

## A STUDY OF MANAGERIAL PRACTICES IN WATER BUFFALO (*BUBALUS BUBALIS*) IN INDIA

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### ABSTRACT

Comparative evaluation of farmers of rural and urban areas of Indore district of Madhya Pradesh, India was undertaken in terms of various managerial practices followed on the basis of herd size among different classes of farmers, and their housing, feeding, breeding and health coverage practices in buffaloes. In rural areas, a significantly higher number (59.33%) of farmers had mud houses with mud floors, whereas in urban areas, 68% farmers had Kiln-dried brick houses with concrete floors. In rural areas, the space available per animal was adequate in all cases but in urban areas, 68% of the respondents had inadequate space per animal. Feeding of green fodder throughout year in both rural and urban areas was practiced. A significantly higher number (88%) of urban farmers offered balanced ration to their animals as compared to rural farmers. In rural areas, only 9.66% of the farmers bred their animals with A.I., and 90.33% preferred natural service. More urban farmers followed cross breeding and grading up as breed improvement practices as compared to rural farmers. The analysis revealed that the rural buffalo gives less profit in comparison to those in urban areas due to lack of scientific animal husbandry practice and the low price of milk in addition to poor fluid milk marketing.

**Keywords:** water buffaloes, managerial practice, management, housing, feeding, breeding

### INTRODUCTION

The role of dairy farming in the Indian rural economy is very outstanding. The significance of bovine economy is heightened by its massive contribution to livelihood of India's rural population. Over 73 percent of India's households have their own livestock. Tending, grazing, feeding and milking cows and buffaloes is one the largest sources of productive employment in rural India. In Madhya Pradesh state, especially in rural areas, the majority of buffalo owners are agriculture farmers and have not yet developed a commercial attitude towards dairy farming. The investigation on the managerial practices for dairy animals, especially buffaloes, is limited. The study has been carried out to determine the status of rural and urban farmers and the housing, feeding, breeding and health coverage practices in buffalo in urban and rural areas, to compare various managerial practices with respect to herd size among different classes of farmers, and to compare the cost of milk production in urban and rural areas.

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## MATERIALS AND METHODS

This study was conducted in Indore district of Madhya Pradesh in India. A total of 400 farmers, i.e. 100 farmers from urban and 300 farmers from rural areas were selected randomly. In the present study, general information viz. caste, categories of farmers, land holdings, education background, occupation, type of farming, size of dairy and financial support of the dairy by the government/or private agencies, and farmers themselves/ was obtained.

Managerial practices information was obtained on the following aspects: 1. Housing management - type of housing, type of floor, system of housing, space available per animal, light and ventilation, drainage system. 2. Feeding management - grazing of animal, feeding of green fodder, dry fodder, and concentrate, processing of roughages, feeding of common salt and mineral mixture, source of drinking water and maintenance of feed records. 3. Breeding programme - system of breeding, bull used for service, breed improvement practices, regularity in heat, and age at first calving, treatment of anoestrus. 4. Attitude of farmers towards health practices - treatment of animals, sick animals treated, deworming practices, control of ticks, and vaccination. 5. Milking practices and disposal of milk - Milking in clean separate place, washing the hind quarter, bathing of animal before evening milking, method of milking, frequencies of milking, milk production, disposal of milk, a Agency to which milk was sold and selling price. 6. Cost of milk production per litre - cost of fodder both green and dry, concentrate, cost of labour both hired and owned, cost of veterinary aid, cost of miscellaneous items such as mineral mixture, gur, salt, oil, rope and chain etc.

The farmers were interviewed and all managerial practices were observed personally. Frequencies were obtained for different

managerial practices. Data were converted into percentage to draw inferences. The Chi-square test was used to determine the degree of association between different variables (Snedecor and Cochran, 1994).

## RESULTS AND DISCUSSION

### General information of dairy farmers

The present study revealed that the majority of the buffalo farmers in both rural and urban areas belonged to Other Backward Caste. Their main occupation was agriculture farming, and dairy farming was a subsidiary occupation. No significant difference was observed between rural and urban areas with regards to the education of farmers. Regarding landholding by farmers, the majority (59%) do not have any agriculture land; they engaged only in their dairy farming business. A similar trend was also reported by Malik and Nagpaul (1998). A significant ( $P < 0.01$ ) association was observed between urban and rural areas with regards to the size of buffalo herd. The majority of rural farmers had small size dairies (1-5 dairy animals) but in urban areas, there were medium to large size buffalo herds because of the fact that the majority of the urban farmers were commercial dairy farmers. Similar trends were observed by Malik and Patel (1987).

### Housing management

A highly significant ( $P < 0.01$ ) difference was observed on the type of housing for buffaloes. The majority of the rural farmers (59.33%) had mud houses according to their economic status. In comparison to rural areas, a significantly ( $P < 0.01$ ) higher percentage of buffalo farmers had Kiln-dried brick (pacca) houses (42%) in urban areas.

The results of present finding revealed that significantly ( $P < 0.01$ ) higher number of animal sheds

had mud floors and improper drainage system in rural areas.

Regarding the housing system, a significantly higher ( $P < 0.01$ ) percentage of urban buffalo farmers had a two-row system (tail to tail or head to head) in comparison to rural farmers.

In rural areas, the availability of space per animal was adequate in compare to urban area. A significantly ( $P < 0.01$ ) higher number of respondents had inadequate light and ventilation (70.33%) in rural areas as compare to urban areas.

### **Feeding management**

A majority of farmers in both urban and rural areas provided green fodder throughout the year. The majority of the farmers cultivated green fodder in rural areas and farmers provided green fodder to pregnant and productive animals. The traditional feeding system of buffalo is generally free grazing. The majority of farmers in rural (69.33%) areas sent their animals out for grazing. In the study it was observed that majority of the farmers in rural and in urban area provided their animals dry fodder on the basis of milk yield. The majority (70%) of the rural farmers did not provide a balanced ration to their animals, whereas a significantly higher percentage (88%) of urban farmers provided their animals balanced ration. Most of the farmers in rural areas (75.33%) provided home grown concentrate like wheat bran, gram / chunie etc. but urban farmers purchased concentrate from the market. A significant difference was observed in the feeding of common salt and mineral mixture to the buffaloes. Rural and urban buffalo farmers did not maintain any records of feed and fodder at the dairy farm. The majority of the rural farmers (80.33%) provided drinking water from a tube well, but in urban areas, 74% farmer supplied drinking water to their animals with a hand pump or by using tap water.

### **System of breeding**

Both rural and urban buffalo farmers prefer natural service as system of breeding, but a significant ( $P < 0.01$ ) difference was observed in adoption of artificial insemination practice. A higher number of urban farmers prefer A.I. In urban areas, the farmers cross their animals from proven sire breeding bulls, but in rural areas, farmers prefer breeding through bull of the grazing herd. The breed improvement practice urban farmers followed were crossbreeding and grading up programmes. As we know, regularity in the oestrus cycle is a vital factor in determining the efficiency of animal production. The best buffalo is likely to produce a single calf per year, but this is only possible when the buffalo is regular in its oestrus cycle. A significantly higher number of buffaloes come in heat regularly in urban areas.

The age at first calving ranged from 50 to 55 months and from 42 to 45 months for rural and urban buffaloes, respectively. The majority of the farmers in rural and urban areas milk their buffaloes in the same shed in which they are kept. Farmers in urban areas wash the whole body of the animals prior to evening milking. Washing of hindquarters was not followed by either category of farmers. The washing of udder before milking was significantly different between urban and rural areas. A total 94% of the urban farmers adopted a hygienic method of milking. The majority of farmers of urban and rural area used the knuckling or thumb-in methods of milking, but the full hand method of milking is an ideal and scientific method. It was beliered by the urban farmers that the full hand method of milking causes pain to their hand, whereas the knuckling method was more comfortable but leads to udder injury and consequently mastitis. Farmers follows a twice-a-day milking schedule in both rural and urban areas. Similar observations were reported by Handa and Gill (1986).

Table 1. General information of farmers of buffalo herd.

S. No.	Description	Percentage	
		Rural Total Number = 300	Urban Total Number = 100
1	Caste wise distribution of dairy farmers		
	1.General	8 (24)	14
	2.Other Backward caste	78 (234)	79
	3. Schedule caste	3.33 (10)	5
	4. Schedule tribe	10.66 (32)	2
2	Occupation of dairy farmers		
	1. Dairy + Agriculture	68.33 (205)	36
	2. Dairy + Agriculture + Service	18 (54)	2
	3. Dairy + Agriculture + Business	8.33 (25)	6
	4. Dairy + Labour	2 (6)	18
	5. Dairy + Service	2.33 (7)	3
	6. Dairy alone	1 (3)	35
3	Educational Background of farmers		
	1. Illiterate	8.66 (26)	2
	2. Primary school	46.33 (139)	16
	3. Middle school	22.66 (68)	21
	4. Metric	17 (51)	42
	5. Graduate	4 (12)	10
	6. Post graduate	1.33 (4)	9
4	Land holding of dairy farmers		
	1. Landless	4.66 (14)	59
	2. Marginal farmers (<2.5 acres)	11.33 (34)	2
	3. Small farmers (2.5 to 5 acres)	54.66 (164)	28
	4. Large Farmers (> 5 acres)	29.33 (88)	11
5	Type of dairy farming		
	1. Dairy farming alone	3 (9)	56
	2. Mixed farming	97 (291)	44
6.	Size of dairy		
	1. Small (1-5 buffaloes)	27.66 (83)	2
	2. Medium (6-10 buffaloes)	48 (144)	58
	3. Large (> 10 buffaloes)	24.33 (73)	40
7.	Financial Support		
	1. Self finance	96.33 (289)	88
	2. Bank loan	2.66 (8)	12
	3. Government subsidy	1 (3)	-

Table 2. Housing management practices of buffalo herd.

S. No.	Description	Percentage	
		Rural Total Number = 300	Urban Total Number = 100
1	Type of Housing		
	1. Kiln-dried brick (Pacca) house	40.66 (122)	68**
	2. Mud house	59.33** (178)	27
	3. No housing	-	5
2	Type of floor		
	1. Concrete	31.33 (94)	82**
	2. Mud floor	65.33** (196)	13
	3. Brick floor	3.33 (10)	5*
3	Drainage system		
	1. Proper	24.66 (74)	79**
	2. Improper	75.33 (226)	21
4	System of housing		
	1. Single line	89.33 (268)	58
	2. Head to Head	3 (9)	12
	3. Tail to Tail	7.66 (23)	30**
5	Space available		
	1. Adequate	61 (183)	32
	2. Inadequate	39 (117)	68
6	Light and Ventilation		
	1. Adequate	29.66 (89)	86
	2. Inadequate	70.33** (211)	14

Table 3. Feeding management practices of buffalo herd.

S. No.	Description	Percentage	
		Rural Total Number = 300	Urban Total Number = 100
1	Green fodder		
	1. Yes	71.33 (214)	68
	2. No	28.66 (86)	32
2	Green fodder		
	1. Grown	81.66 (245)	18
	2. Not grown	18.33 (55)	82
3	Criteria for feeding green		
	1. Milk yield	100 (300)	100
	2. Body weight	-	-
4	Buffaloes sent for grazing		
	1. Yes	69.33 (208)	13
	2. No	30.66 (92)	87
5	Space available		
	1. Adequate	61 (183)	32
	2. Inadequate	39 (117)	68
6	Type of dry fodder provided to buffaloes		
	1. Soya bean straw	72 (216)	100
	2. Wheat Bhusa	8 (24)	-
	3. Wheat + gram Bhusa	20 (60)	-
7	Feeding balanced ration		
	1. Yes	30 (90)	88**
	2. No	70 (210)	12
8	Purchase of concentrate mixture		
	1. Home made	75.33 (226)	-
	2. Purchase	24.66 (74)	100
9	Feeding of common salt		
	1. Yes	6 (18)	41**
	2. No.	94** (282)	59
10	Feeding of mineral mixture		
	1. Yes	11 (267)	92**
	2. No	89 (33)	8
11	Feed Record keeping		
	1. Yes	-	18
	2. No	100 (300)	82
12	Source of drinking water		
	1. Well	13.33 (40)	-
	2. Pond	6.33 (19)	-
	3. Tube well	80.33 (241)	83
	4. Tap water	-	17

Table 4. Breeding management and milking practices of buffalo herd.

S. No.	Description	Percentage	
		Rural Total Number = 300	Urban Total Number = 100
1	System of breeding		
	1. Natural service	90.33 (271)	86
	2. Artificial Insemination	9.66 (29)	14*
2	Bull used for Natural Services		
	1. Non descript	73** (219)	5
	2. Breeding bull	27 (81)	95**
3	Breed Improvement practices		
	1. Crossbreeding	16 (48)	24**
	2. Grading up	-	5*
	3. None	84 (252)	71
4	Buffaloes send for grazing		
	1. Yes	69.33 (208)	13
	2. No	30.66 (92)	87
5	Regularity in estrus cycle		
	1. Yes	18.66 (56)	59**
	2. No	81.33** (244)	41
6	Treatment of anoestrus		
	1. Veterinary Treatment	71.66 (218)	89**
	2. Local (Deshi) Treatment	27.33** (82)	11
7	Milking of buffaloes in clean & separate Place		
	1. Yes	-	28**
	2. No	100 (300)	72
8	Bathing of buffaloes		
	1. Yes	15 (45)	66**
	2. No	85 (255)	34
9	Washing of Hind quarter before milking		
	1. Yes	5.66 (17)	22**
	2. No	94.33 (283)	78
10	Washing of Udder before milking		
	1. Yes	30.33 (91)	94**
	2. No	69.66** (209)	6
11	Method of milking		
	1. Full hand	11.33 (34)	8
	2. Knuckling method	88.66 (266)	92**
12	Frequency of milking		
	1. Once	-	-
	2. Twice	100 (300)	100

Table 5. Disposal of milk and disease control practices of buffalo herd.

S. No.	Description	Percentage	
		Rural Total Number = 300	Urban Total Number = 100
1	Quantity of milk consumed		
	1. At Home	22.33	11
	2. Sold in market	77.66	89
2	Agencies to whom milk was sold		
	1. Co operative society	20	17
	2. Milk Vender	6	2
	3. Direct to consumers	74	81
3	Treatment of sick buffaloes		
	1. Yes	100 (300)	100
	2. No	-	-
4	Sick buffaloes treated by		
	1. Self	5.66 (16)	4
	2. Assitant Veterinary Field Officer	65** (195)	18
	3. Veterinary Assistant Surgeon	29.33 (89)	78**
5	Regular Deworming		
	1. Yes	-	58**
	2. No	100 (300)	42
6	Control of Ticks of buffaloes		
	1. Yes	2.66 (8)	19**
	2. No	97.33 (292)	81
7	Vaccination		
	1. FMD	62 (186)	96**
	2. H.S	47 (141)	39
	3. B.Q.	34 (102)	21



### **Disposal of milk and disease control practices**

The majority of the farmers consult veterinary staff for treatment of their buffaloes preferably the veterinary assistant surgeon and assistant veterinary field officer. Deworming and control of ectoparasites of animals is not a regular practice by either rural and urban farmers. The prophylactic practice results were very encouraging. The majority of the farmers in rural and urban areas had their animals vaccinated against H.S., B.Q. and F.M.D. The analysis revealed that the rural buffalo gives less profit in comparison to the urban buffalo due to scientific animal husbandry practice adopted by urban farmers and attractive price of buffalo milk and better fluid milk marketing.

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