

# Extent of Knowledge of Trained and Untrained Dairy Farmers of Malwa Region of Punjab

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## Abstract

The adoption of scientific practices can be accelerated if the farmers possess scientific knowledge about the sound management practices of dairy enterprise. Dairy farming provides substantial employment opportunities and supplementary income to rural farmers. A study was conducted in the Malwa region comprising of Bathinda, Mansa and Muktsar Districts of Punjab (India) on a sample of 120 respondents i.e., 60 trained and 60 untrained dairy farmers. The ex post facto design research design was used. In order to measure the knowledge level of the trained and untrained dairy farmers, a number of items were prepared in the knowledge test with respect to improved dairy management practices in four major areas of breeding, feeding, health care and miscellaneous management. The knowledge index was calculated to see the extent of knowledge level in different aspects of improved dairy management practices (IDMPs). The investigation revealed that extent of knowledge of the trained dairy farmers was above average whereas; extent of knowledge of untrained dairy farmers was below average. The maximum knowledge index of trained farmers was 72.50 in breeding aspect and in case of untrained dairy farmers the maximum knowledge index was 49.00 in miscellaneous management. The comparative analysis indicated that there was significant difference in the mean knowledge score of different management practices at ( $p=0.01$ ) level of probability of trained and untrained dairy farmers.

## 1. Introduction

India is predominantly an agrarian society where animal husbandry forms the backbone of national economy. The contribution of livestock sector in AgGDP was 13.88% in 1980–81 and increased to 23.80% during 2010–11 (Anonymous, 2014a). Despite having the world's largest population the milk productivity animal<sup>-1</sup> comes to 987 kg year<sup>-1</sup> whereas, worldwide average productivity is 2200 kg animal<sup>-1</sup> year<sup>-1</sup>. The capita<sup>-1</sup> availability of milk in India was 220 g day<sup>-1</sup> in 2011 which rose to 290 g day<sup>-1</sup> in 2013 where as the capita<sup>-1</sup> availability of milk in Punjab was 892 g day<sup>-1</sup> in 2011 and which increased to 942 g day<sup>-1</sup> in 2014 (Anonymous, 2014b).

One of the major reasons of low productivity could be due to traditional dairy farming practices by the farmers. It is well recognized that for increasing productivity and production to make dairy business more remunerative, it is essential to go for adoption of scientific dairy farming practices in the field of breeding, feeding, health care, management and fodder production to achieve better production leading to higher income for economic viability (Kumar et al., 2011). The

adoption of scientific practices can be accelerated if the farmers possess scientific knowledge about the sound management of dairy enterprise. Knowledge is an important component in the sound management of the dairy enterprise. Knowledge is defined as the degree to which the factual information possessed by the dairy farmers regarding recommended dairy management practices. Similarly, the training is a medium to provide technical knowledge and developing the human resources for getting acquaintance with scientific practices of dairy farming. The present study was undertaken to ascertain the extent of knowledge level of the trained and untrained dairy farmers regarding the different dairy management practices.

## 2. Materials and Methods

The study was confined to Malwa region of Punjab and conducted in Bathinda, Muktsar and Mansa districts of Punjab. Considering the adaptability of the design, the ex post facto design was chosen as the phenomena have already occurred. A list of farmers who acquired specialized training on dairy farming from the KVKs of three selected districts during the period of 2011–2013 was procured and farmers who had not



undergone any training regarding dairy farming constituted the population for the study. Out of the list procured from KVKs, 20 trained farmers were selected randomly from each KVK. The equal matching sample of 20 untrained dairy farmers was chosen randomly from these three districts. Hence, 60 trained and 60 untrained dairy farmers constituted the total sample of 120 farmers. The dairy farmers who possessed minimum three dairy animals such as cows/buffaloes or both were considered for the study. A knowledge test was prepared to measure the knowledge level of dairy farmers about improved dairy management practices. Total 55 statements were framed under four dairy practices i.e., breeding, feeding, health care and miscellaneous management. The responses elicited from dairy farmers were quantified by assigning scores of 1 and 0 for correct and wrong/no response respectively.

The knowledge test was analyzed by applying items analysis, item discrimination and point biserial correlation coefficient. Thus, items having difficulty index (0.25 to 0.75), discrimination index (above 0.20) and point biserial correlation coefficient significant at ( $p=0.05$ ) level of probability were selected for the knowledge test. Finally, 42 items were selected for the knowledge test. The reliability of test i.e., 42 items was assessed by using the method of split half technique. Therefore, a statistical correction must be made to estimate reliability of the whole test.

This statistical correction is known “Spearman Brown Proficiency” formula i.e.

$$r' = \frac{2r}{1+r}$$

The  $r$  value thus calculated was 0.862 and  $r'$  value calculated was 0.926.

Validity refers to the degree to which an instrument measures what it is supposed to measure and validity calculated by the square root of its reliability.

$$\text{Validity} = \sqrt{r'} = \sqrt{0.925} = 0.962$$

The extent of knowledge was measured in terms of knowledge index. It was calculated by employing following formula.

### 2.1. Extent of knowledge of the trained and untrained farmers

An index is an observable phenomenon that is substituted for a less observable phenomenon. It is a number that is a composite of two or more numbers. Here, Knowledge Index (KI) is a number on the basis of which the respondents can be said to have more or less knowledge by virtue of which the chance of success or failure in dairy entrepreneurship can be predicted. The maximum possible score of 12, 8, 14 and 8 that dairy farmers could obtain were in areas of breeding, feeding, health care and miscellaneous management of IDMPs respectively.

Knowledge index (KI): It is percentage of mean score obtained

to maximum obtainable score.

$$= \frac{\text{Mean score obtained}}{\text{Maximum obtainable score}} \times 100$$

## 3. Results and Discussion

### 3.1. Socio economic characteristics of the respondents

The findings revealed that majority of the trained and untrained dairy farmers belonged to young and middle age group. Majority of the trained dairy farmers were matriculates whereas, majority of the untrained farmers were educated up to middle. Almost 100% of farmers of both categories were engaged in dairy farming and agriculture. Majority of the trained dairy and untrained dairy farmers belonged to nuclear and joint family respectively and both hailed from medium size family. Majority of the trained dairy farmers owned medium (10–25 acres) land holdings whereas, majority of untrained dairy possessed semi-medium (5–10 acres) land holdings. Majority of the trained dairy farmers and untrained dairy farmers belonged to medium annual income group and had up to 11 years of experience in dairying. The extension participation of the trained dairy farmers was from medium to high level whereas, it was from medium to low in case of the untrained dairy farmers.

### 3.2. Knowledge level of respondents about the improved dairy management practices (IDMPs)

A knowledge test which included items from different aspects i.e., breeding, feeding, health care and miscellaneous management of dairy management practices was used to measure the knowledge level of the respondents. Further, index for four aspects of improved dairy management practices as well as overall knowledge index was calculated to see the extent of knowledge level in different aspects of improved dairy management practices.

### 3.3. Knowledge index of trained dairy farmers about IDMPs

A close examination of (Table 1) depicts the maximum obtained score was 30.03 against possible maximum score 42 from different aspects of IDMPs. On the basis of knowledge index, it can be observed that maximum knowledge index of 72.50 in breeding aspect and lowest knowledge index i.e., 70.00 was found in case of feeding aspect.

Similarly, on the basis of knowledge index management and health care were ranked at II and III respectively. The overall knowledge index was calculated to be 71.50. The calculated knowledge index gives information of respondents about their acquaintances towards scientific dairy farming. It can be interpreted most of trained farmers were well-acquainted with the different aspects of IDMPs. It can be attributed to fact that trained farmers due to effect of training and possession

Table 1: Distribution of respondents according to their socioeconomic characteristics

| Sl. No. | Charac-teristics                      | Categories                 | Trainees (n=60) |       | Non trainees (n=60) |       |
|---------|---------------------------------------|----------------------------|-----------------|-------|---------------------|-------|
|         |                                       |                            | f               | %     | f                   | %     |
| 1.      | Age (years)                           | 19–34                      | 24              | 40.00 | 28                  | 46.67 |
|         |                                       | 35–50                      | 35              | 58.33 | 23                  | 38.33 |
|         |                                       | 51–65                      | 1               | 1.67  | 9                   | 15.00 |
| 2.      | Education                             | Primary                    | 7               | 11.67 | 11                  | 18.33 |
|         |                                       | Middle                     | 6               | 10.00 | 21                  | 35.00 |
|         |                                       | Matric                     | 20              | 33.33 | 15                  | 25.00 |
|         |                                       | Senior secondary           | 19              | 31.67 | 11                  | 18.33 |
|         |                                       | Graduate                   | 8               | 13.33 | 2                   | 3.33  |
| 3.      | Occupation                            | Dairy+ agriculture         | 60              | 100   | 59                  | 98.33 |
|         |                                       | Dairy+ agriculture +Others | 0               | 0.00  | 1                   | 1.67  |
| 4.      | Family type                           | Nuclear                    | 34              | 56.67 | 17                  | 28.33 |
|         |                                       | Joint                      | 26              | 43.33 | 43                  | 71.67 |
| 5.      | Family size                           | Small (Up to 4 members)    | 26              | 43.33 | 16                  | 26.67 |
|         |                                       | Medium (5 to 8 members)    | 30              | 50.00 | 33                  | 55.00 |
|         |                                       | large (above 8 members)    | 4               | 6.67  | 11                  | 18.33 |
|         |                                       | Marginal (<2.5)            | 5               | 8.33  | 6                   | 10.00 |
| 6.      | Operational land holding (acres)      | Small (2.5-5.0)            | 15              | 25.00 | 10                  | 11.67 |
|         |                                       | Semi-medium (5-10)         | 17              | 28.33 | 32                  | 53.33 |
|         |                                       | Medium (10-25)             | 19              | 31.67 | 12                  | 20.00 |
|         |                                       | Large (>25)                | 4               | 6.67  | 0                   | 0.00  |
|         |                                       | Low (<100000)              | 0               | 0.00  | 24                  | 40.00 |
| 7.      | Annual income (₹ year <sup>-1</sup> ) | Medium (100000-400000)     | 39              | 65.00 | 36                  | 60.00 |
|         |                                       | High (> 400000)            | 21              | 35.00 | 0                   | 0.00  |

of cross breed cows, higher scientific orientation and active extension participation might possess great knowledge about these aspects of IDMPs. The value of knowledge Index of other aspects of IDMPs was also very close to each other or differences in their values were very small. So, the trained farmers had almost equal knowledge regarding all aspects of IDMPs. Other researchers like Kumar et al. (2011) reported that maximum extent of Knowledge in dairy animal owners in the area of breeding (42%) followed by management (41.73%), healthcare (39.75%) and feeding (37.84%) respectively in Banka district of Bihar.

Moreover, Sabapara et al. (2013) observed maximum knowledge index in breeding (80.93%), followed by healthcare (63.57%), general management (55.60%) and feeding (50.88%) in tribal area of south Gujarat. Similar results was reported by Sabapara et al. (2014) and Prajapati et al. (2015).

#### 3.4. Knowledge index of the untrained dairy farmers about the IDMPs

A glance at (Table 2) indicates the maximum obtained score was 19.18 against possible maximum score 42. On the basis of knowledge index, it can be observed that maximum knowledge index was 49 in case of miscellaneous management and lowest knowledge index i.e., 40.25 was found in case of feeding aspect. On the basis of knowledge index, breeding and health care were ranked II and III respectively. The overall knowledge index was calculated to be 45.67. It can be interpreted that most of untrained farmers were not well-acquainted with the different aspects IDMPs because the values of knowledge index in all aspects were below average. So, this indicates untrained farmers had a low knowledge about IDMPs. The common management practices like clean milk production, cleanliness of shed etc. help farmers in better understanding and developing acquaintances with these practices.

However, other aspects of IDMPs are of complicated in nature and required considerable technical knowledge to develop acquaintances with the practices of scientific breeding, health care and feeding of dairy animals. At the same time, knowledge in breeding and health care are not easily reinforced, as these practices require intense technical skill and inputs and can be considered as obvious reason for poor knowledge index.

#### 3.5. Comparative analysis of different aspects of dairy farming

The Z test was employed to ascertain the difference of means of different practices IDMPs. A critical examination of (Table 3) reveals that the mean knowledge score obtained by the trained and untrained dairy farmers in the four areas of breeding, feeding, healthcare and miscellaneous management of dairy farming respectively. The mean knowledge score of the trained farmers overweighs the mean knowledge score of untrained farmers but greater mean score is not evidence

Table 2: Extent of knowledge among the trained dairy farmers about various aspects of IDMPs

| Sr. No. | Areas                    | Maximum score | Trainee (n=60) |                 |      | Non trainee (n=60) |                 |      |
|---------|--------------------------|---------------|----------------|-----------------|------|--------------------|-----------------|------|
|         |                          |               | Mean score     | Knowledge index | Rank | Mean score         | Knowledge index | Rank |
| 1.      | Breeding                 | 12            | 8.70           | 72.50           | I    | 5.68               | 47.33           | II   |
| 2.      | Feeding                  | 8             | 5.60           | 70.00           | IV   | 3.22               | 40.25           | IV   |
| 3.      | Health care              | 14            | 9.97           | 71.21           | III  | 6.37               | 45.50           | III  |
| 4.      | Miscellaneous management | 8             | 5.70           | 71.25           | II   | 3.92               | 49.00           | I    |
| 5.      | Overall                  | 42            | 30.03          | 71.50           | -    | 19.18              | 45.67           | -    |

Table 3: Comparative analysis of different aspects of dairy farming

| Sl. No. | Aspects                  | Trainees (n=60) | Non-trainees (n=60) | Z value |
|---------|--------------------------|-----------------|---------------------|---------|
| 1.      | Breeding                 | 8.70            | 5.68                | 7.40**  |
| 2.      | Feeding                  | 5.60            | 3.22                | 7.07**  |
| 3.      | Health care              | 9.97            | 6.37                | **      |
| 4.      | Miscellaneous Management | 5.70            | 3.92                | 6.17**  |
| 5.      | Overall knowledge        | 30.04           | 19.18               | 9.05**  |

\*\*Significant at ( $p=0.01$ ) level of probability

between significance difference in knowledge level of trained and untrained dairy farmers. These means scores were further tested in the light of Z test, the Z value was of these four practices was found to be significant at the ( $p=0.01$ ) level of probability.

It was observed that overall mean knowledge score of trained dairy farmers was comparatively higher than mean knowledge score of untrained farmers. The quantitatively higher mean knowledge score of the trained dairy farmers cannot be attributed to the better knowledge level of trained farmers over the untrained farmers. Then, Z test was employed, the Z value was found to be 9.05 which were significant at  $p=0.01$  level of probability. These results are in harmony with Patel et al. (2014).

#### 4. Conclusion

Majority of the trained dairy farmers possessed above average knowledge whereas, the untrained dairy farmers had below average. So, there is considerable scope for improvement in dairy management practices by enhancing the knowledge level

of the untrained dairy farmers through specialized trainings to enhance the scientific outlook of the farmers. The extension agencies should develop suitable training programmes and strategies on the basis of extent of knowledge of the untrained dairy farmers regarding different aspects of IDMPs.

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