Constraints faced by dairy farmers in hill region of Uttarakhand

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Abstract: Dairy farming has been an indispensable activity in history of human civilization which is not only important from economic point of view but it has nutritional importance too as an alternative food for ever growing human population. This activity is carried out in millions of households across the state and provides employment to the marginal and landless farmers. Despite this, Milk production of state is 1.656 MT, contributing 1.15 percent to dairy industry. Research studies pinpoint toward possibility of improving dairy industry with empowering dairy farmers. For this purpose, lacunae in dairy farming at farmer level especially in hill areas of Uttarakhand needs to be studied thoroughly. Against this backdrop, the present study was conducted with the objective to study socio-economic, psychological and communication characteristics of dairy farmers and elicit the constraints faced by dairy farmers. The study was carried out in Almora district of Uttarakhand, selected purposively. Two districts i.e., Dwarahat and Tarikhet blocks were selected by simple random sampling. The present study reported that unavailability of green fodder round the year, low productivity of animal, non-remunerative prices of milk were major three constraints faced by dairy farmers. Furthermore, other constraints found were high cost of concentrate mixture, unavailability of resource person, lack information about government schemes, unavailability of concentrate mixture, improper disposal animal waste, occurrence of diseases among animal, unavailability of drinking water and poor conception rate in Artificial Insemination.

Keywords: Constraints faced by dairy farmers, Dairy Farmers, Hill Region, Information seeking behavior

Introduction

In India, agriculture sector is vast and diversified which contributes on an average 16 per cent to GDP and 10 per cent to export earnings (Himani, 2014). As an inevitable part of agriculture, animal husbandry has been an integral part of farming from the time of its evolution 10,000 years ago. Animals provide nutrient-rich food products, draught power, dung as organic manure and domestic fuel, hides and skin, and are regular source of cash income for rural households (Chinnadurai et al. 2018). In this context, Dairy farming has been an indispensable activity in history of human civilization which is not only important from economic point of view but it has nutritional importance too as an alternative food for ever growing human population.

Dairy farming is one of the most important economic activities in the rural mountainous areas of Uttarakhand where dairy is closely intervened with farming system. Dairy farming is considered as lifeline in rural areas of hilly region of Uttarakhand where people have been performing it traditionally for their livelihood security. This activity is carried out in millions of households across the state and provides employment to the marginal and landless farmers. Presently, Uttarakhand is coming up with a vast web of small-scale dairy and milk collection centers. Milching cow and buffalo are reared at all altitudes and they have high potential to develop dairy farming. The other important factors that promote dairy farming in the Uttarakhand Himalaya are vast forest (59.7%), grazing land (3.4%) and ample water (Sati, 2016). These factors make the state potential area for milk production but bigger question arises is why dairy farmers of Uttarakhand state are still contributing only 1.15 percent to dairy industry and the annual average income of livestock owners in the state is 13,560 (ULDB, 2001) only.
Statistically, the population of cattle in the state is 29,93,828 which contributes 0.999 percent to country’s cattle population. Milk production of state is 1.656 MT contributing only 1.15 percent to dairy industry. Around 90 percent of dairy owners in Uttarakhand operate dairy at small and medium scale. Despite being the world’s largest milk producer, India’s productivity per animal is very low, at 987 kg per lactation, compared with the global average of 2038 kg per lactation. No doubt, there are many public and private institution in India who are generating number of technologies with huge investments but most of these technologies and improved practices remain confining to limited periphery of research stations. Research studies indicate towards possibility of improving dairy industry with empowering dairy farmers. For this purpose, lacunae in dairy farming at farm level especially in hill state Uttarakhand needed to be studied thoroughly.

**Material and Methods**

The present study was carried out in Almora district of Uttarakhand state. Almora district was purposively selected as locale of the study because from livestock wealth and milk production point of view, it is a well-endowed district with highest milk production and dairy animal population among all hill districts (NDDB, 2018). Two Blocks i.e., Dwarahat and Tarikhet were randomly selected through Simple Random Sampling using chit method. Two villages were selected from each selected block through Simple Random Sampling using chit method for accessing information needs of dairy farmers. Total 120 respondents were selected from all the four villages through Probability Proportionate to Size (PPS) sampling. The data was collected with the help of pre-tested well-structured interview schedule. Pre-testing of schedule was done in Naini village of district Almora with 30 respondents. The respondents were asked open ended about their problems related to dairy farming. All the issues raised by respondents were listed down and considered as their constraints. The data were coded, tabulated, analyzed and were interpreted with appropriate statistical tools and techniques in the light of objectives of the study. Frequency, percentage, arithmetic mean, standard deviation was used to analyze the data for meaningful interpretation.

**Result and Discussion**

**Socio-economic, psychological and communication characteristics of the dairy farmers**

Presented below are the Socio-Economic, Psychological and Communication Characteristics of the Dairy Farmers (Table 1). The results revealed that majority of the dairy farmers (62.50%) belonged to middle age group while 20.83 per cent belonged to old age group. It further reveals that maximum respondents (27.5%) were having education up to middle class followed by 24.17 per cent had education upto high school. It was found that 21.67 per cent farmers were illiterate while 15 per cent farmers had primary education. Majority of the respondents (70%) belonged to nuclear family while 30 per cent of the respondents belonged to joint family. Study indicated that majority of the respondents

| Characteristics         | Categories                             | Frequency | Percentage |
|-------------------------|----------------------------------------|-----------|------------|
| Age                     | Young (<38)                            | 20        | 16.67      |
|                         | Middle (38-64)                         | 75        | 62.50      |
|                         | Old (>64)                              | 25        | 20.83      |
| Education               | Illiterate                             | 26        | 21.67      |
|                         | Primary Education                      | 18        | 15         |
|                         | Education upto middle                  | 33        | 27.5       |
|                         | High School                            | 29        | 24.17      |
|                         | Intermediate                           | 10        | 8.33       |
|                         | Graduation                             | 4         | 3.33       |
|                         | Post-graduation                        | 0         | 0          |
| Family Type             | Nuclear                                | 84        | 70         |
|                         | Joint                                  | 36        | 30         |
| Family size             | Small (<4 members)                     | 17        | 14.17      |
|                         | Medium (4-8 members)                   | 90        | 75         |
|                         | Large (>8 members)                     | 13        | 10.83      |
| Annual Income           | Low (< Rs. 87000)                      | 1         | 0.83       |
|                         | Medium (Rs. 87000- Rs. 290000)         | 100       | 83.33      |
|                         | High(> Rs. 290000)                     | 19        | 15.84      |
| Occupation              | Agriculture as primary occupation      | 85        | 70.83      |
|                         | Other than agriculture                 | 35        | 29.17      |
| Size of Land Holding    | Marginal (<1ha)                        | 120       | 100        |


(75%) had medium family size followed by 14.17 per cent had family size of less than four and remaining 10.83 per cent respondents had large family size. It was reported that majority (83.33%) of the respondents had medium annual income followed by 15.84 per cent having high annual income and 0.83 per cent having low annual income. Majority of the respondents (70.83%) had agriculture as their primary occupation while 29.17 per cent were performing occupation other than agriculture as primary occupation. All the respondents had marginal land holding of less than one hectare and none of the farmer had small, semi-medium, medium or large land holding. Majority of the respondents (53.33%) had medium herd size followed by 26.67 per cent respondents owned small herd size and only 20 per cent owned large herd size. All the respondents had sickle, pick axe, agricultural plough and shovel, none of the respondent possessed land leveler and 7.5 per cent respondents possessed chaff cutter and 5 per cent respondents possessed sprayer. For storage of agriculture harvest, it was reported that 97.5 per cent respondents possessed iron beans, 10.83 per cent possessed Bhakar and none of the respondents possessed kothar/kangi and copper bottom. All of the respondents had mobile phone and television at their home and none of them had internet facility. Also, 4.16 per cent respondents possessed radio, 2.5 per cent possessed computer and 5 per cent possessed newspaper at their home. Regarding transport possession, 12.5 per cent farmers possessed vehicle, 18.33 possessed two-wheeler and 3.33 per cent possessed bicycle. Majority of the respondents (73.33%) had medium overall material possession followed by 26.67 percent of respondents who had high overall material possession. Majority of the farmers (79.17%) were found to have medium milk.

| Herd size | Small (<2) | 32 | 26.67 |
|-----------|------------|----|-------|
|           | Medium (2-3) | 64 | 53.33 |
|           | Large (>3) | 24 | 20 |
| Type of dairy animal | Indigenous cattle | 147 | 45.24 |
|           | Crossbred cattle | 116 | 35.68 |
|           | Buffaloes | 62 | 19.08 |
| Farm implements | Sickle/reaper | 120 | 100 |
|           | Pick axe | 120 | 100 |
|           | Agriculture plough | 120 | 100 |
|           | Shovel | 120 | 100 |
|           | Iron beans | 117 | 97.5 |
|           | Bhakar (Wooden box) | 13 | 10.83 |
|           | Chaff cutter | 9 | 7.5 |
|           | Sprayer | 6 | 5 |
| Communication media | TV | 120 | 100 |
|           | Telephone/Cellular phone | 120 | 100 |
|           | Newspaper | 6 | 5 |
|           | Radio | 5 | 4.16 |
|           | Computer | 3 | 2.5 |
|           | Internet | 0 | 0 |
| Transportation material | Motorcycle/Scooty | 22 | 18.33 |
|           | Car (Four-wheeler) | 15 | 12.5 |
|           | Bicycle | 4 | 3.33 |
| Material possession | Low (<7) | 0 | 0 |
|           | Medium (7-8) | 88 | 73.33 |
|           | High (>8) | 32 | 26.67 |
| Milk Production | Low (<3 l) | 13 | 10.83 |
|           | Medium (3-6 l) | 95 | 79.17 |
|           | High (>6 l) | 12 | 10 |
| Achievement Motivation | Low (<13) | 17 | 14.17 |
|           | Medium (13-18) | 86 | 71.66 |
|           | High (>18) | 17 | 14.17 |
| Scientific Orientation | Low (<13) | 4 | 3.33 |
|           | Medium (13-17) | 71 | 59.17 |
|           | High (>17) | 45 | 37.5 |
| Attitude towards dairy farming | Low (<9) | 24 | 20 |
|           | Medium (9-11) | 84 | 70 |
|           | High (>11) | 12 | 10 |
production per day i.e. 3-6 liters followed by low i.e. 10.83 per cent and high i.e. 10 per cent milk production. Majority of the respondents (71.66%) had medium level of achievement motivation while similar proportion of respondents (14.17%) had low and high level of achievement motivation. Majority of the respondents (59.17%) had medium level of scientific orientation followed by 37.5 per cent having high scientific orientation and few respondents (3.33%) had low scientific orientation. Majority of the respondents (70%) have medium attitude towards scientific dairy practices followed by 20 per cent having low attitude and 10 per cent having high attitude towards dairy farming.

**Information seeking behaviour**

The information seeking behaviour of the farmers was studied under four categories included in Bhairamkar (2009) scale adopted for the present investigation. The scale was modified after pre-testing of interview schedule. As per pre-testing of the scale veterinary officers/doctors, private medicine dealers, milk cooperative societies and *kisan mela* was added in the scale and agricultural assistants, agricultural supervisors, agriculture officers, meetings, discussion, demonstration, farmer’s rally, agriculture campaigns, farm tour and workshops were removed from the scale.

The study revealed (Table 2) that majority of the respondents (70.83%) ‘Occasionally’ seek information from friends and relatives indicating that friends and relatives were contacted by all the respondents occasionally or always. Similarity was found with the findings of Sunetha and Ansari (2014) who reported that 83 per cent farmers always seek information from friends and relatives. The study revealed that majority of the respondents

| S. No. | Information sources                      | Always | Occasional | Never |
|--------|-----------------------------------------|--------|------------|-------|
| 1      | Friends and relatives                   | 35     | 29.16      | 85    | 70.83 | 0     | 0   |
| 2      | Progressive farmers                     | 0      | 0          | 0     | 0     | 120   | 100 |
| 3      | Neighbors                               | 34     | 28.33      | 86    | 71.66 | 0     | 0   |
| 4      | Others                                  | 0      | 0          | 0     | 0     | 120   | 100 |

Table 2 Distribution of respondents according to the use of different sources for seeking information (n=120)
(71.67%) ‘Occasionally’ seek information from neighbors whereas 28.33 per cent respondents ‘always’ seek information from neighbors. So, it can be concluded that neighbors were contacted by all the respondents occasionally or always. Data regarding information seeking behaviour from personal cosmopolites that 50 percent ‘always’ visited veterinary doctors for seeking information whereas rest 50 per cent respondents ‘occasionally’ seek information from veterinary doctor. It shows that veterinary doctors are key source of information for respondents and from them respondents seek information occasionally or always. Moreover, majority of the respondents (77.5%) respondents ‘never’ seek information from milk cooperative union while 18.34 per cent respondents seek information ‘occasionally’ from milk cooperative union and only 4.17 per cent respondents seek information ‘always’ from them. Furthermore, there were no private medicine dealers from whom they can seek information. It was further reported that respondents ‘never’ seek information from Panchayat Samiti, Agriculture University and Bank. So, it can be concluded that among personal cosmopolites, veterinary doctors and milk cooperative union are key sources of information from which farmers seek information regarding dairy farming.

Data regarding utilization of mass media for information seeking that all of the respondents ‘never’ seek information from any of the mass media. Although all of them had one or another mass media but they didn’t used it for seeking any kind of information regarding agriculture or dairy. This may be because mass media is used for entertainment purpose only and respondents rely on interpersonal sources for seeking information regarding agriculture and allied activities. The study also indicated that among extension education methods, Kisan Mela was the only source of information for farmers from which they sought information. It was found that majority of the respondents (76.67%) ‘never’ seek information from Kisan Mela while 12.5 per cent ‘always’ seek information from Kisan Mela while 10.83 percent ‘occasionally’ seek information from Kisan Mela. It was observed that many of the farmers regularly or occasionally visited Kisan Mela which used to be held twice or thrice annually at the beginning of season.

**Constraints faced by the respondents**

Constraints refer to the problems which are faced by farmers in successful operation and management of dairy activity. Dairy production in area had numerous problems hindering the smooth progress of dairy sector in area. The constraints were ranked on the basis of frequency and percentage of respective dairy farmers, who expressed them as constraints in dairy farming. On the basis of present study farmers claimed the following constraints which are enlisted rank wise in Table 3. On the basis of expressed opinion of the respondents the constraints were listed down and it was reported that there were eleven constraints in dairy farming of which, three major constraints were unavailability of green fodder round the year (100%), low productivity of animal (70%), non-remunerative prices of milk (55%). Other constraints reported were high cost of concentrate mixture (50%), unavailability of resource person especially veterinary doctor in nearby area (50%), lack information about government schemes (45%), unavailability of concentrate mixture (36.67%), improper disposal animal waste (35.83%), occurrence of diseases among animal (34.17%), Unavailability of drinking water (30%) and poor conception rate in Artificial Insemination (15%).

In present study, it was found that farmers don’t grow fodder in their fields purposively for dairy purpose. Grasses grow in the fields naturally, residual crop harvest of finger millet, wheat, maize were used as fodder occasionally. Mostly they relied upon forest for green fodder and in winters there was acute shortage of green fodder. Small and fragmented land holding, unavailability of irrigation water, unavailability of fodder seeds was major reason for not growing fodder in their field. Consequently, it was reported that dairy animals were under fed which resulted in, late maturity of animal, high mortality, infertility and low milk production. Gupta

| S. No. | Constraints                                      | Respondents | Rank |
|--------|--------------------------------------------------|-------------|------|
|        | Frequency | Percentage |      |
| 1      | Unavailability of green fodder round the year     | 120         | I    |
| 2      | Low productivity of animal                        | 84          | II   |
| 3      | Non-Remunerative prices of milk                   | 66          | III  |
| 4      | Unavailability of resource person especially veterinary doctor in nearby area | 60          | IV   |
| 5      | High cost of concentrate mixture                  | 60          | V    |
| 6      | Lack information about government schemes         | 54          | VI   |
| 7      | Unavailability of concentrate mixture             | 44          | VII  |
| 8      | Improper disposal of animal waste                 | 43          | VIII |
| 9      | Occurrence of disease among animal                | 41          | IX   |
| 10     | Availability of drinking water for animal          | 36          | X    |
| 11     | Poor conception rate in Artificial Insemination   | 18          | XI   |
Unavailability of veterinary doctor in nearby area was another major constraint where farmers travelled more than ten or fifteen kilometers along with their animal for the treatment and expert advice. It was found that doctors were not present in their posted areas many times and this created problem for villages in accessing information or any kind of service. Yet another constraint was lack of information on government schemes and subsidies. It was found that farmers were unaware of recent advances in different aspects of dairy. Moreover, there was acute unawareness of government support and subsidies. Sharma et al. (2018) also reported Insufficient veterinary doctors or attendants (72%) as one of the major constraints among dairy farm women in Nainital District.

Non-availability of water was constraints for many of villagers especially during summer season. Villagers used to travel long distance for getting drinking water for them and their animal. It was reported that hand pumps were there in villages but animal didn’t drink that water. In case of dairy farmers who had buffaloes, they faced problem shortage of water for drinking as well as for bathing of animal. For dairy farmers who had large herd size and buffaloes faced severe problem regarding availability of water.

Another major constraint was low productivity of dairy animal. This could due to the fact that dairy farmers had local breed of animal, there was shortage of quality fodder and they were following peer feeding practices for dairy animal. On discussion with respondents, it was found that dairy farmers sell was selling milk either to milk union or to people in cities. In both the cases they were found dissatisfied with the price they were getting for milk.

Other than the above-mentioned constraints they faced problem with the availability of concentrate feed and high cost of concentrate feed. It was reported that concentrate feed was an important part animal diet which they preferred crucial for high milk production. It was regular part of animal diet and they used to buy concentrate mixture either from market or from milk cooperative union. It was reported that there was unavailability of concentrate feed in milk cooperative union who provided it to them at minimal price. In such condition they bought it from market at high cost. For dairy farmers who had low milk producing animal and who didn’t earn much from dairy, it was a tough task. The results are in consonance with the findings of Sharma et al. (2018) who reported Low availability and high cost of concentrates (66%) and Low productivity of animal (78%) as constraints in dairy farming.

Furthermore, farmers had problem with proper disposal of animal waste. In absence of disposing-off area near animal shed, they didn’t know what to do with animal waste especially during rainy season. It was found that dairy farmers lack proper knowledge about compost making and gobar gas production. Sharma et al. (2013) also observed that the disposal of the fresh cow dung was the major problem among dairy farmers. Also, few respondents expressed their dissatisfaction from Artificial Insemination services due to poor conception of animal from AI. Last but not least, respondents expressed that occurrence of diseases among animal created problem for them. In rainy season, the case of disease infestation was more. Bloating and Food and Mouth disease were major obstruction for them. Beside this, non-availability of doctors during this period made situation worse for them.

The present findings are in consonance with previous research studies. Rajpoot et al. (2018) reported low price of milk and milk products (83%), lack of veterinary facility in village (70%), respondents not having cross breed/superior animals (72.5%), feed and green fodder/roughages management (63%) as the constraints faced by dairy farmers while adopting animal management practices. Similarly, another study by Chaurasiya et al. (2017) reported that major constraints expressed by dairy farmers were lack of veterinary facilities in the village (68.75%). Another study by Rathod et al. (2011) highlighted that majority of farmers (87%) faced non-availability of fodder round the year, inadequate knowledge about feeding (76%), lack of timely Artificial Insemination (AI) facility (72%), low conception rate through artificial insemination (57%) as the constraints in dairy farming. Irregular disposal of dung and animal waste, non-availability of timely treatment facilities, shortage of green fodder particularly during summer months, non-remunerative price of milk and lack of provision for clean drinking water was indicated as constraints in dairy farming by Singh et al. (2017). Similarly a study in Gujarat by Kathiriya et al. (2014) reported that more than 70 percent respondents had difficulties in getting medical aids, lack of technical knowledge about feed, fodder and health management, lack of artificial insemination facilities at village level, lack of quality fodder and lack of medicinal facilities in the villages as constraints in dairy farming among rural women.

Conclusions

The study concluded that dairying was one of the major activities performed by farmers in hill region of Uttarakhand for livelihood security in consistent manner. So, present study highlighted that in interior region of hills, people seek information more from personal localite than any other source of information. Hence, percolation of need based information among personal localites is utmost important for dairy improvement. Furthermore, it was indicated that veterinary doctors and milk union play a very crucial role in dissemination dairy related information to farmers. The study provided a comprehensive view of constraints faced by dairy farmers in hill region of Uttarakhand state, which were unavailability of green fodder round the year, low productivity.
of animal, non-remunerative prices of milk, high cost of concentrate mixture, unavailability of resource person especially veterinary doctor in nearby areas, lack information on government schemes, unavailability of concentrate mixture, improper disposal of animal waste, occurrence of diseases among animals, Unavailability of drinking water and poor conception rate in Artificial Insemination. Data suggested that efforts are needed for awareness of personal localities on different aspect of improved dairy practices as they act as link for other dairy farmers. It is also emphasized that we still have long way to go in availability feed and fodder round the year, improvement of animal breed and awareness of dairy farmers on government schemes and subsidies. Also, with better prices and consistent veterinary services dairying can be made more profitable for dairy farmers in hills of Uttarakhand state.

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