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Effect of literacy and type of concentrate on peak milk yield in dairy animals

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Abstract
A baseline survey was conducted on randomly selected 120 dairy farmers of district Hoshiarpur. The objective was to study the effect of farmer's literacy and type of concentrate on Buffalo peak milk yield (BPY) & Cow peak milk yield (CPY). Structured questionnaires through interviews were used for data collection. In the present study adoption was measured by collecting all relevant information related to recommended dairy farming practices by the scientist of Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana. In present study, least square model was used to analyse the effect of literacy and type of concentrate feeding on BPY & CPY at farmer's herd. Based on education qualification, farmers were divided into three groups i.e. up to 5th (group 1), up to 10th (group 2) and graduate level (group 3) and three types of concentrates were compared i.e. homemade (group 1), branded (group 2) and mixed (group 3). The farmer's literacy revealed significant difference ($P < 0.05$) w.r.t. CPY. The animals of third group farmers revealed highest cow peak milk yield (11.455) compared to group 1st & 2nd. Whereas, farmer's literacy did not reveal any significant difference in buffalo peak milk yield. Similarly, type of concentrate revealed significant effect ($P < 0.05$) on CPY. The 2nd and 3rd group revealed high cow peak milk yield (12.333 & 10.617)) respectively, compared to 1st group. Whereas, type of concentrate did not revealed significant effect on buffalo peak milk yield.

Keywords: Buffalo, concentrate, dairy, milk yield, literacy

Introduction

In India, total milk production during 2018-19 is 187.75 million tonnes and per capita availability of milk is 394 [1]. Dairy farming is one of the important source of income of the rural population of developing country. More than 70 per cent of rural households depend upon livestock for their livelihood and majority of them are with less than 5 dairy animals, particularly cow and buffaloes [2, 3]. Livestock rearing is one of the most important part of the farming system and main source of livelihood for landless or marginal farmers. Commercial and small scale dairy farming in India is no doubt playing an important role in the total milk production and economy of our country. And almost all regions of India are suitable for setting up dairy farming business.

Most of the dairy farmers in India are raising animals in small scale traditional methods. They are not aware about the modern farming methods and improved techniques for dairy farming. As a result, some farmers are loosing their investment instead of being benefited. Proper business plan, well management and care can ensure maximum production and profit from dairy farming business. Knowledge about scientific rearing practices breed/ species wise plays an important role in dairy farming. There are various genetic and non-genetic factors that effect milk yield. Dairy development has played a major role in increasing milk production, improving income level, and generating employment opportunities, especially for small and marginal farmers.

The dairy farming is characterized by low productivity as the result of poor farming technologies and lack of capital by small holder farmers. Also, research and training programs need to be planned, which would be beneficial to the farming environment [4]. The present work was designed with an objective to determine the effect of literacy and type of concentrate on peak milk yield in cattle (crossbred/exotic (Holstein) and buffalo reared by dairy farmers of district Hoshiarpur, Punjab, India.

Materials and Methods

The present study was conducted on randomly selected 120 dairy farmers from eight villages

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of district Hoshiarpur. From each village 15 dairy farmers were selected randomly. The information was collected with the help of a structural interview schedule. In the present study adoption was measured by collecting all the relevant information related to recommend dairy farming practices by the scientists of Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana.

A questionnaire was developed keeping in view the objectives of the study in which independent variables such as education level, species, breed, peak milk yield and type of concentrate fed to animals were selected. The answers according to the questionnaire were entered into a computer spreadsheet, Microsoft Excel® (Microsoft Corporation, USA). Further descriptive data analysis like frequency, average and percentage were calculated by IBM SPSS-22. In present study, least square model was used to analyse the effect of literacy and type of concentrate feeding on Buffalo peak milk yield (BPY) & Cow peak milk yield (CPY) at farmer's herd. The model used for analysis

$$Y_{ijk} = \mu + L_i + T_j + e_{ijk}$$

Where,
Y_{ijk}=is the observed value,
μ = overall mean,
L_i = fixed effect of ith level of education (i=1,2,3)
T_j= fixed effect of jth type of c oncentrate (j=1,2,3)
e_{ijk}= random residual error

Based on education qualification, farmers were divided into three groups based upon their education qualification i.e. up to 5^{th}standard (group 1), up to 10^{th}standard (group 2) and graduate level (group 3) and three types of concentrates were compared i.e. homemade (group 1), branded (group 2) and mixed (group 3).

Results and Discussion:

In rural dairy farming in Hoshiarpur, Punjab a trend was observed in that in case of cattle farmers were rearing up mostly exotic breeds *viz*. Holstein Friesan (HF) and HF-cross while for buffalos mostly indigenous breeds were favoured.

The farmer's literacy revealed significant difference (*P*<0.05) w.r.t. CPY (Table 1). The animals of third group farmers revealed significantly highest cow peak milk yield (11.45) compared to group 1st& 2nd. Whereas, farmer's literacy did not reveal any significant difference in buffalo peak milk yield.

Similarly, type of concentrate revealed significant effect (*P*<0.05) on CPY (Table 2). The 2nd and 3rd group revealed high cow peak milk yield (12.33 & 10.61) respectively, compared to 1st group. This indicate that the composition of concentrate mixture is formulated as per the nutritional requirement of exotic and cross bred cattle. Thus to exploit maximum milking potential of HF and HF cross cows in our agro climatic conditions feeding of formulated concentrate mixture is a prerequisite. It will significantly contribute to animal welfare and farmers income. Whereas, type of concentrate did not reveal significant effect on buffalo peak milk yield. However, buffaloes fed with homemade concentrate comparatively revealed higher peak milk yield.

One possible explanation for the above results might lie in the differences of genetic makeup of cross-bred/exotic cattle and native buffalo breed. As management practices followed in native buffalo breed follow a traditional approach which is being passed on from generation to generation. However, in crossbred/ exotic cattle literacy played a significant role for milk yield owing to the fact that knowledge about proper managerial practices can be advantageous for better adaption and acclimatization of such sensitive exotic breeds to our agro climatic conditions.

Similar findings were reported by [5]. Whereas Gunlu *et al*. (2003) [6] reported that the effects of education level of the producers on the milk production cost was not significant. (*P*<0.05). Zeqiri *et al*. (2016) [4] also reported significant variation in milk yield with the level of farmer's education.

Milk production record was found to be significantly correlated with the education. Education can facilitate the diffusion and transmission of knowledge needed to understand and process new information and to successfully implement new technologies, which again promotes economic growth [7]. Mellor (1976) [8] also emphasized that literacy needs to be part of a strategy to improve agricultural productivity. In India, like in other developing countries, dairy sector has played a major role in increasing milk production, raising socio-economic status and generating employment opportunities, especially for small and marginal farmers. The loss in dairy farming is characterized by low productivity as the result of poor scientific knows how, managerial and breeding practices. Thus, field oriented research and training programs need to be planned to educate dairy farmers which would be beneficial to the farming environment.

Table 1: Effect of Farmer's Literacy on peak milk yield

Traits	Edu. Group	No. of farmers	Mean ± SE
Cow PY	1	31	9.29 [a] ± 1.167
	2	54	9.88 [a] ± 0.992
	3	35	11.45 [b] ± 1.283
	Total	120	10.1 ± 0.654693
Buffalo PY	1	31	7.50 [a] ± 0.589
	2	54	6.611 [a] ± 0.569
	3	35	6.53 [a] ± 0.737
	Total	120	6.858 ± 0.364

Table 2: Effect of type of Concentrate on peak milk yield

Traits	Concentrate	No. of farmers	Mean ± SE
Cow PY	1	49	8.51 [a] ± 0.998
	2	24	12.333 [b] ± 1.382
	3	47	10.617[b] ± 1.067
	Total	120	10.1 ± 0.654
Buff PY	1	49	6.949 [a] ± 0.575
	2	24	6.50 [a] ± 0.844
	3	47	6.947 [a] ± 0.575
	Total	120	6.858 ± 0.364

Conclusion

In present survey based study effect of literacy and type of concentrate feeding on BPY & CPY at farmer's herd was observed. The farmer's literacy revealed significant difference (*P*<0.05) w.r.t. CPY. The animals of third group i.e. farmers having graduation degree revealed highest cow peak milk yield (11.455) compared to group 1st& 2nd. Similarly, type of concentrate revealed significant effect (*P*<0.05) on CPY. The 2nd and 3rd group revealed high cow peak milk yield (12.333 & 10.617)) respectively, compared to 1st group. Whereas, farmer's literacy and type of concentrate did not reveal any significant difference in buffalo peak milk yield. So there is a lot of scope for increasing the existing level of knowledge of

dairy farmers about improved animal husbandry practices. More extension programmes is need to be organized to increase the knowhow of the farmers regarding care and management of crossbred/exotic cattle breeds.

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