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Assessment of Knowledge Gap Affecting the Dairy Production in Urban and Peri-Urban Area of Uttar Pradesh

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ABSTRACT

Urban and peri-urban dairy production system is growing at a faster rate in response to the fast growing demand for milk and milk products. The prospectus of this production system become more favorable as it provides opportunity to develop their own milk industries, primarily through small scale production, which will have a major impact on different levels of cash income and the trend continue to feed the growing population by adopting new dairy related practices. Therefore the efforts are made to assess the knowledge level and the factors effecting the dairy production in urban and peri-urban areas. This study was conducted in purposively selected Agra Division of Uttar Pradesh in 120 respondents. A pretested knowledge test was administered and knowledge level of respondent was measured. The knowledge of urban and peri-urban from different aspects of feeding is (51.18 percent) and (43.78 percent). The respondents possess (53.13 percent) and (39.69 percent) of knowledge about the breeding practices in urban and peri-urban areas. The knowledge level of the urban respondents is highest in feeding followed by peri-urban and lowest in health care management due to lack of inadequate extension and training services. The efforts should be made to organize the setup of the milk market to provide remunerative milk prices to the dairy owner and financial agencies should provide loan amount to dairy farmers to establish dairy farms. To enhance knowledge of farmers the Government and private agencies should conduct training on scientific dairy farming from time to time.

Keywords

Dairy farmers,
Dairying,
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Introduction

Dairy production is a critical issue in India-a livestock-based society-where livestock and its products are important sources of food and income, and dairying has not been fully

exploited and promoted. Dairy farming is a major component of Indian agricultural production systems since time immemorial, Cattle and buffalo have a complementary, supplementary and sustainable relationship with crops in mixed farming system. The

Urban and peri-urban dairy production has been developed in response to the fast growing demand for milk and milk products. The factors which are acting for the rising urban and peri-urban dairying are high demand of fresh milk and milk products, addition source of income remunerative price of milk. The prospectus for local dairy production in urban and peri-urban area have recently become more favorable as it provides opportunity to develop their own milk industries, primarily through small scale production, which will have a major impact on different levels of cash income. It is expected that demand of milk will increasing day by day due to rapid increase in demand of milk and milk products, due to rapid increase in demand of dairy and its products and increase urbanization, it might be dream for anyone to capitalize this fact growing milk and its product market. So the dairying has taken a new turn by venturing itself on commercial basis leading to the growth of milk production activities in and around urban and peri-urban areas (Rajashekhar, 2017). India has made remarkable strides in the area of dairy development and being the largest milk producer country in the world with production of 187.7 million tons during year 2018-19(DAHD,2019).This trend should continue to feed the growing population and is putting pressure on the farmers to adopted new practices related to dairy farming. Therefore the efforts are made to measure the knowledge level and the factors effecting the dairy production in urban and peri-urban areas.

Materials and Methods

This study was conducted in purposively selected Agra Division of Uttar Pradesh. Among four district of Agra Division, two districts were selected by using simple random sampling method. A total 120 respondents (Forty dairy farmers from urban

and 80 dairy farmer from peri-urban area) were selected to assess the opportunities and challenges of urban and peri-urban dairy farming. The primary data were collected through pretested structured interview schedule and group discussion method. Knowledge is generally understood as an intimate acquaintance of an individual with facts. Knowledge was defined in the words of Bloom *et al.*, (1955) as "those behavior and test situation which emphasized the remembering either by recognition or recall of ideas, materials or phenomenon". They further explained knowledge is that part of a person's information, which is in accord with established fact. Knowledge is also starting point of innovation decision process and with increase in knowledge individual gains some understanding of how it functions. In knowledge test the variable indicated the extent of knowledge in respect of a urban and peri-urban dairy farming, the respondents possessed at the time of interview. The step adopted to construct the knowledge test is as collection of items, item analysis, testing the reliability and validity and measurement of knowledge gap.

Collection of items

A list of knowledge items related to scientific dairy farming was prepared by reviewing the books, consulting the experts and Veterinary personnel. Thus as many as 54 raw items which would reflect the expected knowledge of the dairy farmers were collected. The preliminary test consisting of 54 items were administered to 12 non-sample respondents of the study area.

Their responses were then quantified by assigning score 3, 2, 1 & 0 from most correct, correct, least correct and irrelevant. Total score was calculated for each non-sample respondent by summing the scores of all items. These responses were subjected to

further analysis for calculating difficulty index, discrimination index and correlation as per procedure mentioned below:

Difficulty index

The difficulty index of an item defines as the proportion of respondents giving correct answer to that particular item. This is calculated by the formula:

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

Where, P_i is the difficulty index in % of i^{th} item, n_i is the number of respondents giving correct answer to the i^{th} item and N_i is the total no. of respondents to whom the i^{th} item was administered.

Discrimination index

The discrimination index can be obtained by calculating the phi-coefficient as formulated by Perry and Michael (1951). However, Mehta (1958) in using $E^{1/3}$ method to find out item discrimination emphasized that this method was analogous to, and hence, a convenient substitute for the phi-coefficient. The $E^{1/3}$ formula was used in the present study.

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

Where, $S1$, $S2$, $S5$ and $S6$ is the frequencies of correct answers in groups $G1$, $G2$, $G5$ and $G6$ and N is total number of respondents in the sample of item analysis.

Final selection of items with reliability and validity testing

Items having difficulty index between 0.25 to 0.75 and discrimination index above 0.20 were selected finally for the final knowledge

test. Overall 28 items were selected for the final test on the basis of above criteria. The reliability of the knowledge test was assessed using the split half technique. The final knowledge tests with 28 items were administered to 20 respondents selected randomly in the non-sampling area of the study area.

The total scores obtained by each of these respondents on odd and even numbered item were calculated separately. These two set of scores were treated as two half of the test. The person product moment correlation coefficient between two set of scores was calculated. The 'r' value calculated was 0.52, which was found significant at 1.00 percent level of significance, there by indicating that the test had high internal consistency. Similarly validity of this test was established through content validity.

All possible care was taken while collecting and selecting the statements covering all aspects of scientific dairy farming practices and the same were subjected to item difficulty and discrimination index to select the final statements.

Measurement of knowledge

The knowledge test was administered to the respondents of the present study. Scoring was done according to correctness of response of the respondents to each item. Knowledge score of the individual in different aspect such as breeding, feeding, health care and management were obtained by summing up scores of each item under different aspects. Then, overall knowledge score was calculated by pooling total scores of the respondents in different aspects.

$$\text{Knowledge index} = \frac{\text{Score obtained}}{\text{Maximum obtainable score}} \times 100$$

Then, the respondents were categorized into low, medium and high categories of knowledge on the basis of mean and standard deviation of knowledge score in different aspects of dairying as well as overall knowledge in dairy farming.

Results and Discussion

The knowledge of respondents in urban and peri-urban areas about different aspects was measured by administering knowledge test. The result presented in table 1 states that the knowledge of urban farmers is quit high in comparison to the peri-urban farmers. It was observed that there exists a significant difference between the knowledge of respondent in Urban and peri-urban farmers. It was observed (Table 1) that urban farmers were more aware of feeding and breeding practices.

The knowledge regarding the health care practices in urban and peri-urban areas is (34.38 percent) and (26.82 percent).

Feeding

The knowledge of urban and peri-urban from different aspects of feeding is (51.18 percent) and (43.78 percent). Urban dairy farmers are more literate than peri-urban farmers and as they are more cosmopolite in nature in information seeking from different sources they have acquired good knowledge about feeding practices of dairy animals (Table 2).

The study of Bakshi *et al.*, (2010) also state that the peri-urban dairy farmers used to feed less nutrient (CP and EE) diet to animals than the recommended levels. So there is immediate need for extension intervention to motivate the farmers to feed nutritionally balanced diet to improve productive as well as reproductive efficiency of cattle/buffaloes. Lack of knowledge about extra feeding of pregnant cattle was also stated by Meena *et al.*, (2016), Rajasekhar *et al.*, (2017) and it was seen that the problem was higher in the urban area than that in peri-urban.

Breeding

Urban dairy farmers considered dairy farming as business so they got aware for breeding practices (53.13 percent) than the peri-urban farmers (39.69 percent). It was observed (Table 3) that the urban farmers possess higher knowledge in all the area of breeding practices like popular milch breed, calving interval or the puberty age of heifers. Rajasekhar *et al.*, (2017) also stated that the farmers had inadequate knowledge about the age and breed and the time of selection of dairy animals.

All the farmers have good rate of adoption for breeding practices (Gunaseelan *et al.*, 2018) due to the fact that the large farmers, who invested more on dairy farms, expect more profit and hence adopted the recommended breeding practices.

Table.1 Percentage distribution of the respondents according to their Knowledge (n=120)

S/No.	Items	Urban	Peri-urban	Overall	Mann-Whitney Test
1.	Feeding	51.18	43.78	47.48	Z=2.938 P=0.003*
2.	Breeding	53.13	39.69	46.41	
3.	Management	45.00	37.71	41.36	
4.	Healthcare	34.38	26.82	30.60	
5.	Pooled	45.72	37.50	41.61	

Table.2 Distribution of respondents according to their knowledge in feeding practices (n=120)

S/No.	Items	Urban (Percentage)	Peri-urban (Percentage)	Pooled
1.	What is balance ration?	71.67	58.75	65.21
2.	What is the maintenance ration ratio in Buffalo?	89.17	48.33	68.75
3.	Name of leguminous fodder (Rabi) crops are	55.00	49.58	52.29
4.	Fodder crops that are grown in kharif season	45.00	48.75	46.88
5.	Which crops are most suited for hay making	30.00	32.92	31.46
6.	Amount of salt required for dairy animal/per day	50.00	40.00	45.00
7.	Amount of protein present in straw	34.17	30.42	32.30
8.	Significance of colostrums feeding	52.50	46.25	49.38
9.	Quantity of colostrums to be fed	41.67	30.42	36.05
10.	Amount of concentrate ration to be fed to pregnant animals	49.17	53.33	51.25

Table.3 Distribution of respondents according to their knowledge in breeding practices (n=120)

S/No.	Items	Urban (Percentage)	Peri-urban (Percentage)	Pooled
11.	Popular indigenous milch breed of cattle	20.00	13.75	16.88
12.	Calving interval of murrah buffalo?	47.50	22.50	35.00
13.	Puberty age of indigenous heifer	40.00	26.25	33.13
14.	Average gestation period of buffaloes?	50.00	30.00	40.00

Table.4 Distribution of respondents according to their knowledge in management practices (n=120)

S/No.	Items	Urban (Percentage)	Peri-urban (Percentage)	Pooled
15.	Best method of milking of dairy animals?	50.00	40.83	45.42
16.	Disbudding age of new born calf?	52.50	35.83	44.17
17.	FMD new born Calf vaccination schedule?	40.83	40.83	40.83
18.	Direction of animal house	41.67	41.25	41.46
19.	Floor space requirement for buffaloes	41.67	42.92	42.30
20.	At which age feeding of roughages calf should be fed after colostrums feeding?	43.33	24.58	33.96

Table.5 Distribution of respondents according to their knowledge in health care practices (n=120)

S/No.	Items	Urban (Percentage)	Peri-urban (Percentage)	Pooled
21.	Deworming programme for dairy animals	39.17	36.67	37.92
22.	Premium subsidy of animal insurance?	30.83	25.83	28.33
23.	Preventive measures of FMD	30.00	40.42	35.21
24.	Condition that often occurs in high yielders after parturition	40.00	22.50	31.25
25.	Feeding of Excessive leguminous pastures causes?	33.33	20.00	26.67
26.	Age of vaccination of animals	30.00	24.58	27.29
27.	Zoonotic disease of dairy animals	42.50	27.92	35.21
28.	Which is parasitic disease in animals	29.17	16.67	22.92

Management

It could be visualized that knowledge about management practices is higher in urban area (45.00 percent) than in peri-urban areas (37.71 percent). Respondents had low knowledge regarding management because the animals are mostly reared under traditional systems and farmers are paying less attention towards scientific practices. This might be due to lack of equipment and lack of technological awareness among the farmers. Sinha *et al.*, (2009) also revealed that the management practices like water trough facility, feed manger size, cleaning and type or location of houses need improvement in all the areas of the study. Thus the awareness about the scientific dairy farming practices needs to be diffused among the farmers (Table 4).

Health care

Healthcare being an important aspect appeared as the most important information need of the farmers in the animal husbandry sector (Yadav *et al.*, 2018). The results presented in table 5 showed that both the urban and peri-urban farmers possess less knowledge about scientific

health care practices. A maximum proportion of the farmers (85.00 %) had not adopted the health care practice like treating the umbilical cord of new born calf or isolating the diseased animals from healthy animals (Gunaseelan *et al.*, 2018). It was also observed that distance location of the veterinary institution as well as limited presence of mobile veterinary units is hindering the health care facilities. So there is need to strengthen these services for wider coverage among dairy farmers in both urban as well as peri-urban areas.

Population and economic growth has fostered urbanization in the country and the numbers of urban towns and cities have drastically increased. This growth is expected to continue in the years to come and India has to step up its game in the area of dairy sectors also. It is expected that demand of milk will increase day by day due to rapid increase in demand of milk and milk products, due to rapid increase in demand of dairy and its products and increase in urbanization, it might be a dream for anyone to capitalize this fact growing milk and its product market. Dairy production in urban and peri-urban areas plays an important role by boosting income and providing employment to a large

population of India due to high demand of fresh milk and milk products. The knowledge level of the urban respondents is highest in feeding followed by peri-urban and lowest in health care management due to lack of inadequate extension and training services. The efforts should be made to organize the setup of the milk market to provide remunerative milk prices to the dairy owner and financial agencies should provide loan amount to dairy farmers to establish dairy farms. To enhance knowledge of farmers the Government and private agencies should conduct training on scientific dairy farming from time to time.

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