

**A STUDY OF DIFFERENTIAL ADOPTION OF SCIENTIFIC DAIRY  
PRACTICES BY THE DAIRY FARMERS OF OPERATIONAL  
RESEARCH PROJECT AND INTENSIVE CATTLE  
DEVELOPMENT PROJECT VILLAGES AROUND  
KARNAL.**

**by**  
**SUNIL PRATAP SINGH**  
B. Sc. (Ag.) Hons.

**A Dissertation**  
**Submitted to the Kurukshetra University**  
**in Partial Fulfilment of the Requirements**  
**For the Degree of**

**MASTER OF SCIENCE**  
**in**  
**DAIRYING**  
**(DAIRY EXTENSION)**

**Division of Dairy Extension**  
**NATIONAL DAIRY RESEARCH INSTITUTE**  
**(I. C. A. R.)**  
**KARNAL (Haryana) INDIA**  
**1987**

**Registration No. 84-dk-94**

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DIVISION OF DAIRY SCIENCE  
 NATIONAL DAIRY RESEARCH INSTITUTE  
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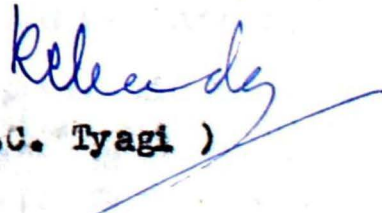
Dr. K.C. Tyagi,  
M.Sc(Ag.), Ph.D.(Punjab)  
Head(Extension)

Division of Dairy Extension  
NATIONAL DAIRY RESEARCH INSTITUTE  
(I.C.A.R.)

KARNAL-132001(HARYANA)

C E R T I F I C A T E

This is to certify that the thesis entitled  
"A study of differential adoption of Scientific Dairy  
Practices by the Dairy farmers of O.R.P. and I.C.D.P.  
villages around Kamal" was carried out by Mr. Sunil  
Pratap Singh, under my direct supervision, in partial  
fulfilment of the requirements for the Degree of  
Science in Dairying (Dairy Extension), of the Kuruk-  
shetra University, Kurukshetra.

  
( K.C. Tyagi )

KARNAL

October 17, 1987

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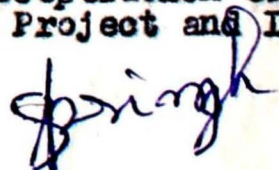
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October 17, 1987

( Sunil Pratap Singh )

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\* DEDICATED \*  
\* TO \*  
\* MY BELOVED \*  
\* PARENTS \*  
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## INTRODUCTION

### CHAPTER - I \*\*\*\*\*

of small, marginal farmers and the landless agricultural labourers. Thus to uplift these large number of rural poor, scientific dairying has been recognised as a tool to increase their economic status. Therefore, the programme of animal husbandry and dairying, received considerable importance during the first five year plan.

Despite the fact that India has about 25% of world's bovine population, the total milk production is of about 35.80 million tonnes in 1954-55 which provides only 142 gms of milk per capita per day, which is far below of the nutritional requirements of 200 gms. This shows wide gap between requirements and availability of milk which has been largely due to low productivity of our milk animals. To meet the requirements of our growing population and to achieve growth with social justice in the country the programme for the enhancement of milk production through the marginal or weaker sections should receive urgent employment opportunities to augment their income. In this way, \*\*\*\*\*

### INTRODUCTION

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## INTRODUCTION

Rural population of India predominantly comprises of small, marginal farmers and the landless agricultural labourers. Thus to uplift these large number of rural poors, scientific dairying has been recognised as a tool to increase their economic status. Therefore, the programme of animal husbandry and dairying received considerable importance during the Fifth Five Year Plan.

Despite the fact that India has about 23% of world's bovine population, the annual milk production is of about 38.80 million tonnes in 1984-85 which provides only 142 gms of milk per capita per day, which is far below of the nutritional requirements of 240 gms. This shows wide gap between requirement and availability of milk which has been largely due to low productivity of our milch animals. To meet the requirement of milk for growing population and to achieve growth with social justice in the country the programmes for the enhancement of milk production through the marginal or weaker sections should receive urgent employment opportunities to augment their income. In this way, if the productivity of milch cattle is improved and dairy farming become a profitable enterprise in the rural areas, it can help to increase their income.

Many dairy development programme have been started by the Govt. time to time. The main objective of these programme are to improve the productivity of cattle & buffaloes. Govt. of India & ICAR have given much emphasis on the dairy development programme i.e. ICDP & ORP.

With the realization of improvement in villages another large scale programme initiated was Intensive Cattle Development Programme undertaken in areas supplying milk to Government dairy plants that had already been set up. This was designed in 1963-64 to increase the milk production and to create confidence in the cattle and dairy industries. "Forty Intensive Cattle Development Projects were set up, one to four projects in each state, from 1964-65 to 1969-70, on the lines of package programme adopted for improving agricultural production" (Khurody, 1974).

The main objective of the ICDP was to go in depth in all aspects of cattle improvement and to increase the milk production per unit.

The specific objectives were to provide full facilities for controlled breeding, to provide effective disease control measures, to arrange proper marketing facilities for milk and to supply the feeds and develop foddens through rural dairy extension.

1v) Based on experiences gained in National Demonstration programme, the working group which formulated the Fifth Five Year Plan proposals of the ICAR suggested that Operational Research Projects should be started for integrated development of rural areas.

Under this programme, the operational Research Project was launched by the National Dairy Research Institute in a cluster of 21 villages around Karnal in 1975. An intensive programme of educating farmers on crop and milk production for increasing the income of rural family had been carried out under this programme. The specific objectives of the programme are :

- i) Demonstration of optimum management, feeding, breeding and health care practices for high yielding crossbred cows together with cultivation of nutritious green fodder to lower the cost of milk production and to test the applicability of the package of dairy farming practices under varying sizes of farm holding.
- ii) Demonstration of multiple cropping system of raising three or more crops in a year including grain, Vegetable and fodder crops.
- iii) Determination of optimum levels of profitable dairy adjustment with crop production.

- iv) To provide an insight to the scientists of problems involved in the application of recommended practices under field conditions and to ascertain the modification, if any, needed in the applications of these recommended practices under village conditions.
- v) To estimate the magnitude of additional income and employment generated in the study area with the application of integrated package of practices for raising more milk and crop yield per unit lands, animal and per unit time.

It is expected that as a result of functioning these programmes, the cattle owners of the villages have acquired knowledge of scientific innovations of dairy farming and also adopted several practices. As such, it seems desirable to assess, through a systematic study, the present status of their knowledge of dairy innovation and then adoption by the families covered under the programmes.

The organisations engaged in developmental work are striving hard to disseminate the new technology among cattle keepers but progress in the area of animal production has not been substantial as in the case of crop production. Knowledge about any new practice by the farmers is obviously a pre-requisite for its adoption.

The starting point for adoptions, therefore is the increase in the knowledge of cattle owners about innovations. Thereafter adoption can be expected to take place.

To evaluate the success of both the intensive programmes a study entitled " A study of differential adoption of scientific dairy practices by the dairy farmers of O.R.P. and I.C.D.P. villages around Kamal.

OBJECTIVE OF THE STUDY:

The main objective of the study is to examine the levels of knowledge and adoption of different categories of the farmers of O.R.P. & I.C.D.P. Villages.

SPECIFIC OBJECTIVES:

1. To identify the personal traits of the respondents.
2. To find out the level of knowledge & adoption of improved dairy husbandry practices by the different categories of dairy farmers.
3. To find out the relationship between adoption & knowledge of different categories of farmer with their personal traits.



## REVIEW OF LITERATURE

The development in any field of human behaviour is made possible only through proper application of science and technology. Systematic research is the foundation of science and technology. Thus comprehensive review of literature is an essential component of any research endeavour. The major function of the review of literature is to acquaint the research worker with past and contemporary research in the field of investigation.

There are many studies on the adoption behaviour of farmers in relation to the agricultural practices. However, in the field of dairy development, such studies are few in number in the country. Adoption is an area of research has been steadily claiming country. In this chapter effort has been made to review the available required literature for the present investigation under the following heads:

1. Independent Variables.

2. Dependent Variables.

1. INDEPENDENT VARIABLES

- i) Age:

Sinha & Sinha (1971) reported that most of dairy farmers in the milkshed area of Amritsar were middle aged.

Singh & Prasad (1974) also indicated that higher adoption was with the farmers in the range of 30-45 years of age.

On the other hand Chandra (1970), John (1974), Gupta (1976), Kumar (1976), Hundal (1976), Singh and Kherde (1978) found that age had significant relationship with adoption of dairy innovations.

Chauhan (1979) found non-significant but positive relationship between age and modernity level of milk producers, while Nakade (1971) found that age had significant effect on milk production.

Subramaniam (1982) in his study also observed that age was positively associated with the overall adoption in case of small farmers of the more successful societies. Subramaniam(1982) also observed that age had no relationship with adoption in case of big farmers milk producers of the less successful societies.

#### ii) Educational Level of Farmers

Tripathi and Garg (1969); Patel and Singh (1970); Satish Chander (1970); Reddy & Reddy(1972); Jha and Shakatawat (1972); John (1974) have found in their studies that education level of farmers is significantly associated with the adoption of improved practices.

Veerabhadraiah and Divarkenath (1970), Alao (1971) have observed that education and adoption of improved agricultural practices are not related with each other.

Sinha & Sinha (1971) have found that most of the dairy farmers are illiterate whereas much larger number of studies pointed out a positive correlation between education and studies, there are some studies where such a relationship has not been established.

iii) Education level of Farmer's Family Members:

Chandra (1979) reported that family education has no positive relationship with adoption of dairy farming practices.

Singh (1980) in his study reported that family education status had positive and highly significant correlation with level of dairy modernization of small and marginal dairy farmers and total sample under study.

Sohi and Kherde (1980), Ram Chand (1980) and Subramaniam (1982) also observed that the family education status was positively correlated with adoption of dairy innovations.

Sayeedi (1983) stated that majority of respondent with low family education had high level of adoption as compared to medium and high family education of farmers.

Mahipal (1983) reported in his study that in case of large farmers all the respondents who were having high family education status were all medium adopters. In case of farmers having medium family education status, there were 27.27, 59.09 and 13.54 <sup>percent</sup> respondents low, medium and high adopters respectively. However in case of low family education status the 75.00 and 25.00 % farmers were medium and high adopters, whereas, none was found to be the low adopter.

iv) Family Size:

Chander Satish(1970) has found the size of family to be not significantly associated with adoption of artificial insemination.

Sinha & Sinha (1971) have observed that most of the dairy farmers have medium size family.

John (1974) has found that family size has no relationship with milk and production on the farm.

Hazarika (1983) observed that more members in the family, higher was the adoption of dairy innovations.

Sayeedi (1983) indicated that farmer with small family size had high level of adoption as compared to medium and large size families.

Singh (1983) found in his study that family size had no significant effect on adoption of artificial insemination.

v) Caste:

Desai (1971) reported that the caste has no significant relationship with adoption of improved farming practices.

Hundal (1976) found that caste had high association with adoption of improved dairy farming practices.

Sohi and Kherde (1978) observed strong, positive and significant correlation between caste and adoption of improved farming practices.

Singh, B.K. (1983) indicated that adoption of dairy innovation of progressive village farmers were positively and significantly correlated with their caste, whereas in the non progressive village caste was found to be non significant with adoption of dairy innovation.

vi) Land Holding (Acres):

Singh and Sohal (1967) have inferred that size of land holding was significantly related to the acceptance of agricultural practices.

Thakur (1975) has found that it is landless and marginal farmers who practice more improved dairy practices.

Thorat (1979) observed that size of land with the adoption of health practices.

Subramaniam (1982) in his study also observed that out of 5 practice studies under breeding, the practice of service at proper time of heat was adopted by majority of small and big farmers milk producers of both the less and more successful societies.

Sayeedi (1983) concluded that the farmers with small land size had high level of adoption as compared to the farmers with medium and large land size.

Singh, B.K. (1983) stated that respondents of progressive village maintained more or less the same operation of land holding as compared to non-progressive village farmers.

vii) Herd size:

Sinha & Sinha (1971) have observed that majority of the dairy farmers are having large sized herd and there is significant association with adoption of artificial insemination in the milk shed area of Amritsar.

John (1979) has found that majority of the owners have one or two milch animals.

Sharma et al (1979) observed that the herd size increased with increase in land holding. They reported that landless, marginal, small, lower medium, upper medium and large milk producers had 1.43, 1.68, 1.85, 2.58, 3.24 and 4.73.

Singh (1980) also found herd size positively and significantly correlated with the level of dairy modernization of small, marginal dairy farmers and total sample under study.

Singh, B.K. (1983) reported that herd size of the respondent of progressive village was significantly larger than that of the respondent of non-progressive village. This means that, the herd size is an important factor of adoption of dairy farming practices.

Mahipal (1983) in his study found that herd size was positively and highly significantly correlated with overall adoption of dairy innovation in case of total sample under study.

## 2. DEPENDENT VARIABLES:

### i) Knowledge:

Profitable application of modern dairy technology presupposes on adequate knowledge and necessary skill. Needless to say that use of dairy innovations will depend upon retention/acquired knowledge and skill by farmers. Thus the knowledge form and important component of adoption behaviour.

According to Rogers and Shoemaker (1971) the knowledge of innovations created motivation for their adoption.

Hoffer and Strandland (1958) and Jaiswal (1983) reported a positive association between knowledge and adoption.

Govindappa (1973) concludes that the small farmers' knowledge was low for all the enterprises except for dairying for which intensive extension work was operative.

Chandra (1979) found positive and highly significant correlation between the knowledge and adoption of dairy innovations in both rural and urban areas of study.

Garde (1980) observed that the maximum knowledge level (29.98%) was found in health care, whereas in management (66.58%) followed by breeding (54.25%) and feeding (49.82%) respectively.

Singh (1980) found knowledge of dairy farming technology positive and significant correlation and regression coefficient with dairy modernization of small and marginal dairy farmers.

Subramaniam (1982) found positive and significant relationship between knowledge and adoption of dairy innovation in case of small and big farmers of the less successful as well as more successful societies respectively.

Mahipal (1983) found positive and highly significant relationship between knowledge and overall adoption of dairy innovations of the total sample under study.

Sinha (1971) observed a positive and significant correlation between the knowledge and adoption of dairy practices of A.I. and feed mixture from the study area.

Kumar (1976), Rath (1977) and Chauhan (1979) observed significant relationship between knowledge and adoption of dairy farming practices.

ii) Adoption of Dairy Innovations:

In this section main attention has been focused on the studies concerned with adoption of dairy innovations. The study with regard to adoption of dairy innovations are few in number as compared to agricultural innovations. However an attempt has been made here to review the various research studies conducted in the field of adoption of dairy husbandry practices.

Sharma (1967) observed that majority of the cattle owners showed some faith in vaccination and 28% accepted all types of vaccination.

Hussain (1968) while studying the adoption of selected practices of animal husbandry, found that majority of farmers were non-adopters of improved animal husbandry practices.

Murthy (1970) reported that the practice of artificial insemination and castration of scrub bulls by Burdize method was followed by 71% and 78% of the respondent respectively.

Sinha (1971) observed variation in the adoption of practices of A.I. and feed mixture from village to village.

Jothi Raj (1974) observed that only 11% of respondents adopted all the 4 selected practices, namely, A.I. use of commercial cattle feed, vaccination and regular breeding. He further stated that 18% adopted 3 practices, 61% adopted 2 practices and 2% of respondents did not adopt even a single practice.

Kakoty (1975) concluded that 83% and 94% of the respondents adopted improved breeding and improved disease control measure respectively. But the adoption was very low in feeding and management.

Gupta (1976) indicated that majority of the farmers were having medium level of adoption i.e. 61.50%.

Rath (1977) found that 23% of the farmers adopted 4-5 breeding practices, but only 3% of the farmers adopted 2-3 new practices. As regard the prevention of diseases, a great majority of farmers, i.e. 73% adopted 2-3 new practices, while 83% of farmers adopted 2-3 new managemental practices. He further observed that 94% of the respondents did not adopt the practice of clean milk production.

Chandra (1979) reported that the level of overall adoption of dairy practices was slightly better in Urban areas in comparison to rural areas.

Garde (1980) in his study found that the overall adoption score for all the four components, namely, breeding, feeding, management and health care was 69.33%.

Subramaniam (1982) in his study reported that the adoption level of big farmers was significantly higher than the small farmers in all the groups of respondents.

Sohi and Kherde (1980) studied the adoption behaviour of different categories of dairy farmers with reference to 14 improved practices and found that out of 14 practices majority 95.00 % of the respondents practised protective vaccination, 85.00 % clean watering to milch animals, 62.00 % pucca shelter and own watering system by 60.00%. The last adopted practices were dehorning of calves with 5.00 % and the use of improved seeds of fodder, deworming and castration of young male calves were 8.75, 18.33 and 20.00 % respectively. None of the respondents was practising loose housing. They further reported that, out of 120 respondents, 21.67 per cent were low adopters, 53.33% were medium adopters and 25.00 % were high adopters. Most of the landless agricultural labourers fall in the low adopters category.

Mahipal (1983) reported that a large number of dairy farmers i.e. 86.36, 87.50, 97.04, 80.68 and 73.68% were found to be medium and high adopters of breeding, feeding, management, health care and overall dairy practices respectively.

Singh, B.K. (1983) reported in his study that the progressive farmers were higher adopters of farm practices as compared to non-progressive villages.

### CHAPTER- III

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### RESEARCH METHODOLOGY

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## RESEARCH METHODOLOGY

The results of any investigation are reliable and valid to the extent, the research design and methodology are suitably applied in conducting the research and free from known, and if possible even the unknown, errors and biases. This cardinal principle was kept in mind in designing the methods and procedures for conducting this study. Thus, the methodological plan of work used in the present investigation has been discussed under the following sub-heads:

1. Locale of the study
2. Sampling plan
  - a) Selection of villages
  - b) Selection of respondents
3. Variables and their measurements
4. Data collection
5. Statistical analysis.

### 1. LOCALE OF THE STUDY:

The investigation has been conducted in the purposively selected area of the Operational Research Project of the National Dairy Research Institute, Kamal and of Intensive Cattle Development Project of Kamal.

This area has been selected for the following reasons:-

- i) Adequate exposure of the rural family to the recommended scientific dairy practices under both the intensive programmes of the projects during the last almost one decade for O.R.P. & almost two decades for I.C.D.P.
- ii) Contiguity of the area to the institute where the investigator is located.
- iii) Familiarity of the investigator with local customs and language of the area which ensured promptly collection of accurate data.
- iv) Existence of rapport of the investigator with the staff of the Operational Research Project and Intensive Cattle Development Project.
- v) The result of this comparative investigation will help in restrengthening the activities in these adopted villages of the O.R.P. & I.C.D.P.

## 2. Sampling Plan:

### a) Selection of the villages:

Keeping in view the nature and objectives of the present investigation, the field laboratory villages of O.R.P. & I.C.D.P. were purposively selected for study. In these villages both the programmes are running almost

from one and two decades respectively. Four villages have been selected for data collection by random sampling. The villages selected are: Sanghoa, Baldi from O.R.P. and Badagaon, Uhani from I.C.D.P.

b) Selection of the respondents:

Out of the four villages, 150 farmers have been selected by stratified random sampling according to size of land holding. A list of the households belonging to the three categories of land size (Landless, Marginal and Small) was prepared with the help of the stockmen. Fortyfive farmers have been selected from each of O.R.P. villages in such a way that there are fifteen respondents from each of the three categories of the respondents and thirty farmers have been selected from each of under I.C.D.P. villages in such a way that there are ten respondents from each of the three categories of the respondents. It has been ensured that the selected respondents has at least one adult milch animal.

3. Variables and Their Measurement:

Operationalization of Variables:

i) Age:

Number of years from the date of birth of the respondent to the date of interview.

ii) Education Level of the Dairy Farmers:

This was the number of years of schooling in a school or college of the farmer. The farmer's education level was scored in accordance with the scale developed by Trivedi and Pareek (1963) which is as under:-

Illiterate	0
Can read only	1
Can read and write only	2
Primary	3
Middle	4
High School	5
Graduate and above	6

iii) Family Education Status:

It refers to the literacy status of all the eligible (i.e. above 6 years of age) members of the family. This was measured with the help of the Trivedi's scale (1963) by adding educational scores of all the eligible family members of the respondents. The respondents family education status was categorised on the basis of total family education score as :-

a) Low family Education Status	Less than Mean - S.D.
b) Medium " "	Between Mean - S.D. to Mean + S.D.
c) High " "	Above Mean + S.D.

Family Education Status =  $\frac{\text{Total Education Score of Family}}{\text{Effective Family Size}}$

- a) Effective Family Size: No. of family members above 6 years of age
- b) Total Education Score: Sum of the educational achievement of each family member.

iv) Family Size:

The total number of adult male and female members including children in the family of the beneficiaries of farmer was considered as a family size.

v) Caste:

It denotes hierarchical status confirmed upon a number of society from time immortal according to law of Manu. It was measured by using Trivedi's Scale(1963) as given:

Chamar, Bhangi, Doom	1
Dhimar, Khati, Dhobi, Badai	2
Lahore, Kumahar, Tailor, Nai, Benia, Sonar, Ahir, Jolaha	3
Saini/Kamboj	4
Brahmin	5
Jat/Rod/Rajput	6

vi) Land Holding:

The size of holding is the acres possessed by the respondents. It was categorized in four groups as below:-

- a) Landless No Land
- b) Marginal Upto 2.5 acres
- c) Small 2.5 to 5.0 Acres

vii) Herd Size:

This is the number of breedable cow and buffalo and bullocks maintained by the dairy farmer.

KNOWLEDGE:

English & English (1961) defined knowledge as "the body of understood information possessed by an individual". They further explained that "knowledge as that part of a person's information which is in accord with established fact". The knowledge of the dairy innovations in the present study has been operationalized as the extent to which the recommendations pertaining to dairy informations are known to the dairy farmers.

Knowledge of any new dairy innovation on the part of dairy farmer is always a precursor of adoption. If there is no prior knowledge at all, the adoption of a practice is almost unthinkable. No doubt, in certain cases due to some cogent reasons, there are some person who may be fully conversant with practice and even than

may not be adopting it. In the process of promoting the adoption of new idea concerning dairy farming, it is important to ensure proper knowledge of the practices. If the knowledge of dairy innovation is a forerunner of adoption it seems important to investigate level of knowledge of the dairy farmers <sup>at</sup> as a given point of time. Accordingly, it appears important to study the level of knowledge which has been attempted here.

The knowledge of a respondent about dairy farming innovations has been judged by asking questions:

#### BREEDING

1. Knowledge of exotic breeds
2. Suitable time for insemination after detecting heat symptoms
3. Suitable time for insemination after calving
4. Proper age of crossbred heifer for A.I.
5. Suitable time of examination for pregnancy

#### FEEDING

6. Correct time to feed new born calf with colostrum.
7. Practices to be known to feed a new born calf.
8. Knowledge about the feeding of cow in daily routine.
9. Additional concentrate feed in the advance stage of pregnancy of a cow.
10. Advantages of premixed cattle feed.

HEALTH CARE

11. Knowledge of contagious/infectious diseases.
12. Right time of vaccinations against contagious/infectious diseases.
13. Important symptoms of F.M.D. to be known.
14. Important symptoms of H.S. to be known.
15. Important symptoms of Mastitis disease to be known.

MANAGEMENT

16. Practices to get clean milk production.
17. Practices to maintain the cleanliness of the pacca cattle shed/house.
18. Correct dry period to allow for a lactating pregnant crossbred cow.
19. Knowledge about dehorning.
20. Knowledge about castration.

(The system of awarding scores for the responses to the above questions is shown in appendix No. 1)

On the basis of scores obtained by the respondent standard deviation (S.D.) and mean are calculated.

The respondents are grouped into three categories in the following manner:

- 1) High knowledge = above Mean + S.D.
- 2) Medium knowledge = Mean - S.D. to Mean + S.D.
- 3) Low knowledge = Less than Mean - S.D.

### LEVEL OF ADOPTION

Level of adoption of respondents is the degree upto which the different practices have been adopted by farmers. Adoptions operationally defined here as practising the dairy innovations by the respondents. For the purpose of measuring adoption, a schedule containing 24 items, concerning different dairy innovations has been prepared. In certain cases, it was enquired whether or not a practice has been adopted and if adopted, then the degree to which the practice had been adopted was also enquired. A system of awarding score for the responses has been developed. The score assigned to alternative responses are given below:

Sr.No.	Innovations
--------	-------------

### BREEDING

1. Keeping crossbred animal
2. Keeping watch on oestrus cycle and heat symptoms
3. Getting covered C.B. heifer within 15-21 months of age
4. Practising A.I.
5. Practising the cow served within 60-90 days after calving
6. Pregnancy diagnosis.

FEEDING

7. Feeding colostrum within 2-4 hours of birth
8. Feeding colostrum upto 5th day of birth
9. Feeding concentrate mixture on the basis of milk production
10. Providing green fodder around the year
11. Practising H.Y.Vs seeds for fodder production
12. Practising fertilizer in raising fodder crops

HEALTH CARE

13. Vaccination
14. Segregation of diseased animal
15. Burying the dead body.
16. Practise tick control
17. Practise deworming
18. Consultation of veterinarian.

MANAGEMENT

19. Providing clean and fresh water
20. Practising full hand method
21. Maintaining cleanliness
22. Practising a dry period of 60 days
23. Practising castration.

( The system of awarding scores for the responses to the above questions is shown in appendix No.1).

The sum total of the scores obtained by a respondent in respect of the above 24 items representing different recommended practices are taken as his adoption score.

On the basis of this adoption score, the respondent have been grouped into three classes in the following manner:

1. High adopters - Above mean + S.D.
2. Medium adopters - Mean-S.D. to Mean + S.D.
3. Low adopters- Less than mean- S.D.

#### DATA COLLECTION:

The information has been collected through personal interviews with the cattle owners through a specially prepared schedule. In all, one hundred fifty cattle owners have been interviewed mainly at their residence as well as at their farm.

#### STATISTICAL ANALYSIS:

These variables have been measured using standardized instruments. Frequency distribution and percentage have been worked out for the knowledge and adoption of the respondents. Simple correlation has been calculated between the independent and dependent variables. For measuring the inter-relationship, correlation coefficient (r) has been used. The formula for (r) is as under:

$$(r) = \frac{xy - \frac{\Sigma(x)(y)}{N}}{\sqrt{x^2 - \frac{(\Sigma x)^2}{N} \quad y^2 - \frac{(\Sigma y)^2}{N}}}$$



## RESULTS AND DISCUSSION

The empirical findings of the study are presented and discussed here in the light of the specific objectives of the study in the following three sections:-

- Section-A Distribution of respondents according to their different traits.
- Section-B Various knowledge and adoption levels of breeding, feeding, health care, management practices.
- Section-C Correlation of personal traits of farmers with knowledge and adoption of different dairy husbandry practices.

In the first instance, it has been considered appropriate to know the traits of the respondents covered by the study. Thereafter the various knowledge and adoption levels of breeding, feeding, health care, and management practices have been presented. In the end, correlations between these traits have been worked out and discussed.

### SECTION - A

#### Distribution of respondents according to their different traits

For a meaningful study of the knowledge of dairy innovations and their adoption by the dairy farmers, it is important to know their relevant traits. Accordingly such traits as are considered to have bearing on knowledge and adoption have been included in the study. These are age, education, family education, family size, caste, land holding and herd size.

(a) Age:Table-1: Distribution of respondents on the basis of age of O.R.Ps. villages

Age groups (in years)	Landless farmers ( n=30 )	Marginal farmers ( n=30 )	Small farmers (n=30)
20-30	2(6.66%)	1(3.33%)	0(0%)
30-50	21(70%)	22(73.33%)	20(66.66%)
50 & above	7(23.33%)	7(23.33%)	10(33.33%)

Figure in parenthesis are percentages

Table-2: Distribution of respondents on the basis of age of I.C.D.Ps. villages

Age group (in years)	Landless farmers (n=20)	Marginal farmers (n=20)	Small Farmers (n=20)
20-30	2(10%)	2(10%)	0(0%)
30-50	10(50%)	13(65%)	12(60%)
50 & above	8(40%)	5(25%)	8(40%)

Figure in parenthesis are percentages

Table 1 & 2 indicated that incase of Operational Research Project's villages as well as in case of Intensive Cattle Development Project's villages, majority of dairy farmers in all the groups i.e. landless, marginal and small farmers were falling in the age group of 30-50.

In case of Operational Research Project's villages landless, marginal & small farmers were found (70%), (73.33%) and (66.66%) respectively and in case of Intensive Cattle Development Project's villages landless, marginal and small farmers were found (50%), (65%) and (60%) respectively.

In age group of 20-30, landless, marginal and small farmers were found to be 6.66%, 3.33% and nil in Operational Research Project's villages and in case of Intensive Cattle Development Project's villages landless, marginal and small farmers were found to be 10%, 10% and nil respectively.

The farmers of above 50 years of age were found in Operational Research Project's villages landless, 23.33% Marginal 23.33% and small 33.33% and in case of Intensive Cattle Development Project's villages landless 40%, marginal 25% and small 40% farmers were above 50 years of age.

This means that at the time of organising training programmes, demonstrations and such other activities the farmers of 30-50 years of age should receive utmost attention of the dairy extension workers.

(b) Education:Table-3: Distribution of respondents on the basis of education of O.R.Ps. villages

Sr.No.	Educational Level	Landless farmers (n=30)	Marginal farmers (n=30)	Small farmers (n=30)
1.	Illiterate	19(63.33%)	17(56.66%)	22(73.33%)
2.	Can read only	1(3.33%)	3(10%)	0(0%)
3.	Can read and write	0(0%)	3(10%)	3(10%)
4.	Primary	5(16.66%)	4(13.33%)	3(10%)
5.	Middle	3(10%)	3(10%)	2(6.66%)
6.	High School	2(6.66%)	0(0%)	0(0%)
7.	Graduate & above	0(0%)	0(0%)	0(0%)

Figures in paranthesis are percentages.

Table-4: Distribution of respondents on the basis of education of I.C.D.Ps. villages

Sr.No.	Educational level	Landless farmers (n=20)	Marginal farmers (n=20)	Small farmers (n=20)
1.	Illiterate	14(70%)	13(65%)	10(50%)
2.	Can read only	0(0%)	1(5%)	0(0%)
3.	Can read and write	0(0%)	1(5%)	6(30%)
4.	Primary	1(5%)	3(15%)	2(10%)
5.	Middle	4(20%)	1(5%)	0(0%)
6.	High school	1(5%)	1(5%)	2(10%)
7.	Graduate & above	0(0%)	0(0%)	0(0%)

Figures in paranthesis are percentages

The table 3 & 4 revealed a very important information that in case of Operational Research Projects villages, majority (63.33%) landless farmers (56.66%) marginal farmers and (73.33%) small farmers were illiterate and same was in the case of Intensive Cattle Development Project's villages, majority (70%) landless farmers, (65%) marginal farmers and (50%) small farmers were illiterate. In case of Operational Research Project's villages landless, marginal, small farmers can read only (33.33%), (10%) and nil respectively. In other hand Intensive Cattle Development Project's villages landless, marginal and small farmers can read only nil, (5%) and nil respectively.

In case of ' can read and write ' in Operational Research Project's villages landless, marginal and small farmers were found nil, (10%) and (10%) respectively while in other hand, in Intensive Cattle Development Project's villages nil, (5%) and (30%) farmers were found in landless, marginal and small farmers respectively.

In Operational Research Project's villages (16.66%), (13.33%) and (10%) landless, marginal and small farmers respectively were found educated upto primary and in other hand in Intensive Cattle Development Project's villages landless, marginal, small farmers were found (5%), (15%) and (10%) respectively.

In Operational Research Project's villages (10%), (10%) and (6.66%) landless, marginal and small farmers respectively were found educated upto middle and in other hand in Intensive Cattle Development Project's villages landless, marginal farmers were found (20%) and (5%) respectively.

In Operational Research Project's villages 2(6.66%) landless farmers having education upto high school, none of the marginal and small farmers having education upto high school. In other side, in Intensive Cattle Development Project's villages landless (5%), marginal (5%) and small farmers (10%) having education upto high school.

No respondent got high education i.e. graduate and above. It indicates that in present situation mostly dairy farmers are illiterate or in other way it can be expressed that illiterate or semi-illiterate persons are only involving themselves in dairying.

The results as presented in table 3 & 4 about the educational status of dairy farmers of ORP and ICDF villages indicated as described above that majority of our respondents in both the settings were illiterate irrespective of their land holdings. Very small number were educated upto middle and high school level.

This situation indicates that an awareness needs to be created about the education of the farmers children. They should be motivated to participate in adult education programmes in greater numbers. Further the extension workers should stress mainly on the case of A.V. aids, TV/Radio farmers should be organised. Charcha Mandals be activated and personal contacts be strengthened to see that the improved animal husbandry practices are adopted by the dairy farmers in both the settings.

(c) Educational Level of Farmer's Family:

Table-5: Distribution of respondents on the basis of level of respondent's family education of O.R.Ps. villages

Educational level	Landless farmers (n=30)	Marginal farmers (n=30)	Small farmers (n=30)
High	14(13.33%)	10(33.33%)	6(20%)
Medium	15(50%)	12(40%)	12(40%)
Low	11(36.66%)	8(26.66%)	12(40%)

Figures in paranthesis are percentages.

Table-6: Distribution of respondents on the basis of level of respondent's family education of I.C.D.Ps. villages

Educational level	Landless farmers (n=20)	Marginal farmers (n=20)	Small farmers (n=20)
High	2(10%)	8(40%)	8(40%)
Medium	13(65%)	8(40%)	9(45%)
Low	5(25%)	4(20%)	3(15%)

Figures in paranthesis are percentages.

The above table 5 & 6 indicated that in Operational Research Project's villages landless (13.33%), marginal (33.33%) and small farmer's families (20%) were falling in category of highlevel of family education and in case of Intensive Cattle Development Project's villages landless (10%), Marginal(40%) and small (40%) were falling in category of high level of family education. However in case of Operational Research Project's villages landless (50%), marginal (40%) and small (40%) farmer's family were falling in medium family education category and in case of Intensive Cattle Development Project's villages landless(65%), marginal (40%) and small (45%) were falling in medium education of family.

Table also show that in case of Operational Research Project's villages landless (36.66%), marginal (26.66%) and small (40%) were falling in the category low, family education and in case of Intensive Cattle Development Project's villages landless (25%), marginal (20%) and small (15%) farmer's families were falling in the categories of low level of family education.

As presented in Table-5 and 6 and described above the family education of the cattle owners of various categories viz. landless, marginal and small farmers. The majority had medium family education however it was noteworthy that in high level of education, the percentages of landless, marginal and small farmers in both the settings i.e. of O.R.P. and I.C.D.P. were 13.33, 10; 33.33, 40 and 20, 40 respectively. This shows a good trend and if it continues the family education will go up in all categories of farmers before long. It is a known fact that higher family education helps in high knowledge and adoption of technical skills. Thus it will be helpful in increasing the rate of adoption of improved dairy husbandry practices.

(d) Family Size:Table-7: Distribution of the respondents on the basis of the family size of ORPs villages

No. of family members	Landless farmers (n=30)	Marginal farmers (n=30)	Small farmers (n=30)
1-5	19(63.33%)	23(76.66%)	16(53.33%)
6-10	11(36.66%)	7(23.33%)	14(46.66%)

Figures in paranthesis are percentages.

Table-8: Distribution of the respondents on the basis of the family size of I.C.D.Ps. villages

No. of family members	Landless farmers (n=20)	Marginal farmers (n=20)	Small farmers (n=20)
1-5	12(60%)	11(55%)	10(50%)
6-10	8(40%)	9(45%)	10(50%)

Figures in paranthesis are percentages

The above table-7 pointed out that (63.33%) landless, (76.66%) marginal and (53.33%) small farmers were possessing small family size (1-5) in Operational Research Project's villages. It was observed that majority of the farmers had small family size.

On the other hand in almost equal distribution was found among small and large family size in Intensive Cattle Development Project's villages. At table-8 showed landless, marginal & small farmers (60%), (55%) & (50%) respectively were possessing small family size (1-5) and (40%), (55%) and (50%) of landless, marginal and small farmers were possessing large family size.

There is no significant difference between various categories of farmers in both the settings. However, it is heartening to note that majority of the farmers were having small i.e. 1-5 family. As is well known that with large family size the resources of the family also get distributed and this results in the standard of living going down, while our effort should be to rise the standard of living of our farmers.

(e) Caste:

Table-9: Distribution of respondents on the basis of caste of O.R.Ps. villages

Sr.No.	Caste Structure	Landless farmers (n=30)	Marginal farmers (n=30)	Small farmers (n=30)
1.	Jat/Rod/Rajpoot	0(0%)	12(40%)	15(50%)
2.	Brahmin	1(3.33%)	3(10%)	0(0%)
3.	Saini/Kamboj	7(23.33%)	9(30%)	11(36.66%)
4.	Lohar, Kumahar, Tailor Nai, Bania, Sonar, Ahir Jolaha.	3(10%)	5(16.66%)	3(10%)
5.	Dhimar, Khati, Dhobi Badai	3(10%)	0(0%)	(0%)
6.	Chamar, Bhangi, Doom	16(53.33%)	1(3.33%)	1(3.33%)

Figures in paranthesis are percentages.

Table-10: Distribution of respondents on the basis of caste of I.C.D.Ps villages.

Sr.No.	Caste Structure	Landless farmers (n=20)	Marginal farmers (n=20)	Small farmers (n=20)
1.	Jat/Rod/Rajpoot	0(0%)	16(80%)	15(75%)
2.	Brahmin	6(30%)	0(0%)	0(0%)
3.	Saini/Kamboj	0(0%)	(0%)	(0%)
4.	Lohar, Kumahar, Tailor Nai, Bania, Sonar, Ahir, Jolaha	5(25%)	4(20%)	3(15%)
5.	Dhimar, Khati, Dhobi Badai.	2(10%)	0(0%)	1(5%)
6.	Chamar, Bhangi, Doom	7(35%)	0(0%)	1(5%)

Figures in paranthesis are percentages

It is observable from above table that majority of respondents (40%) marginal, (50%) small farmers in Operational Research Project's villages and (80%) marginal, (75%) small farmers in Intensive Cattle Development Project's villages were from Jat/Rod/Rajpoot, who are keeping milch animals.

Brahmin in Operational Research Project's villages were found (3.33%) landless, (10%) marginal and none in small farmers, category. In case of Intensive Cattle Development Project's villages landless (30%), none in marginal and small farmers categories were found.

From above tables we may observe that none of the Jat/Rod/Rajpoot casts were in category of landless.

In Intensive Cattle Development Project's villages none of Brahmin comes under marginal and small farmer's categories.

In Operational Research Project's villages (10%) marginal farmers come in from Brahmin but no brahmin comes in category of small farmers.

Saini/Kamboj were almost equally distributed in all three categories of farmers as landless (23.33%), marginal (30%) and small (36.66%) farmers in Operational Research Project's villages.

But Intensive Cattle Development Project's villages which were choosen for study farmers the caste of Saini/Kamboj were not found.

Lohare, Kumahar, Tailor, Nai, Bania, Sonar, Ahir and Jolaha were found to be landless (10%), marginal (16.66%) and small (10%) farmers in Operational Research Project's villages. In Intensive Cattle Development Project's villages landless (25%), marginal (20%) and small (15%) farmers were found.

Mostly Chamar, Bhangi, Doom as (53.33%) except (3.33%), Marginal and (3.33%) small farmers were falling under the category of landless farmers in Operational Research Project's villages. In Intensive Cattle Development Project's villages majority of Chamar, Bhangi, Doom were falling in landless category i.e. (35%) except (5%) in small farmers.

The data presented in table No. 9 and 10 regarding farmers of O.R.P. and I.C.D.P. respectively indicated that in the landless category majority of the respondents were belonging to scheduled caste and backward castes. While there were 3% of the respondents of this category were Brahmin, none was from Jat, Rod and Rajput castes in O.R.P. setting. Almost similar was the trend in I.C.D.P. setting while majority of respondents in small and marginal farmers were belonging to the Rod, Jat & Rajput castes. This means that while the higher caste farmers have farming as major source of livelihood the low caste groups depend on other subsidiary occupations or labour for their livelihood. As dairying and husbandry is a labour intensive enterprise, this should be advocated in these groups and there people should be motivated to adopt modern methods of cattle keeping and raising their family income to fullfill their aspirations. The extension agencies should develop programmes to involve these group of population in their activities alongwith other caste groups.

(f) Herd size:

Table-11: Distribution of respondents on the basis of herd size of O.R.Ps. villages

No. of Animals	Landless farmers (n=30)	Marginal farmers (n=30)	Small farmers (n=30)
One milch animals	1(3.33%)	0(0%)	0(0%)
2-4 milch animals	28(93.33%)	12(40%)	10(33.33%)
5-7 milch animals	1(3.33%)	17(56.66%)	12(40%)
More than 7 milch animals	0(0%)	1(3.33%)	8(26.66%)

Figures in paranthesis are percentages

Table-12: Distribution of respondents on the basis of herd size of I.C.D.Ps villages

No. of Animals	Landless farmers (n=20)	Marginal farmers (n=20)	Small farmers (n=20)
One milch animal	0(0%)	0(0%)	0(0%)
2-4 milch animals	19(95%)	12(60%)	6(30%)
5-7 milch animals	1(5%)	8(40%)	12(60%)
More than 7 milch animals	0(0%)	0(0%)	2(10%)

Figures in paranthesis are percentages

The tables 11 & 12 indicate that majority of dairy farmers falls in the category of 2-4 milch animals as in Operational Research Project's villages landless (93.33%), marginal (40%) and small (33.33%) farmers and in Intensive Cattle Development Project's villages landless (95%), marginal (60%) and small (30%) farmers had 2-4 milch animals.

No farmers wants to keep only one milch animal except (3.33%) landless in Operational Research Project's villages.

One important observation was that 5-7 milch animals were kept mostly by marginal and small farmers. It was very rare that any landless cattle owners kept so many animals while in Operational Research Project's villages landless (3.33%), marginal (56.66%) and small (40%) farmers were having 2 animals. In Intensive Cattle Development Project's villages the percentage of landless farmers (51%), having 5-7 milch animals, marginal (40%) and small (60%) farmers.

It may also be observed that more than 7 milch animals were kept mostly by small farmers, very rarely by marginal and landless farmers. As In Operational Research Project's villages no landless marginal only 3.33% and small 26.66% farmers were found to have more than 7 milch animals. In Intensive Cattle Development Project's villages also non landless and marginal farmers and only (10%) small farmers were found to have more than 7 milch animals.

It can be observed from the above table No. 11 & 12 that the land holding size were direct relationship with herd size while landless cattle owners were keeping only 2-4 milch animals the marginal & small farmers also had medium herd size because they can not spare enough. Land for fodder production for the maintenance of large herd. The large, medium and to certain extent the small farmers may therefore be encouraged to keep more number of animals depending upon the capacity to spare land for fodder production. It has been observed by the researcher that some of these farmers interested in cattle keeping are maintaining like herd i.e. the prized animals yielding more than 15 litre of milk per day. They have these animals and take pride in maintaining these. This certainly enhances their prestige in their society and they are recognised as leaders in cattle keeping in the village.

#### SECTION- B

Knowledge and adoption levels of breeding, feeding, healthcare and managerial practices:

The major focus of the study is to bring out the levels of knowledge and adoption of dairy innovations. Knowledge of any innovation is the initial step of that innovation to be adopted. Therefore we would like to see first of all the knowledge level of different breeding, feeding, healthcare and managerial practices among the farmers of Operational Research Project's villages and Intensive Cattle Development Project's villages.

KNOWLEDGE

Table-13: The distribution of respondents according to their levels of knowledge of breeding, feeding, healthcare and managerial practices of the respondents of O.R.Ps villages

$N = 210$

Sr.No.	Name of innovations	Knowledge		
		High	Medium	Low
1.	Breeding	18(20%)	41(45.55%)	31(34.44%)
2.	Feeding	19(21.11%)	41(45.55%)	30(33.33%)
3.	Healthcare	26(28.88%)	43(47.77%)	21(23.33%)
4.	Management	20(22.22%)	40(44.44%)	30(33.33%)
5.	Overall	15(16.66%)	63(70%)	12(13.33%)

Figures in paranthesis are percentages.

It may be observed from above table that majority of the respondents fall in the category of medium level of knowledge in all the areas i.e. breeding, feeding, healthcare and management.

In breeding area the knowledge level of Operational Research Project's farmers were found 20%, 45.55% and 34.44% high, medium and low respectively. The level of scientific dairy practices in feeding area has been observed of the farmers were found 21.11%, 45.55% and 33.33% high, medium and low respectively.

In the area of health care knowledge levels were found to be high, medium and low of 28.88%, 47.77%, 23.33% respondents respectively.

Management levels of knowledge were found to be high, medium & low of 22.22%, 44.44%, 33.33% respondents respectively.

Overall levels of knowledge were found to be high, medium and low of 16.66%, 70% and 13.33% respondents of Operational Research Project's villages regarding scientific dairy practices. The results points out that more efforts are needed to increase the levels of knowledge of dairy husbandry practices by applying various extension techniques.

Table-14: Distribution of respondents according to their knowledge levels regarding breeding, feeding, healthcare and managerial practices of the respondents of I.C.D.Ps. villages

N = 60

Sr.No.	Name of innovation	Knowledge		
		High	Medium	Low
1.	Breeding	13(21.66%)	37(61.66%)	10(16.66%)
2.	Feeding	13(21.66%)	34(56.66%)	13(21.66%)
3.	Healthcare	17(28.33%)	28(46.66%)	15(25%)
4.	Management	18(30%)	20(33.33%)	22(36.66%)
5.	Overall	9(15%)	38(63.33%)	13(21.66%)

Figures in paranthesis are percentages.

It may be observed from table -14 that majority of farmers fall in the category of medium level of knowledge in all the areas i.e. breeding, feeding, healthcare and management.

In breeding area knowledge level of Intensive Cattle Development Project's farmers 21.66%, 61.66% and 16.66% were found to be high, medium and low respectively.

In feeding area knowledge level of Intensive Cattle Development Project's farmers 21.66%, 56.66% and 21.66% were found to be high, medium and low respectively.

In health care same trend was found i.e. 28.33%, 46.66% and 25% of the respondents was having high, medium and low levels of knowledge respectively.

However in area of management the farmers were found almost equally distributed in knowledge levels i.e. 30%, 33.33% and 36.66% high, medium and low respectively.

63.33% farmers of Intensive Cattle Development Project's villages fell under the category of medium knowledge level and only 15%, 21.66% farmers come under the categories of high and low level of knowledge regarding scientific dairy practices.

Only 15% of the respondents were having high overall knowledge levels which should be improved by organising more educational programmes in the area with the help of extension staff.

ADOPTION

Table-15: Distribution of respondents according to their adoption levels regarding breeding, feeding, healthcare and managerial practices of the respondents of O.R.Ps. villages

N = 90

Sr.No.	Name of innovations	Adoption		
		High	Medium	Low
1.	Breeding	34(37.77%)	43(47.77%)	13(14.44%)
2.	Feeding	33(36.66%)	46(51.11%)	11(12.22%)
3.	Healthcare	36(40%)	15(16.66%)	39(43.33%)
4.	Management	38(42.22%)	21(23.33%)	31(34.44%)
5.	Overall	17(18.88%)	57(63.33%)	16(17.77%)

Figures in paranthesis are percentages.

From the above table it may be observed that majority of farmers of Operational Research Project's villages fall in category of medium level of adoption in the areas of overall adoption of scientific dairy practices as shown table-15 as 63.33%.

In area of breeding 37.77% & 47.77% farmers of O.R.Ps. villages fell in category of high and medium levels of adoption respectively. Only 14.44% farmers fell under the category of low adoption level.

In feeding area of adoption level of O.R.Ps. farmers 36.66%, 51.11% keeping levels of adoption, high and medium respectively and only 12.22% farmers come in the category of low level of adoption.

In area of health care 40% O.R.Ps farmers fell in high level of adoption and only 16.66% farmers fell in category of medium level of adoption. In category of low level of adoption 43.33% farmers were found.

In area of management of scientific dairy practices 42.22%, 23.33% and 34.44% farmers of O.R.Ps. villages fell in categories of high, medium & low levels of adoption respectively.

Overall 18.88% farmers in O.R.Ps villages come in category of high level of adoption and only 17.77% farmers come in category of low level of adoption of scientific dairy practices.

The results showed that only 18.88% respondents had high level of overall adoption. It may, therefore, be suggested that more efforts should be made to identify the constraints and to remove these constraints to the extent possible so that this percentage could be increased.

Table-16: Distribution of respondents according to their adoption levels regarding breeding, feeding, healthcare and managerial practices of the respondents of I.C.D.Ps. villages

N = 60

Sr.No.	Name of Innovations	Adoption		
		High	Medium	Low
1.	Breeding	10(16.66%)	37(61.66%)	13(21.66%)
2.	Feeding	18(30%)	30(50%)	12(20%)
3.	Healthcare	22(36.66%)	24(56.66%)	14(23.33%)
4.	Management	18(30%)	24(40%)	18(30%)
5.	Overall	9(15%)	37(61.66%)	14(23.33%)

Figures in paranthesis are percentages.

Above table indicates that a majority of farmers of Intensive Cattle Development Project's villages come in category of medium level of adoption.

In area of breeding 61.66% & 16.66% farmers come in category of medium and high levels of adoption respectively.

In area of feeding 50% and 30% farmers of I.C.D.Ps. villages come in categories of medium and high levels of adoption respectively.



In area of healthcare 56.66% & 33.66% farmers were found in the categories of medium and high levels of adoption respectively.

In area of management, the farmers were found equally distributed i.e. 30% for each categories i.e. high and low levels of adoption. In category of medium level of adoption 40% farmers were found in area of management.

It may be observed from above table that 15% & 61.66% farmers of I.C.D.Ps. villages were found in high and medium levels of adoption respectively. Only 23.33% farmers were found in category of low level of adoption.

It may be observed that the respondents ranging from 20 to 30 percent fell in the category of low adoption. The overall figure indicated that 23.33% farmers had only low level of adoption. It is this group of farmers which needed utmost attention of the extension workers and from the earlier studies it is known that this group that is the laggards adopt the new technology with great difficulty and at very late stage, but it seems that the time has come that effort should be directed to this group now.

Table-17: Distribution of the respondents according to their land holding size in relation to knowledge levels in O.R.Ps. villages

Knowledge levels	N = 90		
	Landless farmers	Marginal farmers	Small farmers
High	1(3.33%)	2(6.66%)	12(40%)
Medium	20(66.66%)	25(83.33%)	18(60%)
Low	9(30%)	3(10%)	0(0%)

Figures in paranthesis are percentages.

Above table indicated that from the landless farmers of O.R.Ps villages only 3.33% of them had high level of knowledge while 66.66% and 30% had medium and high levels of knowledge.

In case of marginal farmers 83.33% possess medium level of knowledge while on 6.66% and 10% farmers fell in the categories of high and low level of knowledge respectively.

Small farmers of O.R.Ps villages have high level of knowledge and 60% farmers have medium level of knowledge, non of the farmers have low level of knowledge about scientific dairy practices.

From above table it can be concluded that mostly farmers of O.R.Ps villages as the categories of landless, marginal and small fell in the medium level of knowledge.

It seems that land holding size has a direct bearing upon knowledge level. As the land holding size increases, the level of knowledge also increases as shown in above table landless, marginal and small farmers 3.33%, 6.66% and 40% respectively have high level of knowledge about scientific dairy husbandry practices. Indirectly it implies that more emphasis needs to be given to landless group so that their knowledge also goes up.

Table-18: Distribution of the respondents according to their land holding size in relation to adoption levels of O.R.P.s. villages  
N = 90

Adoption levels	Landless farmers	Marginal farmers	Small farmers
High	3(10%)	6(20%)	8(26.66%)
Medium	17(56.66%)	18(60%)	22(73.33%)
Low	10(33.33%)	6(20%)	0(0%)

Figures in paranthesis are percentages.

Above table indicates that only 10% landless farmers of O.R.P.s. villages have high level of adoption of dairy husbandry practices.

56.66% and 33.33% of the landless farmers have medium and low level of adoption of scientific dairy husbandry practices.

In case of marginal farmers 60% have medium level of adoption and only 20% farmers have high and low levels of adoption of scientific dairy husbandry practices.

In case of small farmers 73.33% have medium level of adoption and only 26.66% farmers have high level of adoption and none of the farmers has low level of adoption of scientific dairy husbandry practices.

From above table we can conclude that a majority of O.R.Ps. villages farmers fall in the category of medium level of adoption and land holding size has a direct effect on adoption level of scientific dairy husbandry practices as the land holding size increases, the level of adoption also increases as can be seen in above table landless, marginal and small farmers 10%, 20% and 26.66% respectively have high level of adoption of scientific dairy husbandry practices. Since, this variable i.e. land size can not be increased the only influence which can be drawn is that the extension staff should pay more attention to the landless cattle owners to increase their level of adoption of dairy husbandry practices.

Table-19: Distribution of the respondents according to their land holding size in relation to knowledge levels of I.C.D.Ps. villages

N = 60

Knowledge levels	Landless farmers	Marginal farmers	Small farmers
High	0(0%)	1(5%)	8(40%)
Medium	6(30%)	19(95%)	12(60%)
Low	14(70%)	0(0%)	0(0%)

Figures in paranthesis are percentages.

Above table indicates that only 30% of landless farmers of I.C.D.Ps. villages have medium level of knowledge of scientific dairy husbandry practices and non of the farmers has high level of knowledge 70% of the landless farmers have low level of knowledge in I.C.D.Ps. villages.

In case of marginal farmers only 5% have high level of knowledge and 95% have medium level of knowledge. None of the marginal farmers has low level of knowledge in I.C.D.Ps. villages regarding scientific dairy husbandry practices.

From above observations it can be concluded that in case of marginal and small farmers of I.C.D.Ps. villages majority of farmers fell in the category of medium level

of knowledge. But in case of landless a majority of farmers fell in the category of low level of knowledge.

It can also be observed that with the increase in land holding size level of knowledge also increases. As shown in above table landless, marginal and small farmers nil, 5% and 40% respectively have high level of knowledge about scientific husbandry practices.

Table-20: Distribution of respondents according to their land holding size in relation to adoption levels of I.C.D.Ps. villages

N=60

Adoption levels	Landless farmers	Marginal farmers	Small farmers
High	0(0%)	0(0%)	9(45%)
Medium	6(30%)	20(100%)	11(55%)
Low	14(70%)	0(0%)	0(0%)

Figures in paranthesis are percentages.

Above table indicates that in case of landless and marginal farmers of I.C.D.Ps. villages, none of the landless farmers falls in the category of high level of adoption, while in case of small farmers 45% fall in category of high level of adoption.

Landless, marginal and small farmers 30%, 100%, 55% respectively fall in category of medium level of adoption of scientific dairy husbandry practices.

None of the marginal and small farmers have low level of adoption in I.C.D.Ps. villages. But 70% of the landless farmers has low level of adoption.

We may, therefore, conclude that a majority of farmers of marginal and small categories have medium level of adoption. But in case of landless farmers, a majority of farmers fall in category of low level of adoption.

From above observations we may conclude that impact of land holding size was found very effective in case of small farmers.

One important and interesting thing is this, that 100% of marginal farmers have medium level of adoption of scientific dairy husbandry practices.

SECTION - C

Correlation between various traits and knowledge and adoption

In this section 'r' values have been worked out of various traits i.e. age, education, family education, family size, caste, land holding, herd size with knowledge and adoption of scientific dairy practices by the respondents.

The 'r' value indicates the relationship of respondents' traits with their knowledge and adoption. The correlation between knowledge and adoption has also been worked out to see how strong is the relationship between these two variables.

The 'r' values of knowledge with various traits have been presented in table-21. The main findings are discussed as follows:

Table-21: Correlations between knowledge and various traits

Sr.No.	Traits	'r' value (O.R.P.)	'r' value (I.C.D.P.)
1.	Age	.1292	-.0863
2.	Education	-.0608	.0078
3.	Family Education	.0235	.1995
4.	Family size	.1055	.0915
5.	Caste	.3667**	.4184**
6.	Land holding	.5184**	.7899**
7.	Herd Size	.4503**	.5590**

\*\* Significant at one percent level.

Caste:

'r' values .3667 and .4184 for O.R.P. and for I.C.D.P. respectively, which are significant at one per cent level. It indicates that there is positive relationship between caste and knowledge of respondents.

Land Holding:

'r' values are .5184 and .7899 for O.R.P. and I.C.D.P. respectively which are significant at one per cent level. It indicates there is positive relationship between land holding and knowledge of respondents. These findings, find support from the studies of Sinha and Brahmjit(1964), Patel (1965) and Bhaskaran and Mahajan (1968).

Herd Size:

'r' values are .4503 and .5590 for O.R.P. and I.C.D.P. respectively, which are significant at one per cent level. It indicates there is positive relationship between herd size and knowledge of respondents. These findings have been reported by Malik (1978).

The 'r' values of various traits and adoption have been presented in table-22.

Table-22: Correlations between adoption and various traits

Sr.No.	Traits	'r' value (O.R.P.)	'r' value (I.C.D.P.)
1.	Age	.0862	-.1622
2.	Education	-.0756	.1120
3.	Family Education	-.0795	.2576*
4.	Family Size	.0783	-.0280
5.	Caste	.3210**	.3240**
6.	Land Holding	.4704**	.8205**
7.	Herd Size	.3382**	.5998**

\*\* Significant at 1 per cent level.

\* Significant at 5 per cent level.

The worked out results which have been shown in table-22 are as under:-

Family Education:

The 'r' values -.0795 and .2576 for O.R.P. and I.C.D.P. respectively. In these value of O.R.P. is not significant and value of I.C.D.P. is significant at five per cent level.

Caste:

The 'r' values .3210 and .3240 for O.R.P. and I.C.D.P. respectively, which are significant at one percent level. It indicates the positive relationship between caste and adoption of the respondents.

Land Holdings:

The 'r' values are .4704 and .8205 for O.R.P. and I.C.D.P. respectively, which are significant at one per cent level. It indicates the positive relationship between land holding size and adoption.

This view has also been reported by Singh and Sohal (1967), Rao (1969) and Thakur (1975) and Malik (1978).

Herd size:

The 'r' values are .3382 and .5998 for O.R.P. and I.C.D.P. respectively, which are significant at one percent level. It indicates the positive relationship between herd size and adoption of the respondents.

This view has been strengthened by Sinha and Sinha (1971), Patel (1965) and John (1974).

Finally 'r' values have been worked out between knowledge and adoption and relationship between knowledge and adoption has been ascertained. It has been found that there is positive relationship between knowledge and adoption. As knowledge increases the adoption also increases.

The 'r' values are .8407 and .8016 for O.R.P. and I.C.D.P. respectively, which are significant at one percent level supported by Majumdar and Majumdar (1967). The similar results have also reported by Sinha and Bhasin (1968) in their studies.

The above relationships between the personal traits of the respondents and knowledge and adoption indicated that there is no relationship of age, education, family size with either knowledge or adoption of dairy innovation. Only caste, land holding and herd size were found significantly related with knowledge and adoption which in case of adoption in I.C.D.P. area family education has also been found significantly (at 5 % level) correlated with adoption.

## SUMMARY AND CONCLUSION

### CHAPTER - V

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The rapidly growing human population, vegetation of the deserts and the gap between the requirements of the population of adequate quantity and quality of food on the one hand and efforts to increase food production on the other, have made the problem of agricultural production in India much more serious and urgent. It is realized that when quantity is somewhat satisfied, quality with the successive satisfactory harvests during the past ten years, there is a feeling of relief so far as the per capita availability of internally produced food is concerned. Most of our deficiencies in diet such as low special significant content of protein, particularly protein of animal origin which is essential for satisfactory growth and tissue repair right from early age through adulthood and old age. This deficiency is mainly due to the low productivity of milk and other animal products of our livestock.

Intensive efforts through a number of organizations and agencies have been made to increase the productivity of livestock by diffusing improved methods of dairy farming. The most important of these are the Operational Research Project at the National Dairy Research Institute, Karnal and Intensive Cattle Development Project in accordance with a series of such projects under

### SUMMARY AND CONCLUSION

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## SUMMARY AND CONCLUSION

The rapidly growing human population, vagaries of the seasons and the gap between the requirements of the population of adequate quantity and quality of food on the one hand and efforts to increase food production on the other, have made the problem of agricultural production in India much more serious and urgent. It is realized that when quantity is somewhat satisfied, quality with the successive satisfactory harvests during the last ten years, there is a feeling of relief so far as the per capita invariability of internally produced food is concerned. Most critical deficiency in diet which assumes special significance is that of protein, particularly protein of animal origin which is essential for satisfactory growth and tissue repairs right from early age through adulthood and old age. This deficiency is mainly due to the low productivity of milk and other animal products of our livestock.

Intensive efforts through a number of organisations and programmes have been made to increase the productivity of livestock by diffusing improved practices of dairy farming. The efforts aiming at improvement of dairy cattle are the Operational Research Project at the National Dairy Research Institute, Karnal and Intensive Cattle Development Project in accordance with a series of such projects under

the aegis of Indian Council of Agricultural Research. The projects from the time of its inception in July, 1975 ( Operational Research Project ) and 1963-64 ( Intensive Cattle Development Project ) have strived hard to disseminate the new ideas of dairy farming and motivating the people to adopt those. To what extent these have succeeded to achieve their goal, the present study entitled "A study of differential adoption of scientific dairy practices by the dairy farmers of O.R.P. and I.C.D.P. villages around Karnal" has been undertaken. The specific objectives of the study are as under:

1. To identify the personal traits of the respondents.
2. To find out the level of knowledge and adoption of improved dairy husbandry practices by the different categories of dairy farmers.
3. To find out the relationship between adoption and knowledge of different categories of farmer with their personal traits.

The present study is purposively located in the Intensive Cattle Development Project area and Operational Research Project area of the National Dairy Research Institute, Karnal.

Four villages (Two from each projects area) have been randomly selected. The data were collected through a structured interview schedule from one hundred fifty

Respondents selected randomly. The schedule used for collecting data comprising three parts. In the first part informations have been obtained regarding personal traits like, age, education, family education, family size, landholding & herd size. Part second contains twenty questions to know the knowledge of respondents and in part third a set of twenty four items for measuring adoption have been included.

The salient findings of the study are given below:

1. Majority of respondents falls in the age group of 30 to 50 years (70%).
2. Mostly respondents are illiterate in O.R.P. villages, Illiteracy is 64% and in ICDP villages illiteracy is found to be 61%.
3. Majority of farmers in ORP and ICDP have a herd size of 2-4 milch animals. In ORP 56% respondents have 2-4 milch animals and in ICDP 60% also have 2-4 milch animals.
4. In all four areas i.e. breeding, feeding, healthcare and management, mostly farmers have medium level of knowledge.
5. Landless farmers have low level of knowledge in all four areas in comparison to marginal & small farmers.
6. Mostly farmers (63.33%) had medium level of adoption of scientific dairy husbandry practices.

7. Regarding healthcare 43.22% farmers have low level of adoption.
8. 33.33% landless farmers have low level of adoption.
9. Caste is positively related with knowledge and adoption of scientific dairy practices by the respondents.
10. The 'r' values in case of herd size are significant at 1% level. It indicates strong relationship between herd size with knowledge and adoption.
11. Land holding size is also significantly related with knowledge and adoption.

#### SUGGESTIONS

The main reason for low knowledge and adoption of improved dairy farming practices is illiteracy. Mostly respondents are illiterate. To get knowledge and its retention the education has a great role. A planned programme should be started for educating the farmers.

In both the areas of Operational Research Project and Intensive Cattle Development Project, supplies and services have been provided sufficiently. But adequate attention does not seem to have been paid for increasing the knowledge of farmers about the improved dairy farming practices.



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APPENDICES

APPENDICES

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1. Name of Inventor

2. Name of Assignee

3. Title of Invention

4. International Law

5. ...

vi) ...

vii) \* \* \* \* \*

viii) \* \* \* \* \*

ix) \* \* \* \* \*

x) \* \* \* \* \*

xi) ...

xii) ...

xiii) ...

14. ...

15. ...

16.

17.

18.

19.

20.

21.

22.

23.

APPENDIX - I

INTERVIEW SCHEDULE

( Part-A )

<u>Sr.No.</u>	<u>Item</u>	<u>Score</u>
1.	Name of Farmer	
2.	Name of Village	
3.	Age of Farmer	
4.	Educational Level of Farmer	
	i) Illiterate	0
	ii) Can read only	1
	iii) Can read and write only	2
	iv) Primary	3
	v) Middle	4
	vi) High	5
	vii) Graduate and above	6

5. Educational Level of Family Members

<u>Sr.No.</u>	<u>Name of family members</u>	<u>Age</u>	<u>Educational Level</u>
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

6. Caste:

To which caste do you belong ?

Chamar, Bhengi, Doom	1
Dhimar, Khati, Dhobi, Bedai	2
Lahore, Kumahar, Tailor, Nai Banias, Sonar, Ahir, Jolaha	3
Saini/Kamboj	4
Brahmin	5
Jat/Rod/Rajput	6

7. Operational Land Holding (Acres)

	<u>Irrigated</u> <u>(acres)</u>	<u>Unirrigated</u> <u>(Acres)</u>	<u>Total</u> <u>(acres)</u>
Land owned			
Leased in			
Leased out			
Grand Total (AC)			

8. Herd Size:

Please give information about your herd size:

Animal Type	In milk	In milk & pre-gnant	Dry	Dry & Preg-nant	Heifers	Cal- ves	Tot.
Indegenous cows							
Crossbred cows							
Buffaloes							
Bullocks							
Crossbred Buffalo							

## (PART - B )

KNOWLEDGE TEST (DAIRY INNOVATIONS)

I. <u>BREEDING</u>	<u>Score</u>
1. What are the exotic breeds you know?	
a) Emumeration of 3 or more breeds	3
b) Emumeration of 2 breeds	2
c) Enumeration of 1 breed	1
d) Enumberation of none/wrong answer	0
<u>Exotic Breeds</u>	
H.F., Brown Swiss, Jersey, Red Dane etc.	
2. What is the right time of AI when a cow is in normal heat ?	
a) Between 12 and 18 hours	3
b) Between 19 and 22 hours	2
c) After 22 hours	1
d) Irrelevant/ no answer	0
3. After how many days of calving, a normal cow/buffalo should be got inseminated, if comes in regular and normal heat ?	
a) Between 60 and 90 days	3
b) Between 91 and 120 days	2
c) More than 120 days	1
d) Irrelevant/no answer	0
4. At what age a crossbred heifer with average body weight should be got inseminated ?	
a) Between 15-18 months	3
b) Between 19-22 months	2
c) More than 22 months	1
d) Irrelevant/ no answer	0

5. After how many days of AI a cow/ buffalo should be checked for pregnancy ?
- |                           |   |
|---------------------------|---|
| a) Between 45 and 60 days | 3 |
| b) Between 61 and 90 days | 2 |
| c) After 90 days          | 1 |
| d) Irrelevant/ no answer  | 0 |

## II FEEDING

6. After how many hours of birth, a newly born calf should be fed colostrum ?
- |  |   |
|--|---|
| a) Within 2 hours  | 3 |
| b) Between 3 and 4 hours   | 2 |
| c) More than 4 hours or after dropping of placenta whichever is earlier. | 1 |
| d) Irrelevant/ no answer   | 0 |
7. What practices should be followed to feed the new born calf ?
- |                                       |   |
|---------------------------------------|---|
| a) Enumeration of 3 or more practices | 3 |
| b) Enumeration of 2 practices         | 2 |
| c) Enumeration of 1 practices         | 1 |
| d) Enumeration of none/wrong answer   | 0 |

### PRACTICES

- Weaning of calf should be done
- Newly born calf should be given colostrum for 4-5 days
- Whole milk should be fed between 4-12 days after colostrum
- Milk/colostrum should be fed 10% of its body weight.

## Score

8. What should be fed to a crossbred cow daily ?
- a) Green fodder + compound feed or concentrate mixture ( Prepared at home in proper proportion ) + Mineral Mixture and feed supplement- more than thrice a day. 3
  - b) Green fodder + concentrate mixture ( Prepared at home in proper proportion ) + salt- thrice a day. 2
  - c) Fodder and feed ( Whatever available ) ad lib. 1
  - d) Irrelevant / no answer 0
9. How much additional concentrate feed should be given to a pregnant cow in the advance stage ( 7-8 months ) of pregnancy ?
- a) 1 kg. concentrate feed 3
  - b) 1.5 kg concentrate feed 2
  - c) 2 kg. concentrate feed 1
  - d) No answer/irrelevant 0
10. What are the advantages of pre-mixed cattle feed ?
- a) Enumeration of 3 or more advantage 3
  - b) Enumeration of 2 advantages 2
  - c) Enumeration of 1 advantages 1
  - d) Enumeration of one/ wrong answer 0

ScoreAdvantages

- Provides optimum quantity of essential ingredient for general growth.
- Enhances milk production of lactating animal
- Improves health of the animals
- Reduces the chance of diseases specially caused by mineral deficiency.

III HEALTH CARE

11. What are the main contagious/infectious diseases of cattle against which vaccination should be done ?
- |                                      |   |
|--------------------------------------|---|
| a) Enumeration of 3 or more diseases | 3 |
| b) Enumeration of 2 diseases         | 2 |
| c) Enumeration of 1 disease          | 1 |
| d) Enumeration of none/wrong answer  | 0 |

Diseases

- H.S., R.P., F.M.D., B.Q., Anthrax
12. What is the right time of vaccinations against the contagious/infectious diseases ?
- |  |   |
|--|---|
| a) Enumeration of correct time for 3 or more diseases. | 3 |
| b) Enumeration of correct time for 2 diseases          | 2 |
| c) Enumeration of correct time for 1 disease           | 1 |
| d) Enumeration of correct time for none/wrong answer   | 0 |

ScoreVACCINATION SCHEDULE

<u>Sr.No.</u>	<u>Disease</u>	<u>Time for vaccination</u>
1.	F.M.D.	March-April
2.	H.S.	May-June
3.	R.P.	Preferably May-June
4.	Anthrex	Any time(After 6 months of age)
5.	B.Q.	May-june
6.		
7.		
13.	What are the important symptoms of F.M.D. ?	
	a) Enumeration of 5 or more symptoms	3
	b) Enumeration of 3-4 symptoms	2
	c) Enumeration of 1-2 symptoms	1
	d) Enumeration of none/wrong answer	0

SYMPTOMS

- i) Initially there is high fever
- ii) Sluggishness
- iii) Reduced feed consumption
- iv) Profuse salivation from the mouth
- v) Lameness
- vi) Snacking of the lips
- vii) Abrupt reduction in milk yield if the animal is in milk.

14. What are the important symptoms of H.S. ?
- |                                      |   |
|--------------------------------------|---|
| a) Enumeration of 5 or more symptoms | 3 |
| b) Enumeration of 3-4 symptoms       | 2 |
| c) Enumeration of 1-2 symptoms       | 1 |
| d) Enumeration of none/wrong answer  | 0 |

SYMPTOMS

- i) Short rapid and painful respiration in the initial stage.
- ii) Restless, Off-feed and start severing.
- iii) Mostly swelling starts in head, throat, neck and chest region, but very extensive in throat region.
- iv) Body temperature rises sharply with rapid breathing.
- v) Watery discharge from eyes and nose.
- vi) The sever stage is marked by laboured breathing with peculiar grunting sound.

15. What are the important symptoms of mastitis disease ?
- |                                      |   |
|--------------------------------------|---|
| a) Enumeration of 3 or more symptoms | 3 |
| b) Enumeration of 2 symptoms         | 2 |
| d) Enumeration of 1 symptoms         | 1 |
| d) Enumeration of none/wrong answer  | 0 |

SYMPTOMS

- i) Swelling of one or more quarter/teats.
- ii) Pain in affected quarter/teat
- iii) Flakes or clots with the milk at initial stage.
- iv) Pus, blood, turbid, thin milk in advance cases.

IV. MANAGEMENT

16. What practices should be followed to get the clean milk production?
- a) Enumeration of 3 or more practices 3
  - b) Enumeration of 2 practices 2
  - c) Enumeration of 1 practices 1
  - d) Enumeration of none/ no answer 0

PRACTICES

- i) Use of clean utensil for milking
    - ii) Wash the udder and teats before milking with warm water containing soda, soap and then using towels.
    - iii) Using clean water to clean udder and teats.
    - iv) Taking the animal to other separate clean place.
    - v) Clean the animal before milking
17. What should be done to maintain the cleanliness of the Pacca cattleshed/ house?
- a) Sweeping and washing the floor daily in the morning and white washing the shed at least twice a year. 3
  - b) Sweeping and washing the floor once a day. 2

		X
		Score
	c) Sweeping once in a day	1
	d) Irrelevant/ no answer	0
18.	How much dry period one should allow for a lactating pregnant crossbred cow ?	
	a) 51-60 days	3
	b) 41-50 days	2
	c) 31-41 days	1
	d) Irrelevant/no answer	0
19.	At what age one should get his crossbred calves dehorned ?	
	a) At the age of 7-15 days	3
	b) After the age of 15 days & before 30 days.	2
	c) At the age of 31 days or above	1
	d) Irrelevant/no answer	0
20.	At what age one should get his male calf castrated ?	
	a) Between 1 and 2 years age	3
	b) After 2 years but upto 3 years of age	2
	c) Above 3 years age	1
	d) Irrelevant/no answer	0

(Part- C)

Interview Schedule for the Measurement  
of Adoption of Dairy Farming Practices

Sl.No.	Practices	Always (2)	Sometimes (1)	Never (0)
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Area-I: BREEDING

1. Keeping a crossbred (C.B.) cow/  
Heifer/Young stock.
2. Keeping watch on oestrus cycle  
and heat symptoms of cows/buff.
3. Getting covered the C.B. heifer  
with in 15-21 months of age.
4. Practising Artificial Insemination  
in animals at proper time of heat.
5. Practising the cow served with in  
60-90 days after calving.
6. Practising the pregnancy diagno-  
sis between 45-120 days after  
services.

Area-2: Feeding

1. Feeding colostrum to new born  
calves within 2-4  
hours of birth.
2. Feeding colostrum continuously  
to new born calves upto 5th  
day of its birth.
3. Feeding concentrate mixture on  
the basis of milk production.
4. Providing green fodder to  
animals round the year.
5. Practising HYVs seeds for  
fodder production.
6. Practising fertilization in  
raising fodder crops.

Always	Sometimes	Never
(2)	(1)	(0)

Area-3: HEALTHCARE

1. Practising vaccinations timely and regularly against the contagious diseases especially H.S., F.M.D and B.Q.
2. Segregating the diseased animals suffering from contagious disease.
3. Burying the dead body if the animal die of contagious disease.
4. Practising pesticides (e.g. Melthion/B.H.C. etc) for the prevention and control of ticks mites etc.
5. Practising treatment of sick animals/repeat breeders and anoestrus cases by veterina-  
rism.

Area-4: MANAGEMENT:

1. Providing clean and fresh water for drinking to animals.
2. Practising full hand method of milking i.e. without the use of thumb for miling the animals.
3. Maintenance of cleanness in the animal shed/house.
4. Practising in a dry period of about 60 days in C.B. Cows.
5. Practising dehoming in calving at the age of about 7 to 31 days.
6. Practising castration of male calves between one and two years of age.

VERIFIED  
Manjeet  
Singh  
Signature

