experienced, 28 per cent experienced and 53 per cent highly experienced adopters. The 53 non-adopters included 8 per cent least experienced, 15 per cent less experienced, 26 per cent experienced

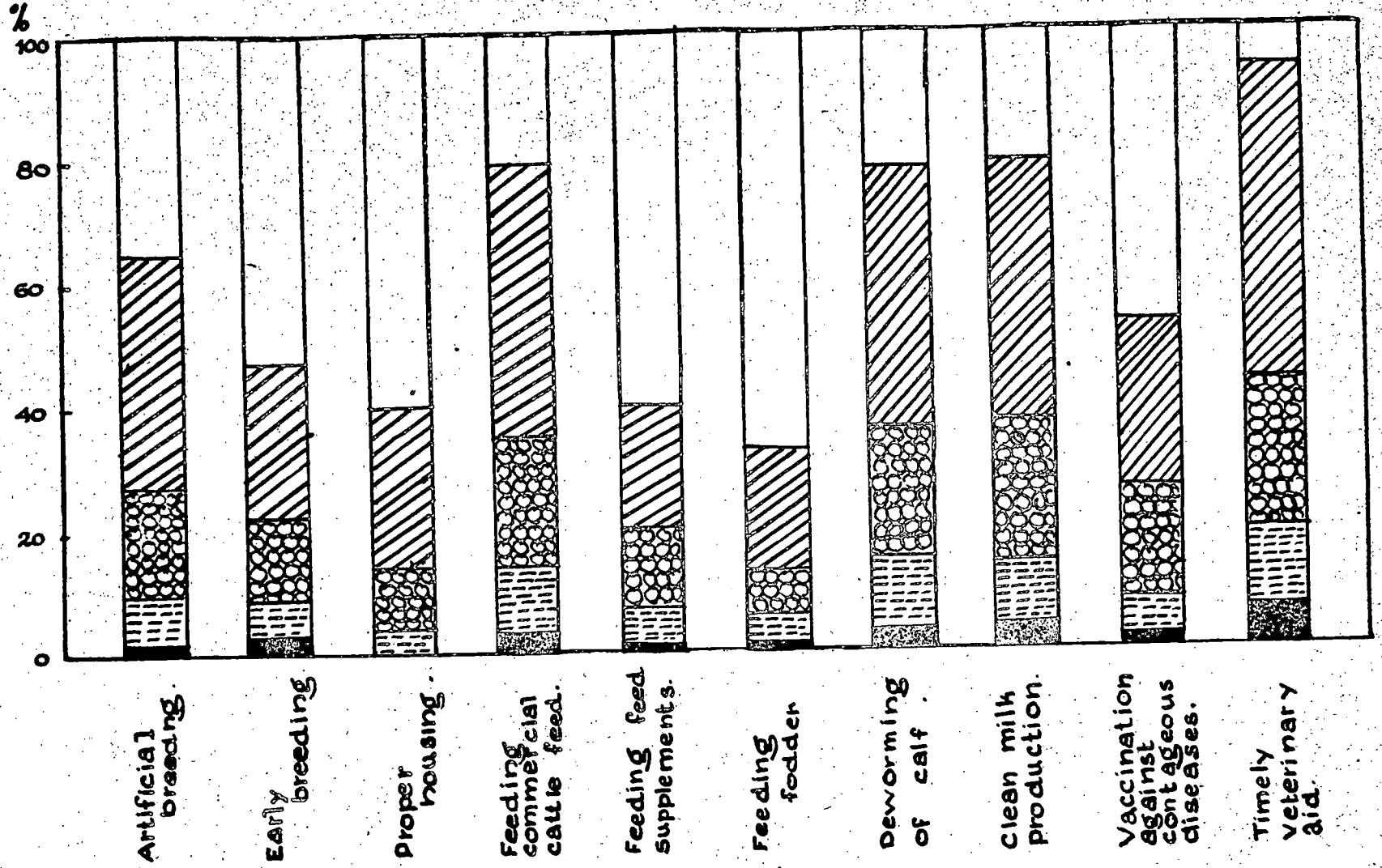


Fig. 8. Bar chart showing the influence of Farming experiance on adoption of recomended dairy husbandry practices.

Table 12. Farming experience Vs. Adoption of improved practices.

| Sl. No. | Recommended practices | Adopters | | | | | Non-adopters | | | | | Chi-square value. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Least experienced | Less experienced | Experienced | Highly experienced | Total | Least experienced | Less experienced | Experienced | Highly experienced | Total | |
| 1. | Artificial breeding | 2 (3) | 8 (12) | 17 (26) | 38 (59) | 65 (100) | 5 (14) | 6 (17) | 10 (29) | 14 (40) | 35 (100) | 6.003 |
| 2. | Early breeding | 3 (6) | 6 (13) | 13 (28) | 25 (53) | 47 (100) | 4 (8) | 8 (15) | 14 (26) | 27 (51) | 53 (100) | 0.183 |
| 3. | Proper housing | 0 (-) | 4 (10) | 10 (25) | 26 (65) | 40 (100) | 7 (12) | 10 (17) | 17 (28) | 26 (43) | 60 (100) | 7.694 * |
| 4. | Feeding commercial cattle feed | 3 (4) | 11 (14) | 21 (27) | 44 (55) | 79 (100) | 4 (19) | 5 (14) | 6 (29) | 8 (38) | 21 (100) | 6.526 * |
| 5. | Feeding feed supplements | 1 (3) | 6 (15) | 13 (33) | 20 (49) | 40 (100) | 6 (10) | 8 (13) | 14 (23) | 32 (54) | 60 (100) | 2.774 |
| 6. | Feeding fodder | 1 (3) | 5 (15) | 7 (21) | 20 (61) | 33 (100) | 6 (9) | 9 (13) | 20 (30) | 32 (48) | 67 (100) | 2.468 |
| 7. | Deworming of calf | 3 (4) | 12 (15) | 21 (27) | 42 (54) | 78 (100) | 4 (18) | 2 (9) | 6 (27) | 10 (46) | 22 (100) | 5.757 |
| 8. | Clean milk production | 4 (5) | 10 (13) | 23 (29) | 42 (53) | 79 (100) | 3 (14) | 4 (19) | 4 (19) | 10 (48) | 21 (100) | 3.220 |
| 9. | Vaccination against contageous diseases | 2 (4) | 6 (11) | 18 (34) | 27 (51) | 53 (100) | 5 (11) | 8 (17) | 9 (19) | 25 (53) | 47 (100) | 4.304 |
| 10. | Timely veterinary aid | 6 (6) | 13 (14) | 24 (26) | 51 (54) | 94 (100) | 1 (17) | 1 (17) | 3 (49) | 1 (17) | 6 (100) | 3.668 |

Figures in parentheses denote the percentage.

$X^2$ value for adopter category = 8.71 (27 d.f.)

*** Significant at 1% level.
** Significant at 5% level.
* Significant at 10% level.

and 51 per cent highly experienced respondents. The chi-square analysis revealed no significant difference.

"Proper housing" practice was adopted by 40 respondents comprising of 10 per cent less experienced, 25 per cent experienced and 65 per cent highly experienced adopters. The 60 non-adopters included 12 per cent least experienced, 17 per cent less experienced, 28 per cent experienced and 43 per cent highly experienced respondents. The chi-square value was significant at 10 per cent level.

"Feeding commercial cattle feed" practice was adopted by 79 respondents comprising of 4 per cent least experienced, 14 per cent less experienced, 27 per cent experienced and 55 per cent highly experienced adopters. The 21 non-adopters included 19 per cent least experienced, 14 per cent less experienced, 29 per cent experienced and 38 per cent highly experienced respondents. The chi-square value was significant at 10 per cent level.

"Feeding feed supplements" practice was adopted by 40 respondents comprising of 3 per cent least experienced, 15 per cent less experienced, 33 per cent experienced and 49 per cent highly experienced adopters. The 60 non-adopters included 10 per cent

least experienced, 13 per cent less experienced, 23 per cent experienced and 54 per cent highly experienced respondents. The chi-square analysis revealed no significant difference.

"Feeding fodder" practice was adopted by 33 respondents comprising of 3 per cent least experienced, 15 per cent less experienced, 21 per cent experienced and 61 per cent highly experienced adopters. The 67 non-adopters included 9 per cent least experienced, 13 per cent less experienced, 30 per cent experienced and 48 per cent highly experienced respondents. The chi-square analysis revealed no significant difference.

"Deworming of calf" practice was adopted by 78 respondents comprising of 4 per cent least experienced, 15 per cent less experienced, 27 per cent experienced and 54 per cent highly experienced adopters. The 22 non-adopters included 18 per cent least experienced, 9 per cent less experienced, 27 per cent experienced and 46 per cent highly experienced respondents. The chi-square analysis revealed no significant difference.

"Clean milk production" practice was adopted by 79 respondents comprising of 5 per cent least experienced, 13 per cent less

experienced, 29 per cent experienced and 53 per cent highly experienced adopters. The 21 non-adopters included 14 per cent least experienced, 19 per cent each less experienced and experienced and 48 per cent highly experienced respondents. The chi-square analysis revealed no significant difference.

"Vaccination against contagious diseases" practice was adopted by 53 respondents comprising of 4 per cent least experienced, 11 per cent less experienced, 34 per cent experienced and 51 per cent highly experienced adopters. The 47 non-adopters included 11 per cent least experienced, 17 per cent less experienced, 19 per cent experienced and 53 per cent highly experienced respondents. The chi-square analysis revealed no significant difference.

"Timely veterinary aid" practice was adopted by 94 respondents comprising of 6 per cent least experienced, 14 per cent less experienced, 26 per cent experienced and 54 per cent highly experienced adopters. The 6 non-adopters included 1 each least experienced, less experienced and highly experienced and 3 experienced respondents. The chi-square analysis revealed no significant difference.

7. Herd size Vs. Adoption of practices.

Respondents were classified into three groups based on the number of dairy animals possessed, viz., small, medium and large. There were 75, 22 and 3 per cent in the three groups respectively. Distribution of the respondents according to herd size group and practice adopted was as shown in Table 13 and Fig.9.

Analysing through chi-square the adopter category in the aggregate of practices adopted and herd size groups showed no significance.

"Artificial breeding" practice was adopted by 65 respondents comprising of 71 per cent small, 25 per cent medium and 4 per cent large. The 35 non-adopters included 83 per cent small and 17 per cent medium. The chi-square analysis revealed no significant difference.

"Early breeding" practice was adopted by 47 respondents comprising of 72 per cent small, 23 per cent medium and 5 per cent large. The 53 non-adopters included 77 per cent small, 21 per cent medium and 2 per cent large. The chi-square analysis revealed no significant difference.

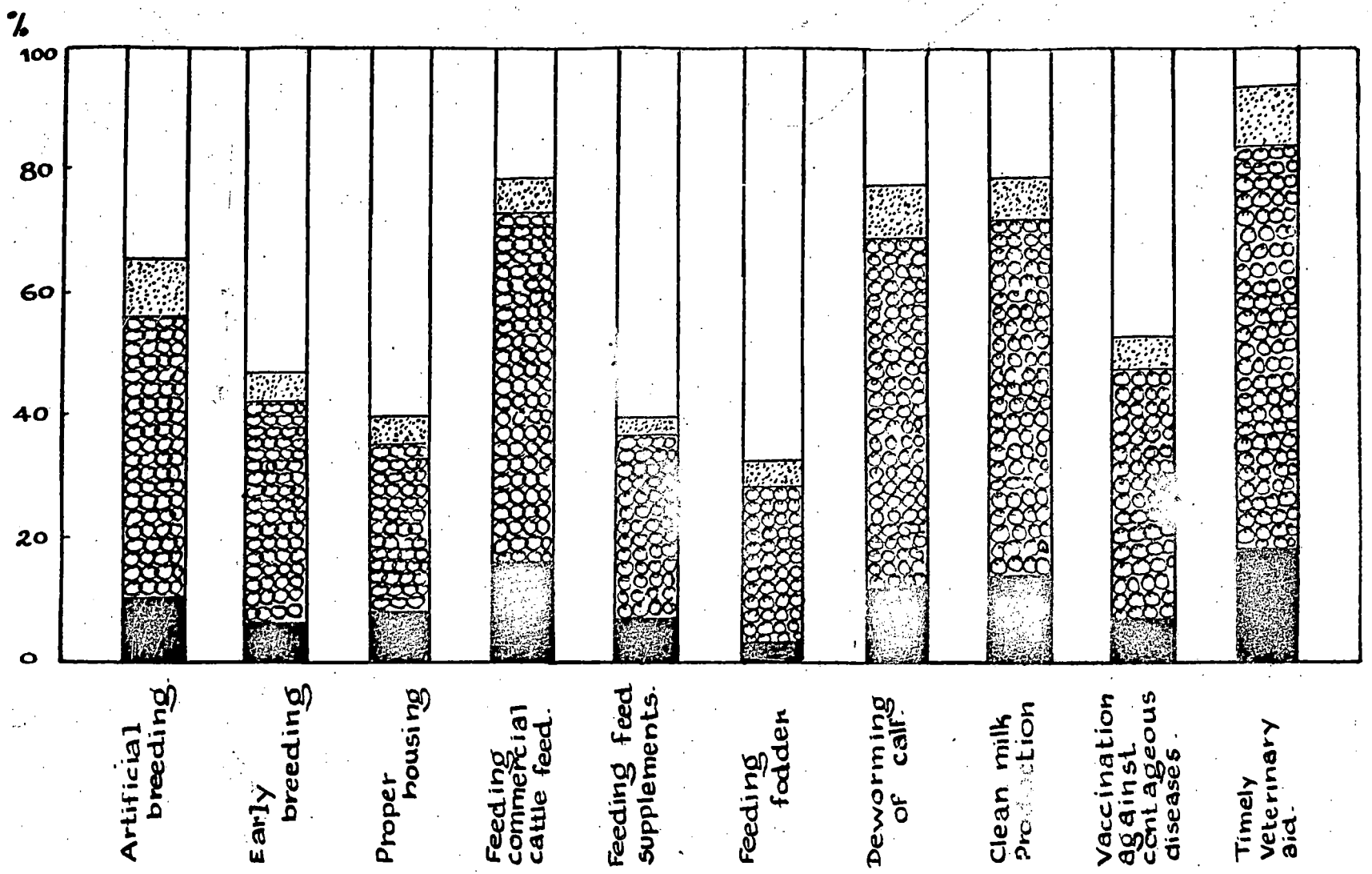


Fig. 9. Bar chart showing the influence of Herd size, on adoption of recommended dairy husbandry practices

Table 13. Herd size Vs. Adoption of practices.

| Sl. No. | Recommended practices | Adopters | | | | Non-adopters | | | | Chi-square value. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Small | Medium | Large | Total | Small | Medium | Large | Total | |
| 1. | Artificial breeding | 46 (71) | 16 (25) | 3 (4) | 65 (100) | 29 (83) | 6 (17) | 0 (-) | 35 (100) | 2.636 |
| 2. | Early breeding | 34 (72) | 11 (23) | 2 (5) | 47 (100) | 41 (77) | 11 (21) | 1 (2) | 53 (100) | 0.680 |
| 3. | Proper housing | 26 (65) | 12 (30) | 2 (5) | 40 (100) | 49 (82) | 10 (17) | 1 (1) | 60 (100) | 3.717 |
| 4. | Feeding commercial cattle feed | 59 (75) | 17 (21) | 3 (4) | 79 (100) | 16 (76) | 5 (24) | 0 (-) | 21 (100) | 0.842 |
| 5. | Feeding feed supplements | 29 (73) | 10 (25) | 1 (2) | 40 (100) | 46 (77) | 12 (20) | 2 (3) | 60 (100) | 0.384 |
| 6. | Feeding fodder | 20 (61) | 10 (30) | 3 (9) | 33 (100) | 55 (82) | 12 (18) | 0 (-) | 67 (100) | 8.995 ** |
| 7. | Deworming of calf | 54 (69) | 21 (27) | 3 (4) | 78 (100) | 21 (95) | 1 (5) | 0 (-) | 22 (100) | 6.325 * |
| 8. | Clean milk production | 60 (76) | 17 (22) | 2 (2) | 79 (100) | 15 (71) | 5 (24) | 1 (5) | 21 (100) | 0.380 |
| 9. | Vaccination against contageous diseases | 40 (75) | 11 (21) | 2 (4) | 53 (100) | 35 (74) | 11 (23) | 1 (3) | 47 (100) | 0.308 |
| 10. | Timely veterinary aid | 70 (74) | 21 (22) | 3 (4) | 94 (100) | 5 (83) | 1 (17) | 0 (-) | 6 (100) | 0.333 |

Figures in parentheses denote the percentage.

$X^2$ value for adopter category = 6.75 (18 d.f.)

*** Significant at 1% level.
** Significant at 5% level.
* Significant at 10% level.

"Proper housing" practice was adopted by 40 respondents comprising of 65 per cent small, 30 per cent medium and 5 per cent large. The 60 non-adopters included 82 per cent small, 17 per cent medium and 1 per cent large. The chi-square analysis revealed no significant difference.

"Feeding commercial cattle feed" practice was adopted by 79 respondents comprising of 75 per cent small, 21 per cent medium and 4 per cent large. The 21 non-adopters included 76 per cent small and 24 per cent medium. The chi-square analysis revealed no significant difference.

"Feeding feed supplements" practice was adopted by 40 respondents comprising of 73 per cent small, 25 per cent medium and 2 per cent large. The 60 non-adopters included 77 per cent small, 20 per cent medium and 3 per cent large. The chi-square analysis revealed no significant difference.

"Feeding fodder" practice was adopted by 33 respondents comprising of 61 per cent small, 30 per cent medium and 9 per cent large. The 67 non-adopters included 82 per cent small and 18 per cent medium. The chi-square value was significant at 5 per cent level.

"Deworming of calf" practice was adopted by 78 respondents comprising of 76 per cent small, 22 per cent medium and 2 per cent large. The 22 non-adopters included 95 per cent small and 5 per cent medium. The chi-square value was significant at 10 per cent level.

"Clean milk production" practice was adopted by 79 respondents comprising of 76 per cent small, 22 per cent medium and 2 per cent large. The 21 non-adopters included 71 per cent small, 24 per cent medium and 5 per cent large. The chi-square analysis revealed no significant difference.

"Vaccination against contageous diseases" practice was adopted by 53 respondents comprising of 75 per cent small, 21 per cent medium and 4 per cent large. The 47 non-adopters included 74 per cent small, 23 per cent medium and 3 per cent large. The chi-square analysis revealed no significant difference.

"Timely veterinary aid" practice was adopted by 94 respondents comprising of 74 per cent small, 22 per cent medium and 4 per cent large. The 6 non-adopters included 5 small and 1 medium. The chi-square analysis revealed no significant difference.

8. Social participation Vs. Adoption of practices.

Respondents were classified into three groups based on the level

of participation in various organisations, viz., low, medium and high. There were 21, 69 and 10 per cent in the three groups respectively. Distribution of the respondents according to social participation group and practice adopted was as shown in Table 14 and Fig. 10.

Analysing through chi-square the adopter category in the aggregate of practices adopted and social participation groups showed no significance.

"Artificial breeding" practice was adopted by 65 respondents comprising of 15 per cent low, 71 per cent medium and 14 per cent high. The 35 non-adopters included 31 per cent low, 66 per cent medium and 3 per cent high. The chi-square value was significant at 10 per cent level.

"Early breeding" practice was adopted by 47 respondents comprising of 13 per cent low, 77 per cent medium and 10 per cent high. The 53 non-adopters included 28 per cent low, 62 per cent medium and 10 per cent high. The chi-square analysis revealed no significant difference.

"Proper housing" practice was adopted by 40 respondents

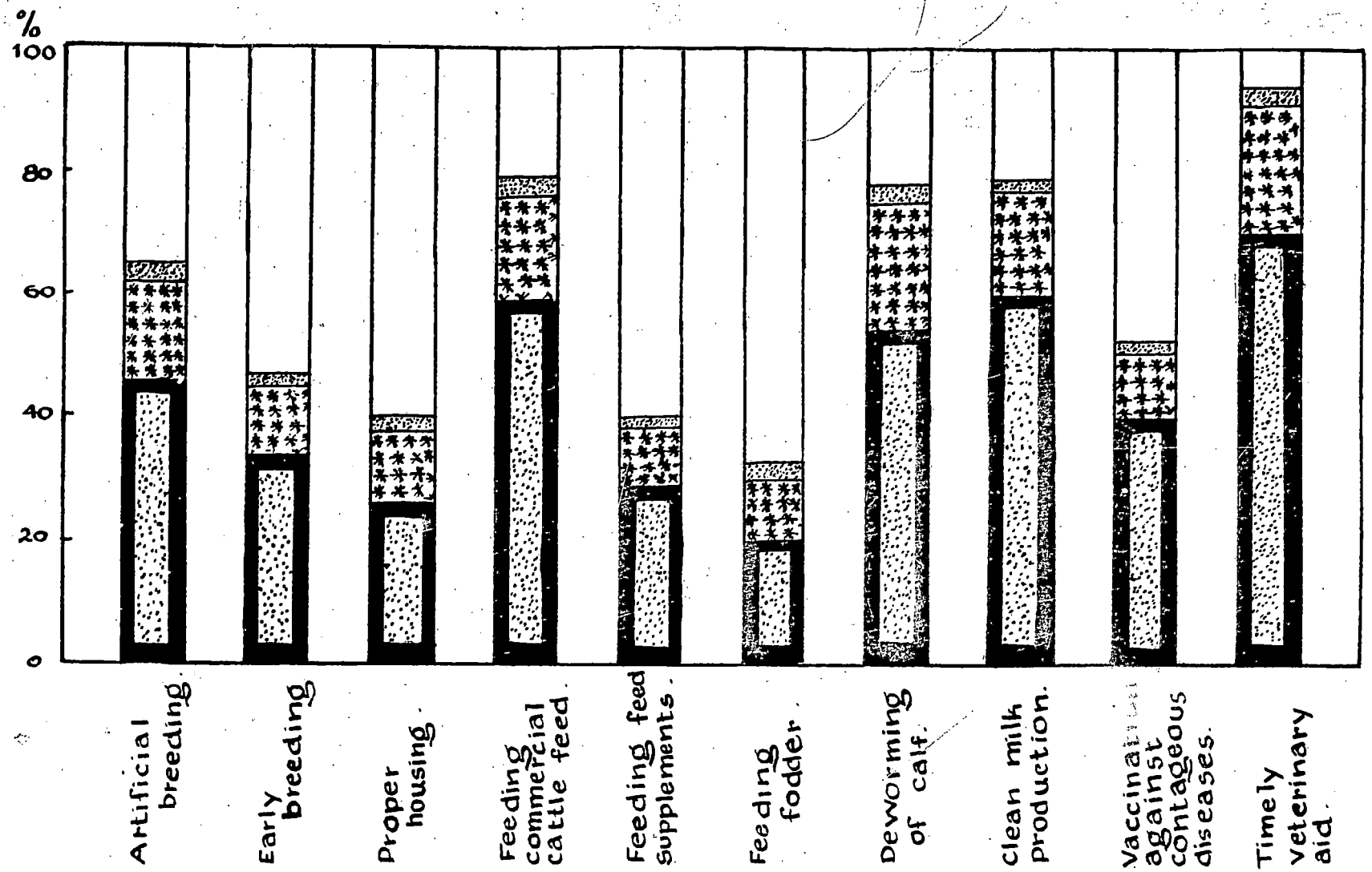


Fig. 10 .. Bar chart showing the influence of Social participation on adoption of recommended dairy husbandry practices.

Table 14. Social participation Vs. Adoption of practices.

| Sl. No. | Recommended practices | Adopters | | | | Non-adopters | | | | Chi-square value. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Low | Medium | High | Total | Low | Medium | High | Total | |
| 1. | Artificial breeding | 10 (15) | 46 (71) | 9 (14) | 65 (100) | 11 (31) | 23 (66) | 1 (3) | 35 (100) | 5.620 * |
| 2. | Early breeding | 6 (13) | 36 (77) | 5 (10) | 47 (100) | 15 (28) | 33 (62) | 5 (10) | 53 (100) | 3.641 |
| 3. | Proper housing | 8 (20) | 27 (68) | 5 (12) | 40 (100) | 13 (22) | 42 (70) | 5 (8) | 60 (100) | 0.470 |
| 4. | Feeding commercial cattle feed | 16 (20) | 57 (72) | 6 (8) | 79 (100) | 5 (24) | 12 (57) | 4 (19) | 21 (100) | 2.818 |
| 5. | Feeding feed supplements | 7 (18) | 30 (75) | 3 (7) | 40 (100) | 14 (23) | 39 (65) | 7 (12) | 60 (100) | 1.153 |
| 6. | Feeding fodder | 3 (9) | 26 (79) | 4 (12) | 33 (100) | 18 (27) | 43 (64) | 6 (9) | 67 (100) | 4.232 |
| 7. | Deworming of calf | 12 (15) | 57 (73) | 9 (12) | 78 (100) | 9 (41) | 12 (54) | 1 (5) | 22 (100) | 7.017 ** |
| 8. | Clean milk production | 14 (18) | 58 (73) | 7 (9) | 79 (100) | 7 (33) | 11 (52) | 3 (15) | 21 (100) | 3.478 |
| 9. | Vaccination against contageous diseases | 7 (13) | 41 (77) | 5 (10) | 53 (100) | 14 (30) | 28 (60) | 5 (10) | 47 (100) | 4.439 |
| 10. | Timely veterinary aid | 19 (20) | 65 (69) | 10 (11) | 94 (100) | 2 (33) | 4 (67) | 0 (-) | 6 (100) | 1.706 |

Figures in parentheses denote the percentage.

$X^2$ value for adopter category = 6.79 (18 d.f.)

*** Significant at 1% level.
** Significant at 5% level.
* Significant at 10% level.

comprising of 20 per cent low, 68 per cent medium and 12 per cent high. The 60 non-adopters included 22 per cent low, 70 per cent medium and 8 per cent high. The chi-square analysis revealed no significant difference.

"Feeding commercial cattle feed" practice was adopted by 79 respondents comprising of 20 per cent low, 72 per cent medium and 8 per cent high. The 21 non-adopters included 24 per cent low, 57 per cent medium and 19 per cent high. The chi-square analysis revealed no significant difference.

"Feeding feed supplements" practice was adopted by 40 respondents comprising of 18 per cent low, 75 per cent medium and 7 per cent high. The 60 non-adopters included 23 per cent low, 65 per cent medium and 12 per cent high. The chi-square analysis revealed no significant difference.

"Feeding fodder" practice was adopted by 33 respondents comprising of 9 per cent low, 79 per cent medium and 12 per cent high. The 67 non-adopters included 27 per cent low, 64 per cent medium and 9 per cent high. The chi-square analysis revealed no significant difference.

"Deworming of calf" practice was adopted by 78 respondents comprising of 15 per cent low, 73 per cent medium and 12 per cent high. The 22 non-adopters included 41 per cent low, 54 per cent medium and 5 per cent high. The chi-square value was significant at 5 per cent level.

"Clean milk production" practice was adopted by 79 respondents comprising of 18 per cent low, 73 per cent medium and 9 per cent high. The 21 non-adopters included 33 per cent low, 52 per cent medium and 15 per cent high. The chi-square analysis revealed no significant difference.

"Vaccination against contageous diseases" practice was adopted by 53 respondents comprising of 13 per cent low, 77 per cent medium and 10 per cent high. The 47 non-adopters included 30 per cent low, 60 per cent medium and 10 per cent high. The chi-square analysis revealed no significant difference.

"Timely veterinary aid" practice was adopted by 94 respondents comprising of 20 per cent low, 69 per cent medium and 11 per cent high. The 6 non-adopters 2 low and 4 high. The chi-square analysis revealed no significant difference.

9. Contact with extension agencies Vs. Adoption of practices.

Respondents were classified into three groups based on the level of contact with the extension agencies by them, viz., less frequent, frequent and more frequent. There were 39, 50 and 11 per cent in the three groups respectively. Distribution of the respondents according to contact group and practice adopted was as shown in Table 15 and Fig.11.

Analysing through chi-square the adopter category in the aggregate of practices adopted and contact groups showed no significance.

"Artificial breeding" practice was adopted by 65 respondents comprising of 37 per cent less frequent, 48 per cent frequent and 15 per cent more frequent. The 35 non-adopters included 43 per cent less frequent, 54 per cent frequent and 3 per cent more frequent. The chi-square analysis revealed no significant difference.

"Early breeding" practice was adopted by 47 respondents comprising of 28 per cent less frequent, 55 per cent frequent and 17 per cent more frequent. The 53 non-adopters included 49 per cent

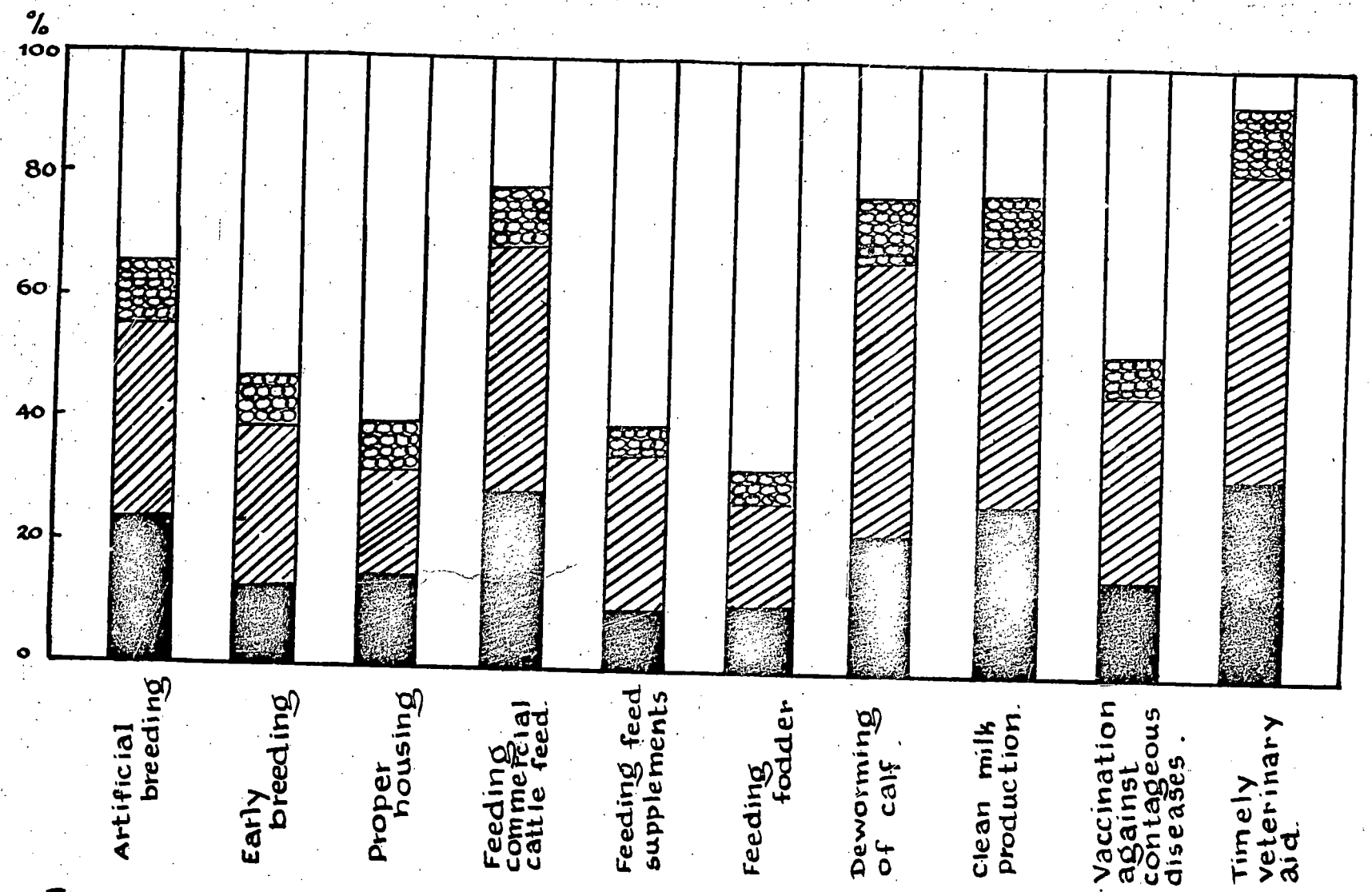


Fig. 11 :- Bar chart showing the influence of Contact with extension agencies on adoption of recommended dairy husbandry practices.

Table 15. Contact with extension agencies Vs. Adoption of practices.

| Sl. No. | Recommended practices | Adopters | | | | Non-adopters | | | | Chi-square value. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Less frequent | Frequent | More frequent | Total | Less frequent | Frequent | More frequent | Total | |
| 1. | Artificial breeding | 24 (37) | 31 (48) | 10 (15) | 65 (100) | 15 (43) | 19 (54) | 1 (3) | 35 (100) | 3.649 |
| 2. | Early breeding | 13 (28) | 26 (55) | 8 (17) | 47 (100) | 26 (49) | 24 (45) | 3 (6) | 53 (100) | 6.349 ** |
| 3. | Proper housing | 15 (38) | 17 (43) | 8 (19) | 40 (100) | 24 (40) | 33 (55) | 3 (5) | 60 (100) | 5.698 * |
| 4. | Feeding commercial cattle feed | 29 (37) | 40 (51) | 10 (12) | 79 (100) | 10 (48) | 10 (48) | 1 (4) | 21 (100) | 1.477 |
| 5. | Feeding feed supplements | 10 (25) | 25 (63) | 5 (12) | 40 (100) | 29 (48) | 25 (42) | 6 (10) | 60 (100) | 5.570 * |
| 6. | Feeding fodder | 11 (33) | 17 (52) | 5 (15) | 33 (100) | 28 (42) | 33 (49) | 6 (9) | 67 (100) | 0.801 |
| 7. | Deworming of calf | 23 (29) | 44 (56) | 11 (15) | 78 (100) | 16 (73) | 6 (27) | 0 (-) | 22 (100) | 14.243 *** |
| 8. | Clean milk production | 28 (35) | 42 (53) | 9 (12) | 79 (100) | 11 (52) | 8 (38) | 2 (10) | 21 (100) | 2.027 |
| 9. | Vaccination against contageous diseases | 16 (30) | 30 (57) | 7 (13) | 53 (100) | 23 (49) | 20 (43) | 4 (8) | 47 (100) | 3.728 |
| 10. | Timely veterinary aid | 33 (35) | 50 (53) | 11 (12) | 94 (100) | 6 (100) | 0 ( - ) | 0 (-) | 6 (100) | 9.972 ** |

Figures in parentheses denote the percentage.

$\chi^2$ value for adopter category = 7.43 (18 d.f.)

*** Significant at 1% level.
** Significant at 5% level.
* Significant at 10% level.

less frequent, 45 per cent frequent and 6 per cent more frequent. The chi-square value was significant at 5 per cent level.

"Proper housing" practice was adopted by 40 respondents comprising of 38 per cent less frequent, 43 per cent frequent and 19 per cent more frequent. The 60 non-adopters included 40 per cent less frequent, 55 per cent frequent and 5 per cent more frequent. The chi-square value was significant at 10 per cent level.

"Feeding commercial cattle feed" practice was adopted by 79 respondents comprising of 37 per cent less frequent, 51 per cent frequent and 12 per cent more frequent. The 21 non-adopters included 48 per cent each less frequent and frequent and 4 per cent more frequent. The chi-square analysis revealed no significant difference.

"Feeding feed supplements" practice was adopted by 40 respondents comprising of 25 per cent less frequent, 63 per cent frequent and 12 per cent more frequent. The 60 non-adopters included 48 per cent less frequent, 42 per cent frequent and 10 per cent more frequent. The chi-square value was significant at 10 per cent level.

"Feeding fodder" practice was adopted by 33 respondents comprising of 33 per cent less frequent, 52 per cent frequent and 15 per cent more frequent. The 67 non-adopters included 42 per cent less frequent, 49 per cent frequent and 9 per cent more frequent. The chi-square analysis revealed no significant difference.

"Deworming of calf" practice was adopted by 78 respondents comprising of 29 per cent less frequent, 56 per cent frequent and 15 per cent more frequent. The 22 non-adopters included 73 per cent less frequent and 27 per cent frequent. The chi-square value was significant at 1 per cent level.

"Clean milk production" practice was adopted by 79 adopters comprising of 35 per cent less frequent, 53 per cent frequent and 12 per cent more frequent. The 21 non-adopters included 52 per cent less frequent, 38 per cent frequent and 10 per cent more frequent. The chi-square analysis revealed no significant difference.

"Vaccination against contageous diseases" practice was adopted by 53 respondents comprising of 30 per cent less frequent,

57 per cent frequent and 13 per cent more frequent. The 47 non-adopters included 49 per cent less frequent, 43 per cent frequent and 8 per cent more contact. The chi-square analysis revealed no significant difference.

"Timely veterinary aid" practice was adopted by 94 respondents comprising of 35 per cent less frequent, 53 per cent frequent and 12 per cent more frequent. The 6 non-adopters included less frequent group. The chi-square value was significant at 5 per cent level.

# DISCUSSION

## DISCUSSION

The study concentrated on two major aspects concerning the adoption behaviour besides exploring the extent of adoption itself. These are the role communication media played and the influence personal and socio-economic characters had on adoption. It was evident that the media coverage on dairy husbandry practices were quite extensive comprising the conventional tools and techniques of extension education. The switch over by adopters from personal as well as impersonal sources to more competent and knowledge sources in the adoption process is a fair indication of normal adoption behaviour. This is in general agreement with the findings of Rogers (1962). The fairly appreciable influence at the awareness stage of radio and seminar among mass media and milk supply cooperative societies among neighbourhood agencies is worth mentioning. Obviously the effectiveness of the above media were somewhat less at the adoption stage. This finding is in keeping with those of Pushkaran (1975), Muthiah, Somasundaram and Subarathnam (1975) and Menon & Duraiswamy (1975) but at variance with those of Manjaiyan, Srinivasan

and Oliver (1975).

The appreciable role played by Veterinary Surgeons among Government agencies and in comparison to other media at the adoption stage is understandable. But their dominant role even at the awareness stage is a finding not observed by many earlier workers whose studies centred largely around agricultural practices. It is evident that the some-what skilled technical nature of some of the practices of dairy husbandry studied have been responsible for this phenomenon. The evidence is revealed when we compare the communication media used at awareness and adoption stages for practices like "Artificial breeding", "Early breeding", "Timely Veterinary aid", "Vaccination against contageous diseases" and "Deworming of calf" with practices like "Feeding commercial cattle feed", "Proper housing", "Clean milk production" and "Feeding feed supplements". The diverse nature of these practices have, obviously, resulted in practically no significant difference when practices and media in the aggregate were analysed. The significant role of Government agencies when practices were analysed individually lends emphasis to the conclusion on the nature of dairy husbandry practices vis-a-vis agricultural practices.

Though all the respondents were members of milk supply cooperative societies, that were in existence for quite sometime, the appreciable role played by the society as an agency in the diffusion and adoption of dairy husbandry practices augurs well in the transfer of technology for increasing milk production. It is the general policy of Government and development agencies to channel many of the benefits for livestock improvement through milk supply cooperative societies. With better planning, therefore, milk supply cooperative societies could play pivotal role in rural development.

The importance of the nature and character of practices becomes more clear when we consider the extent of adoption of practices. Practices grouped under disease control and breeding were adopted by largest percentage of respondents while those under management and feeding by less percentage of respondents. Under the livestock improvement programmes of Government of Kerala prevention and treatment of diseases and artificial breeding activities have received the widest technical coverage when compared to management and feeding. The latter two require more individual initiative than Government support and thus appear to be lagging behind in their adoption. While there was none who had not adopted

at least one practice those with adoption quotient of 100 formed only five per cent. This may be compared with the finding of Joon, Singh & Rana (1970) where only three per cent of farmers adopted all the six practices of high yielding varieties of foodgrain and that of Sundaraswamy & Duraiswamy (1975) where 17 per cent adopted 90 - 100 per cent of practices and 21 per cent adopted between 10 & 40 per cent for hybrid Sorghum. The above discussions are emphasised by the observation and normal distribution of adopters based on number of practices adopted. The normal distribution agrees fairly well with the distribution of adopters pointed out by Rogers (1962) for the adoption process.

The fact that feeding forms the most important adjunct to other practices in increasing milk production do not appear to have received due consideration by dairymen. Though over three-fourths of respondents had adopted "Feeding commercial cattle feed" only one-third and a little more than that had adopted "Feeding fodder" and "Feeding feed supplements" respectively. It has been proved that feed cost could be considerably reduced when improved varieties of green fodder is fed along

with concentrates (commercial cattle feed). Thus it could not be said that the dairymen have really understood the rationale behind feeding or there may be other extraneous factors which are generally known to influence the adoption process. The fact that nearly 80 per cent of respondents had adopted two of the three management practices is quite encouraging the reasons for which may be revealed by some of the associated factors discussed later.

Age was significant only for two of the 10 practices, viz., "Feeding commercial cattle feed" and "Feeding fodder", the latter to a lesser degree than the former. In both the practices proportion of adopters appear to increase with age. Studies like those of Nair (1971), Reddy and Reddy (1972), Karim and Mahboob (1974) and Pillai (1978) have indicated no relation of age with adoption behaviour. However, Jothiraj (1974) and Subramanian (1976) working on animal husbandry practices have come across negative correlation between age and adoption of practices. While Vijayaraghavan (1977) found age to be positively correlated with extent of adoption, Anbalagan (1974) noted relationship for only some of the practices

be studied. By and large it can be said that age seems to have only a minor role in the adoption behaviour of dairymen.

Educational level is seen to have a very negligible role to play in the adoption of dairy husbandry practices, since it was only slightly significant for the one practice of "Proper housing". Nair (1971), Reddy and Reddy (1972), Jha and Shaktawat (1972) and Sharma and Nair (1974) indicated positive relationship between level of education and extent of adoption, while Heron and Rao (1975) and Shanmugappa (1979) found no relationship. Results obtained in this study concurre well with those of the latter two studies, the reason probably being that illiteracy was practically absent among the respondents studied.

The variable caste had some significance in three out of the 10 practices, viz., "Timely veterinary aid", "Feeding feed supplements" and "Clean milk production". Perhaps the availability of a wide network of veterinary institutions in the study area had induced a near complete adoption, except

backward of "Timely Veterinary aid" practice by all caste groups. This is the case with the practices "Clean milk production" and "Feeding feed supplements" though with less intensity. In their studies Menon and Rao (1975), Sharma (1977), Pillai (1978) and Jha and Shaktawat (1972) found no relationship between caste and adoption behaviour. The adoption behaviour observed in this study may be due to the fact of giving preference in dairy improvement programmes to socially and economically backward farmers.

Similarly, income was of some significance to the adoption of "Artificial breeding", "Deworming of calf" and "Timely veterinary aid" among the 10 dairy husbandry practices. Contrary to expectation the highest proportion of adopters was from the low income group followed by medium and high income groups. Thus income appeared to be somewhat negatively related, which again may be due to the reason of preferential treatment to socially and economically backward farmers. While Ambalagan (1974) and Jothiraj (1974) found positive relation between income and adoption, Menon and Rao (1975) and Subramanyan (1976) observed no relation between adoption and economic status.

The variable land-holding size showed significant difference for two of the 10 practices, viz., "Proper housing" and "Feeding commercial cattle feed". But, where as Joon, Singh and Rana (1970), Nair (1971), Reddy and Reddy (1972) and Subramanyan and Menon (1975) obtained positive relationship of size of holding with adoption of high yielding varieties of food grains, the present study did not show any specific relationship, although proportionately more small and marginal farmers had adopted these two practices, compared to large farmers and agricultural labourers. Subsidies and concessions for livestock development are usually extended only to small and marginal farmers and agricultural labourers. But only the former two category appear to have availed the facility and that too for practices requiring substantial cash investment. The absence of any significant role for land holding size in adoption may also be due to the fact that, unlike agricultural practices, animal husbandry practices are less dependent on land area and dairying is more a supplementary than a main enterprise.

Ordinarily, farming experience should be positively

associated with extent of adoption and number of practices adopted as shown by Anbalagan (1974). In the present study, however, farming experience had only low significance and that too for only two of the 10 practices, viz., "Proper housing" and "Feeding commercial cattle feed". For these two practices, proportionately larger number of adopters having considerable experience in dairy farming had adopted.

Herd size was significant with "Feeding fodder" and slightly less with "Deworming of calf". Among the respondents studied herd size was generally small and has never assumed the size necessary for large scale commercial dairying. While Subramanyan (1976) found positive relation between herd size and adoption of poultry practices, Pillai (1978) found no relation with regard to swine husbandry practices. From the results of the present study no particular relationship could be discerned as to the influence of herd size.

Social participation showed some significance for only two of the 10 practices, viz., "Deworming of calf" and "Artificial breeding". Positive relationship between social

participation and adoption was observed by Sharma and Nair (1974), Anbalagan (1974), Jothiraj (1974) and Subramanyan and Menon (1975); whereas Menon and Rao (1975) and Pillai (1978) observed no correlation. By and large results of the present study appear to agree with the latter two studies and, even for the practices which showed some significance, no peculiar pattern could be observed.

Among all the variables, contact with extension agencies appeared to have the largest influence on dairy husbandry practices influencing 5 of the 10 practices studied, viz., "Deworming of calf", "Early breeding", "Timely veterinary aid", "Proper housing" and "Feeding feed supplements". In all these practices the highest proportion of adopters were maintaining 'frequent' rather than 'more or less frequent' contact. Thus, though contact with extension agency could be said to exert the greatest influence in adoption the frequency of contact did not show any clear indication. Kar, Misra and Choudhari (1970), Jha and Chaktawat (1972), Sharma and Nair (1974) and Sundarraswamy and Duraiswamy (1975) have all observed greater rate of adoption associated with higher number of contacts. The present study is not at variance with their findings.

Viewing the influence of the variables from the point of view of practices it can be seen that "Timely veterinary aid" had significance in the case of caste, income and contact with extension agencies whereas "Proper housing" had significance for variables like education, land holding size, farming experience and contact with extension agencies. "Deworming of calf" practice had significance in the case of income, herd size, social participation and contact with extension agencies while "Feeding commercial cattle feed" practice had significance for age, land holding size and farming experience. "Artificial breeding" practice had significance for income and social participation. "Feeding fodder" practice had significance in the case of age and herd size. While the practice "Feeding feed supplements", had significance for caste and contact with extension agencies the practices "Clean milk production" and "Early breeding" had significance for only one variable of caste and contact with extension agencies respectively. The practice "Vaccination against contageous diseases" had no significance for any of the variables studied.

The study has thus revealed many features not in common

with those observed in the various studies reviewed. The reasons may be the basic differences in the characteristics between agricultural and animal husbandry practices and the patterns of dairying obtaining in the area studied. In general, the respondents appear to rely more on technical personnale for adoption of the practices than on other communication media. The role of cooperatives observed points to the possibilities of using this institution as an instrument to bring about desirable changes in dairying in the area. The absence of appreciable influence by many of the commonly known variables may be an indication of broader outlook on the part of the respondents in as much as they do not seem to be very muchconstrained in their choices by personal and socio-economic factors. It would appear that, by and large, dairymen who are members of milk cooperative societies are guided, in their adoption behaviour, by the availability of and access to facilities rather than by extraneous considerations.

# SUMMARY

## SUMMARY

Adoption of improved dairy husbandry practices depends upon the effective communication media to which farmers are generally exposed directly or indirectly. Extension communication media are basic and proven methods of extension teaching to encourage people to accept and adopt improved practices. Communication media have different impact on farmers in changing their mind. The level of adoption of practices varies from individual to individual. This may be due to their personal and socio-economic characters. This study attempts to find out the media that are effective at the awareness and adoption stages as well as the role of personal and socio-economic characters on the adoption of recommended dairy husbandry practices by members of milk cooperative societies.

The results of the study are expected to be of assistance to persons engaged in dairy development activities in planning their programmes relating to dairy husbandry.

The study was undertaken with the three specific objectives, viz.,

1. Extension communication media used by the respondents at awareness and adoption stages.
2. Extent of adoption of practices.
3. Influence of personal and socio-economic characteristics on the adoption of recommended practices.

The study was carried out in Ollukkara Block area. Seven milk supply cooperatives were selected from which one hundred respondents were selected through a process of stratified random sampling technique with probability proportional to the number of members.

The ten practices selected as improved dairy husbandry practices in the study were, "Artificial breeding", "Early breeding", "Proper housing", "Feeding commercial cattle feed", "Feeding feed supplements", "Feeding fodder", "Deworming of calf", "Clean milk production", "Vaccination against contageous diseases" and "Timely veterinary aid". The nine personal and

socio-economic characteristics studied in relation to adoption behaviour were age, education, caste, income, land holding size, farming experience, herd size, social participation and contact with extension agencies.

The data were gathered by interview from all the 100 respondents using a protected interview schedule. Data were subjected to statistical analyses, viz., percentage analysis, chisquare analysis, paired 't' test and normality test.

In general, neighbourhood agencies were quite effective in creating awareness of recommended practices in dairy husbandry. Government agencies were used by relatively more number of dairy farmers for the adoption of practices than other media.

Comparing the media used at the awareness and adoption stages, it could be seen that many adopters switched over from personal and impersonal sources to knowledgeable sources. This is evident from the increased percentage of adopters resorting to Government agencies at the adoption stage.

For the practices "Artificial breeding", "Early breeding",

"Feeding feed supplements" and "Feeding fodder" eventhough most of the respondents became aware of these practices through neighbourhood agencies they relied on Government agencies for the adoption.

For the three practices "Deworming of calf", "Vaccination against contageous diseases" and "Timely veterinary aid" Government agencies were the most effective media in creating awareness and adoption.

For practices like "Proper housing", "Feeding commercial cattle feed", "Clean milk production", neighbourhood agencies and mass media had better influence at the awareness stage as well as adoption stage.

Thus it can be concluded that for practices more technical in nature and required not only communication but also services and supplies from Government agencies, tended to be adopted by more respondents and through the influence of Government agencies; whereas such practices which require initiative and expense on the part of respondents tended to be adopted by less respondents and to depend on sources other than Government agencies.

Practices grouped under disease control and breeding were adopted by largest percentage of respondents while those under management and feeding by less percentage of respondents.

In general, it can be seen that there is wide variation in the extent of adoption of improved dairy husbandry practices.

The emperical distribution of adopters based on adoption quotient and chi-square test revealed a normal curve showing symmetrical distribution of adopters.

Age was significant only for two practices, viz., "Feeding commercial cattle feed" and "Feeding fodder".

Educational level was seen to have a very negligible role to play in the adoption of practices, since it was only slightly significant for the one practice of "Proper housing".

Caste had some significance in three practices, viz., "Timely veterinary aid", "Feeding feed supplements" and "Clean milk production".

Income was of some significance to the adoption of

"Artificial breeding", "Deworming of calf" and "Timely veterinary aid".

Land holding size showed significant difference for two practices, viz., "Proper housing" and "Feeding commercial cattle feed".

Farming experience had low significance for only two of the practices, viz., "Proper housing" and "Feeding commercial cattle feed"

Herd size was significant with "Feeding fodder" and slightly less with "Deworming of calf".

Social participation showed some significance for only two of the 10 practices, viz., "Deworming of calf" and "Artificial breeding".

Contact with extension agencies appeared to have the largest influence on dairy husbandry practices influencing 5 of the 10 practices studied, viz., "Deworming of calf", "Early breeding", "Timely veterinary aid", "Proper housing" and "Feeding feed supplements".

Findings also revealed that the two practices, "Deworming of calf" and "Proper housing" had significance for more number of variables while the practice "Vaccination against contageous diseases" had no significance for any one of the variables studied.

Since most of the personal and socio-economic characters of respondents except contact with extension personnel had only low or negligible influence on extent of adoption and number of practices adopted, it can be concluded that dairymen are guided in their adoption behaviour by services and supplies made available mostly by Government agencies for dairy husbandry.

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* Abstract only (originals not seen).

# APPENDIX

APPENDIX

## Interview Schedule

Respondent No: _____

Part I

1. Name of Farmer _____

   Name of Milk Supply Cooperative Society _____

   Name of Village _____

2. Age _____ Yrs.

3. Caste _____ Scheduled/backward/others.

4. Education _____ Illiterate/Primary/Middle High School.

5. Family annual income

   i) Dairy alone _____ Rs.

   ii) All family members _____ Rs.

   iii) Other sources _____ Rs.

   Total annual income Rs. _____

6. Size of land holding and classification of farmer.

| | | |
|---|---|---|
| Large farmer | - | Above 2 hectares (5 acres) |
| Small farmer | - | 1 to 2 hectares (2.5 to 5 acres) |
| Marginal farmer | - | Below 1 hectare (2.5 acres) |
| Agricultural labourer | - | 10 cents and below. |

7. Farming Experience.

| | | |
|---|---|---|
| Below 2 years | - | (Least experienced) |
| 2 to 5 years | - | (Less experienced) |
| 5 to 10 years | - | (Experienced) |
| 10 years and above | - | (Highly experienced) |

8. Size of Dairy animals possessed.

| Category | Species | Breed | No |
|---|---|---|---|
| In milk | Cow | | |
| | Buffalo | | |
| Dry | Cow | | |
| | Buffalo | | |
| Heifer | Cow | | |
| | Buffalo | | |

Number of Goats _____ in milk/dry.

9. Social participation

| Sl. No. | Organisation | As office bearer | As member only |
|---|---|---|---|
| 1. | Co-operative Society | | |
| 2. | Panchayat | | |
| 3. | Co-operative milk supply society | | |
| 4. | Distinctive features (N.D.A., U.P. etc.) | | |
| 5. | Any other | | |

10. Contact with Extension Agencies.

| Sl. No. | Extension worker | Frequency of contact | | |
|---|---|---|---|---|
| | | Often | Occasionally | Rarely |
| 1. | Cattle Improvement Assistant | | | |
| 2. | Dairy Farm Instructor. | | | |
| 3. | Village Extension Officer. | | | |
| 4. | Veterinary Surgeon. | | | |
| 5. | Extension Officer (AH) | | | |

PART II

I. Artificial breeding practice

1. Have you heard about artificial insemination — Yes/No
2. If yes, the media of getting the information. ——
3. Have you adopted the same in your herd — Yes/No
4. Name the media (if any) which influenced you to adopt ——

II. Early breeding practice

1. Have you heard about early breeding practice — Yes/No
2. If yes, the media of getting the information ——
3. Are you getting your animals crossed at the first heat after 90 days of calving — Yes/No

4. Name the media (if any) which influenced you to adopt _____

III. Proper housing

1. Are you aware of the following aspects of cowshed.

a) Space requirement Yes/No

b) Cement flooring Yes/No

c) Disposal of Cowdung Yes/No

2. If yes, the media of getting the information _____

3. Have you constructed it to the requirement Yes/No

4. Name the media (if any) which influenced you to adopt _____

IV. Use of commercial cattle feed

1. Have you heard about commercial cattle feed Yes/No

2. If yes, the media of getting the information _____

3. Do you feed your cattle with commercial cattle feed Yes/No

4. Name the media (if any) which influenced you to adopt _____

V. Feed supplements

1. Are you aware of the deficiency diseases that may affect dairy animals Yes/No

2. Do you know that these can be prevented by feeding feed supplements — Yes/No

3. If yes, the media of getting the information — _____

4. Do you feed your animals with feed supplements — Yes/No

5. Name the media (if any) which influenced you to adopt — _____

VI. Feeding fodder

1. Do you know, feeding fodder reduces cost of milk production — Yes/No

2. Do you know, feeding fodder provides Vitamin A. requirement for your animals — Yes/No

3. If yes, media of getting the information — _____

4. Do you feed fodder to your animals — Yes/No.

5. Name the media (if any) which influenced you to adopt — _____

VII. Deworming of calf

1. Have you heard about the deworming of calves — Yes/No

2. If yes, media of getting the information — _____

3. Have you adopted it — Yes/No

4. Name the media (if any) which influenced you to adopt — _____

VIII. Clean milk production

1. Are you aware of clean milk production — Yes/No

2. If yes, media of getting the information — _____

3. Do you practice the following new practices in clean milk production.

   a) Washing of cow — Yes/No

   b) Washing of udder — Yes/No

   c) Full hand method of milking — Yes/No

   d) Disinfecting and sterilizing milking vessels — Yes/No

4. Name the media (if any) which influenced you to adopt. — _____

IX. Vaccination against contageous diseases

1. Are you aware of the contageous diseases of dairy animals — Yes/No

2. Do you know that vaccinations prevent contageous diseases — Yes/No

3. If yes, media of getting the information. — _____

4. Have you adopted preventive vaccination for your herd — Yes/No

5. Name the media (if any) which influenced you to adopt — _____

K. Timely Veterinary aid

1. Do you seek Veterinary aid to your animals — Yes/No

2. If yes, media of getting the information. _____

3. Have you got the animals treated by a Veterinary Surgeon — Yes/No

4. Name the media (if any) which influenced you to adopt. _____

Part III

List of Extension Communication media used under Dairy Development Programme.

1. Government Agencies.

a) Extension Officer (A.H.) *

b) Veterinary Surgeon.

c) Village Extension Officer.

d) Dairy Farm Instructor.

e) Livestock Assistant.

f) Cattle Improvement Assistant.

2. Neighbourhood agencies.

a) Neighbours, Friends and Relatives.

b) Milk Supply Cooperative Societies.

3. Mass media.

a) Radio

b) Newspaper

c) Exhibition

d) Poster

e) Demonstration

f) Seminar

g) Film-show

h) Literature/Farm Magazine - specify.

* The Extension Officer for Animal Husbandry includes Veterinary Surgeons attached to the N.E.S. Block, S.F.D.A., Dairy Development Department and Extension staff of Kerala Agricultural University for Animal Husbandry Extension Programmes.

# COMPARATIVE EFFECTIVENESS OF EXTENSION COMMUNICATION MEDIA USED UNDER THE DAIRY DEVELOPMENT PROGRAMME AND EXTENT OF ADOPTION OF IMPROVED DAIRY HUSBANDRY PRACTICES BY MEMBERS OF MILK COOPERATIVES IN SELECTED AREAS IN TRICHUR TALUK

BY

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## ABSTRACT OF A THESIS

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ABSTRACT

The objectives of the study were to know the effectiveness of various extension communication media used in Dairy Development programmes for disseminating improved dairy husbandry practices, to measure the extent of adoption of selected improved dairy husbandry practices and to understand the influence of personal and socio-economic characteristics on the adoption of improved dairy husbandry practices.

One hundred members of seven Milk Supply Cooperative Societies in Ollukkara Block area were selected for the study.

The findings showed that neighbourhood and Government agencies played dominant roles in diffusing the improved practices concerning dairy husbandry. Among the neighbourhood agencies, Milk Supply Cooperative Societies ranked first. Government agencies were found to be effective for influencing the respondents in adoption. Veterinary Surgeons were found to be a powerful medium within the Government agencies. Thus Veterinary Surgeons and Milk Supply Cooperative Societies

accounted very much to the knowledge as well as the adoption of all the practices except for the practice "Clean milk production" which was influenced by mass media.

The adoption of practices in the aggregate were not influenced by the nine personal and socio-economic characteristics, viz., age, education, caste, income, land holding size, farming experience, herd size, social participation and contact with extension agencies. But for some individual practices there was slight significant difference between adopters and non-adopters.

Age, herd size and education seem to have only a very negligible role in the adoption behaviour of dairymen, while contact with extension agencies appeared to have the largest influence on dairy husbandry practices. It was also observed that among the 10 practices only one practice, viz., "Vaccination against contageous diseases" was not influenced by any one of the nine variables studied.