Knowledge and adoption of improved dairy management practices among women dairy farmers in Dindigul District of Tamil Nadu, India

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ABSTRACT
A study was undertaken with the objective of assessing the knowledge and adoption of improved dairy management practices among women dairy farmers in Dindigul District of Tamil Nadu. Following multistage sampling procedure, 300 women dairy farmers involved in dairying were selected. The data were collected through a well structured schedule by personally interviewing the selected women dairy farmers. The study revealed that majority of the women dairy farmers had knowledge about time of feeding first colostrum to new born calves, dry period allowed for lactating pregnant animals, right time of insemination and the extent of adoption is also high. The overall knowledge level of women dairy farmers were found to be moderate (48.33 per cent) followed by good (27.34 per cent) and poor (24.33 per cent).

Key words: Adoption, Dairy women, Improved dairy farming practices, Knowledge.

INTRODUCTION
Dairy farming assumed the most important role in providing employment and income generating opportunities, especially for landless, marginal and small farmers. Women contribute 71 per cent of the labour force in livestock farming (Singh and Garia, 1999). The majority of landless cattle keepers in rural areas are women.

Knowledge about the improved dairy management practices is essential to increase the profit margin of the enterprise. Adoption of improved and scientific practices in dairying not only increases productivity but also augments the income from dairying and make it more remunerative. In the context of promotion of dairying as a profitable farm enterprise it is essential to find out the knowledge level of women farmers on improved dairy management practices and its adoption that would help the policy makers to formulate suitable policies. Therefore, the study was undertaken to assess the knowledge and adoption of improved dairy management practices among women dairy farmers in Dindigul District of Tamil Nadu.

MATERIALS AND METHODS
The study was purposively conducted in Dindigul district of Tamil Nadu since the district is familiar for the researcher. Multistage sampling was used for selecting the respondents of the study. The study was conducted during April 2016 to March 2017. Dindigul district comprises of 14 blocks. Out of the 14 blocks, five blocks were selected based on dairy animal population. From each selected block, three villages were randomly selected. From each selected village, 20 dairy farmers were randomly selected to constitute a sample size of 300 respondents. In this study, the term knowledge was conceptualized as the understood information about recommended dairy farming practices possessed by the dairy owners. A knowledge test has been defined by Bloom et al. (1996) as a test which refers to those behaviours and test situations which emphasizes remembering by the recall of ideas, material or phenomenon.

CONSTRUCTION OF KNOWLEDGE TEST
Item collection: The content of knowledge test was composed of questions called items. Items for the test were compiled from different sources, such as literature, field extension personnel, subject matter specialists in animal science and dairy science and also from the researcher’s own experiences. The questions were designed to test the knowledge level of dairy farmers about improved dairy farming practices.

Initial selection of items: The selection of items was done on the basis of the following criteria: (i) It should promote thinking rather than rote-memorization, and (ii) It should differentiate the well-informed dairy farmers from the poorly informed ones and have a certain difficulty value. In consultation with subject matter specialists 35 knowledge items were selected. The selected knowledge items were given to 120 farmers in non-sampling area for testing. The answers were evaluated and score of ‘1’ and ‘0’ was given to ‘correct’ and “incorrect” answers respectively. The total score of an individual respondent on knowledge was obtained by summing up the scores of the items. The knowledge scores were arranged in descending order. Based on the score, the
Difficulties were divided into six equal groups (each group had 20 respondents). These groups were named G1, G2, G3, G4, G5, and G6. The middle two groups (G3 and G4) were eliminated. Two extreme groups with high and low scores were considered for difficulty and discrimination index (Ray and Mandal, 2004).

**Difficulty index**: It indicates the difficultness of the knowledge item. Difficulty index was calculated by using the following formula.

\[ p_i = \frac{n_i}{N} \times 100 \]

Where,

- \( p_i \) - Difficulty index in percentage of the \( i^{th} \) item
- \( n_i \) - Number of respondents giving correct answers to the \( i^{th} \) item
- \( N \) - Total number of respondents

**Discrimination index**: Discrimination index is used to differentiate the well-informed farmers from the poorly informed farmers. Discrimination index was calculated by using the formula given below.

\[ E_{ij} = \frac{(S_i + S_j) - (S_k + S_l)}{N/3} \]

Where,

- \( S_i \), \( S_j \), \( S_k \), and \( S_l \) - Frequencies of correct answers in groups G1, G2, G3, and G4 respectively
- \( N \) - Total number of respondents

**Selection of final items for the study**: Two criteria namely difficulty index and discrimination index of all the 35 items were calculated and 20 items which fulfilled both the criteria were selected for the final format of knowledge test.

Knowledge about mastitis deduction kit

Knowledge on improved dairy farming practices was estimated among the respondents. The score of 1 and 0 were given to the correct and incorrect answers respectively. The summation of scores indicated the level of knowledge about the improved dairy farming practices. The range of scores was, therefore, from 0 to 20. Further, based on the knowledge score, the respondents were classified into poor, moderate and good by using cumulative square root frequency method.

**RESULTS AND DISCUSSION**

**Knowledge about improved dairy management practices**: The data regarding knowledge of improved dairy management practices is furnished in Table 1. Cent per cent of the women dairy farmers had knowledge about time of feeding first colostrum to new born calves and dry period

**Table 1: Distribution of the respondents according to their knowledge about improved dairy management practices (n=300)**

| Statements                                                                 | Knowledge |
|----------------------------------------------------------------------------|-----------|
| Time of feeding first colostrum to the new born calf                       | 300(100.00) | 0(0.00) |
| Ligation of the navel cord of new born calf                               | 171(57.00)  | 129(43.00) |
| First deworming in calf                                                   | 234(78.00)  | 66(22.00)  |
| Period of insemination after calving                                      | 22(7.33)    | 278(92.67) |
| Feeding of cow based on milk production                                   | 165(55.00)  | 135(45.00) |
| Quantity of green fodder, dry fodder and concentrate fed to animals       | 156(52.00)  | 144(48.00) |
| Use of adding salt in the daily ration                                    | 117(39.00)  | 183(61.00) |
| Advantage of using chaff cutter                                           | 226(75.33)  | 74(24.67)  |
| Time of feeding after milking                                             | 252(84.00)  | 48(16.00)  |
| Knowledge about mastitis deduction kit                                    | 284(94.67)  | 16(5.33)   |
| Dry period allowed for lactating pregnant animals                         | 300(100.00) | 0(0.00)   |
| Optimum time taken for expulsion of placenta after calving               | 272(90.67)  | 28(9.33)   |
| Expression of oestrous symptoms after calving                             | 246(82.00)  | 54(18.00)  |
| Right time of insemination                                               | 286(95.33)  | 14(4.67)   |
| Time of pregnancy diagnosis after insemination                            | 207(69.00)  | 93(31.00)  |
| Importance of feeding specific mineral mixture                            | 99(33.00)   | 201(67.00) |
| Importance of feeding concentrate during dry period                       | 161(53.67)  | 139(46.33) |
| Importance of feeding GRAND supplement                                     | 226(75.33)  | 74(24.67)  |
| Importance of feeding azolla to dairy animals                             | 226(75.33)  | 74(24.67)  |
| Knowledge about silage                                                     | 83(27.67)   | 217(72.33) |

(Figures in the parenthesis indicate percentage)
allowed for lactating pregnant animals. Majority of the women dairy farmers had knowledge on right time of insemination (95.33%), knowledge about mastitis deduction kit (94.67%), optimum time taken for expulsion of placenta after calving (90.67%), time of feeding after milking (84%), expression of oestrous symptoms after calving (82%), first deworming in calf (78%), advantage of using chaff cutter (75.33%), importance of feeding GRAND supplement (75.33%), importance of feeding azolla to dairy animals (75.33%). Only few women dairy farmers had knowledge about silage (27.67%) and knowledge in period of insemination after calving (7.33%). Education, experience in dairy farming, training, high extension agency contact, economic motivation and scientific orientation might have positively influenced the knowledge of dairy farm women in the activities that directly affect the profit through production and productivity.

The less knowledge on silage and feeding specific mineral mixture might be due to the inherent difficulty in understanding and availability of the technologies.

**Overall knowledge level of women dairy farmers:** Table 2 revealed that the overall knowledge level of women dairy farmers were moderate (48.33%) followed by good (27.34%) and poor (24.33%). Good knowledge on improved dairy management practices is an important factor/quality that an entrepreneur should possess to increase income. Moderate entrepreneurial behaviour might have forced the respondents to gain moderate to good knowledge in improved dairy management practices to transform subsistence farming to an enterprise. Similar finding was also reported by Nisha and Subramanian (1997), Murugesan et al. (1998), Mande et al. (2008) and Wankhade et al. (2013).

**Adoption of improved dairy management practices:** It could be seen from Table 3 that cent per cent of the women dairy farmers regularly adopted improved dairy management practices such as feeding colostrums to new born calf and feeding dry fodder. Majority of them regularly adopted the practice of inseminating animals 8-12 hours after onset of oestrum (95%) followed by 60 days as dry period (94%), feeding green fodder (82%) and deworming calves (60%). Practices such as early pregnancy diagnosis (52%) and feeding based on production (42%) were adopted sometimes by the women dairy farmers. Cent per cent, 97.00 per cent and 95.00 per cent of the women dairy farmers never adopted silage making, mastitis deduction kit and chaff cutter respectively.

Knowledge about dairy farming practices, positive impact of training and high entrepreneurial behaviour might have influenced the adoption of improved dairy farming practices. The complexity of technologies on silage making, lack of awareness of mastitis deduction kit and non-availability of women user friendly chaff cutter might have restricted the women dairy farmers to adopt the practices at field level.

**CONCLUSION**

It could be concluded that dairy farm women had knowledge in routine activities and also had high level of adoption. Training on silage making, importance of feeding specific mineral mixture, period of insemination after calving would educate a person to gain knowledge so as to be fitted, qualified and proficient in adopting improved dairy farming practices. Imparting skill training on silage making, use of chaff cutter and use of mastitis detection kit would improve the rate of adoption would make the dairy enterprise as a profitable one.
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