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Studies on feeding management practices adopted by murrah buffalo owners in vicinity of Pune

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Abstract
The investigation entitled, "Studies on feeding management practices adopted by Murrah buffalo owners in vicinity of Pune" was undertaken to ascertain the various management practices followed by buffalo owners in vicinity of Pune. Total 100 Murrah buffalo dairy farms in and around 30 km radius of Pune city were studied. The data was collected through pretested questionnaire. The buffalo owners were distributed in four groups on the basis of buffaloes possessed by them as group-I were having up to 10 buffaloes, group-II possessed 11 to 25 buffaloes, group-III had 26 to 50 buffaloes and group IV were having above 51 buffaloes.
The farm owners fed their buffaloes with average 21.06 kg green fodder, 11.09 kg dry fodder and 5.25 kg concentrate per day per buffalo. While more than half of respondents were feeding 30 to 50 Ml. of mustard oil daily to their milch buffaloes with view to increase the fat content of milk. Almost all the buffalo owners kept their pregnant buffaloes together with other buffaloes and fed 1.53 kg concentrate per day as a pregnancy allowance.

Keywords: Murrah buffaloes, feeding status of buffalo, feeding management

Introduction
Among all the buffaloes available in the world, the Murrah buffalo holds the greatest promise and potential for milk production. The success of Indian dairy industry is much dependent on productivity and efficient reproduction performance of Murrah buffaloes (Kumar, 2015) [6]. Murrah is one of the superior breeds of Indian buffaloes and it has a share of 44.39 percent in total buffalo population of the country. Out of the buffalo breeds in India, Murrah breed is essentially the unique for dairy type. Besides India, Murrah breed has spread in Asia and Europe as well. Several countries including China, Brazil, Egypt, Bulgaria, Bangladesh etc. have used Murrah as an improved breed for upgrading their native buffaloes. Home tract of Murrah buffaloes is Haryana but graded Murrah buffaloes are found throughout the country due to their higher milk production potential coupled with adaptation to wide environmental 2 conditions and feed conversion efficiency. Hence, it has been appropriately named as the black gold or Holstein-Friesian of the buffalo world.
Murrah breed of buffalo, the pride of Haryana, is a milk type animal. The home tract of Murrah buffalo is Rohtak, Jind, Hisar and Bhiwani districts of Haryana. It is also found in Nabha and Patiala districts of Punjab and around Delhi. India has over 108 million heads of buffaloes, which is approximately 57 percent of total world buffalo population contributing 50 million tons of milk, which accounts for 55 percent of total milk production in India.

Materials and Methods
In all, 100 Murrah buffalo owners were selected randomly in and around the Pune city. These buffalo owners were grouped in to four groups according to the total number of buffaloes they possessed as under

Group	Number of buffaloes
I	Less than 10 buffaloes
II	11 to 25 buffaloes
III	26 to 50 buffaloes
IV	More than 51 buffaloes

The 100 buffalo farms were surveyed without the restriction on the number of farm for each group as Group-I-, Group-II-, Group-III- and Group-IV. The detail information as per the questionnaire were collected from each farm owner by interview method.
An interview schedule was constructed to collect information keeping in view the objectives of the study set forth and the independent and dependent variables delineated. Initially the schedule was developed in rough form and then after it was finalized.

Compilation of data
The information collected through interview was transferred from the interview schedule to the primary tables and then to the secondary tables wherever necessary. The quantified data (numerical figures data) were used to find out the nature of relationship between independent and dependent variables.

Statistical analysis
In this study, the statistical measures, such as the percentage, mean, standard error, correlation coefficient, regression analysis and 'F' test have been used as per the formula given by Snedecor and Cochran, (1994) [12].

Percentage
It was the simplest analysis used for simple comparisons. It's calculation was done by dividing frequency of particular cell by the total number of buffalo farmers belonging to the category and multiplied by 100.

Mean: It is defined as a single value which describes the whole data

$$X = \frac{X_1 + X_2 + \ldots\ldots + X_n}{n}$$

Where,
X_1, X_2, X_n = Number of observations
N = Total number of observations

Standard error

$$\text{Standard error of mean} = \frac{\text{Standard deviation } (\sigma)}{\sqrt{n}}$$

Correlation coefficient
It is numeric factor which measures the degree of relationship and direction of relationship between two variables.

$$COV(X,Y) = \frac{(\sum XiYi - n\,XY)}{\sqrt{(\sum Xi^2 - nX^2)}\sqrt{(\sum Yi^2 - nYi^2)}}$$

Multiple regression coefficients
In this effect of more than one independent variables on the dependent variables were studied.

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + \ldots\ldots + b_px_p + e$$

Where,
A = constant
Bi = i = 1, 2…., p-regression coefficient
Y = dependent variable

'F' Test
It was used to test regression fit.

Table 1: Response of farmers towards feeding management practices in different groups

Sr. No.	Practice	Response	Group-I		Group-II		Group-III		Group-IV		Overall	
			No	%	No	%	No	%	No	%	No	%
1.	Land for cultivation of fodder crops	Yes	12	31.58	20	68.97	15	68.18	07	63.64	54	54.00
		No	26	68.42	09	31.03	07	31.82	04	36.36	46	46.00
2.	Average land under fodder crops	Acres	0.95		1.20		1.36		1.5		1.25	
3.	Feeding green fodder throughout the year	Yes	28	73.68	22	75.86	10	45.45	09	81.82	69	69.00
		No	10	26.31	07	24.14	12	54.55	02	18.18	31	31.00
4.	Average green fodder fed per day per buffalo	kg	17.82		20.48		22.68		23.27		21.06	
5.	Average dry fodder fed per day per buffalo	kg	9.16		11.13		11.81		12.26		11.09	
6.	Buffalo late loose for grazing	Yes	14	36.84	07	24.14	09	40.91	04	36.36	34	34.00
		No	24	63.16	22	75.86	13	59.09	07	63.64	66	66.00
7.	Chaffing of fodder	Yes	38	100	29	100	22	100	11	100	100	100
		No	-	-	-	-	-	-	-	-	-	-
8.	Concentrate feeding	Whole year	32	84.21	23	79.31	18	81.82	11	100	84	84.00
		Only milking period	06	15.79	06	20.69	04	18.18	-	-	16	16.00
9.	Feeding of salt and mineral mixture	Yes	25	65.79	19	65.52	14	63.64	10	90.91	68	68.00
		No	13	34.21	10	34.48	08	36.36	01	09.09	32	32.00
10.	Silage preparation.	Yes	-	-	06	20.69	05	22.73	05	45.45	16	16.00
		No	38	100	23	79.31	17	77.27	06	54.55	84	84.00
11.	Use of oil in concentrate mixture	Yes	16	42.11	18	62.07	14	63.64	08	72.73	56	56.00
		No	22	57.89	11	37.93	08	36.36	03	27.27	44	44.00

Results and Discussion
It revealed that overall 54 percent respondents had land for cultivation of fodder crops whereas 46 percent respondents had no land. It was seen that overall 69 percent respondents provide green fodder to their buffaloes throughout the year, whereas, 31 percent respondents were not feeding green fodder throughout the year. It was also observed that the area under fodder crops was directly related to the number of buffaloes maintained by the farmers. The area under forage crops increased with the increase in number of buffaloes. Among all the groups area under fodder crops was more in case of group-IV. The average quantity of green fodder fed to

the buffalo per day was higher (23.27 kg) in group-IV, while it was low (17.82 kg) in group-I. Overall, 21.06 kg of green fodder was fed to the buffalo per day by the respondents. The average quantity of dry fodder fed to the buffalo per day was more or less similar in all the groups whereas, overall dry fodder fed to the buffalo was 11.09 kg per day. The highest (40.91%) number of farmers from group-III let loose their buffaloes for grazing, whereas overall 34 percent respondents followed grazing practice for their buffaloes. All the respondents from each group followed the practice of chaffing of fodder before feeding it to buffaloes. Overall 68 percent of farmers feed salt and mineral mixture and remaining 32 percent farmers do not fed it. Overall 16 percent of farmers prepared silage for their buffaloes and 84 percent were not preparing silage to their buffaloes. It may due to lack of knowledge of feeding practices and preparation of silage.

Similar findings were reported by Bidwe *et al*. (2009) [2] while working on management practices followed by the buffalo owners of Buldana district of Maharashtra and Tanwar *et al*. (2012) [11] while studying on feeding management practices followed by member and non-member of dairy co-operative in Jaipur district of Rajasthan. Chandolia *et al*. (2016) [3] reported that in rural and semi-urban areas of Jaipur district only 72.3 and 76.6 percent farmers fed concentrate round the year.

As revealed from the data 90.91 percent respondent from group-IV fed salt and mineral mixture whereas 65.79, 65.52 and 63.64 percent respondents from group-I, group-II and group-III fed salt and mineral mixture to their buffaloes. Overall 56 percent respondents fed oil to their buffaloes for increasing fat content in milk.

Conclusion

Overall 69.00 percent respondents provided green fodder throughout the year whereas, only 31.58 percent respondents of group I provided the green fodder throughout the year which was very low as compared to other groups. The average of 21.06 kg of green fodder and 11.09 kg of dry fodder was fed per buffalo per day by the respondents. The average quantity of green fodder per day per buffalo was higher for group–IV (23.27 kg) while it was low for group-I (17.82 kg). The average quantity of dry fodder provided to the buffalo per day was more or less similar in all the groups. The area under fodder crops was more in case of group-IV as compared to other groups. Overall 34.00 percent respondents under study follow the grazing practice to their buffaloes. All the respondents fed their buffaloes with concentrate mixture using cotton seed cake, groundnut seed cake along with coarse crushed grains such as jowar, wheat, gram, chunni and bhusa etc. In group-I 65.79 percent and group-II 65.52 percent buffalo owners fed salt and mineral mixture to their buffaloes.

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