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Impact of conventional managemental practices on reproductive performance of rural buffaloes

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ABSTRACT

Data on reproduction vis-a-vis management of 850 rural buffaloes in various agro-eco zones of Punjab revealed that round the year green fodder deficiency prevailed in each zone and animals were fed with variable quantities of wheat/rice straw and concentrates. Prepartum supplementary feeding was prevalent more in Southern Punjab and least in Central Punjab. While wallowing was practiced widely in Southern Punjab, buffaloes were given bath 1 - 3 times daily in Central Punjab to ward off summer heat. "Doka", the post milking engorgement of teats was a much relied upon sign of ensuing oestrus in each zone, especially so in nomadic herds. While variable incidence of anoestrus was recorded round the year and in each zone, it was highest in nomadic herds during summer. A critical analysis revealed that prepartum supplemented buffaloes had early onset of postpartum ovarian activity and fertility. Further, higher proportion of buffaloes exposed to wallowing had overt signs of oestrus. It is concluded that area - based managemental traditions have a bearing on buffalo reproduction and that fertility can be improved through improvised management and feeding practices.

Key words : Buffalo, management, reproduction

Buffalo has traditionally been regarded as a poor breeder with delayed onset of puberty, long postpartum ovarian quiescence, poor signs of oestrus and long inter-calving intervals. Buffaloes under management and feeding compatible to their genotype may have improved fertility (Usmani *et al.*, 1985; Perera *et al.*, 1987; Vale, 1997). However, information on feeding, management and climatic variables in different agro - climatic zones of Punjab and their impact on buffalo reproduction is obscure. The present study was planned to work out the relationship between reproductive performance of buffaloes and managemental practices under different agro-climatic field conditions in Punjab.

MATERIALS AND METHODS

Data of reproduction, vis - a - vis nutritional and managemental practices was collected in June 1999 using a questionnaire, on 850 buffaloes belonging to 211 marginal farmers of Central (Group 1), and Southern (Group 2) Punjab and from 15 nomadic farmers (Group 3). The central (rice belt) and southern (cotton belt) areas differed in type of soil, rain fall, temperature and in agronomic practices (Singh and Chaudhary 1996). The information thus gathered was subjected to appropriate statistical analysis.

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RESULTS AND DISCUSSION

Nutritional practices : All the farmers of groups 1 and 2 grew green fodder viz. barseem (fed in late November through March) and sorgum, maize and pearl millet (fed in June through September). Only 11% farmers of group 1 grew Napier grass available round the year. Nomadic animals thrived on limited green fodder and 3 - 5 hour grazing in empty fields and road sides. This inferred that 89%, 100%, 100% farms of groups 1, 2 and 3 were deficient in round the year green fodder availibility. Buffaloes were fed with variable amount of wheat straw (groups 1 and 2) or rice straw (group 3). Irregular and inconsistent concentrate feeding (1-3 Kg/ day/head) was practiced in lactating buffaloes by 16, 04 and 20% farmers of groups 1,2 and 3 respectively.

Managemental practices : Buffaloes were cooled during summer either by 1 - 3 times daily bathing (91% in group 1) or by wallowing (97% group 2 and 89% group 3). Availability of ponds /canals determined the type of cooling procedure adopted at various locations. Heat detection was done through observations primarily on doka, vaginal mucus discharge or overt symptoms of oestrus (Table 3). Doka is a vernacular term used for retention of milk in teats even after milking (Bawa, 1968). Buffaloes were exposed to male animals for longer duration during wallowing and grazing in groups 2 and 3 than 1.

Reproductive performance of the buffaloes : Of the 850 buffaloes surveyed, 67-76% were pregnant and 3-13% were in early postpartum (< 60 days; Table 1). Majority of the late postpartum buffaloes (63-83%) were anoestrus during summer months, which is in line with earlier studies (Singh *et al.,* 1989; Singh and Nanda, 1993). The incidence of summer anoestrus in nomadic buffaloes was significantly higher (P<0.05) than the rest. This depicted a rather strict breeding seasonality. Owing to limited resources, lack of green fodder and improper housing, the nomads probably could not protect their buffaloes from the detrimental effects of summer stress.

Irrespective of the location, postpartum anoestrus was the major reproductive disorder leading to long calving to conception intervals (Table 2). Only 34 - 52 % buffaloes conceived timely thereby limiting their intercalving interval to acceptable 14 months. Intercalving intervals of 48-66% buffaloes was more than 14 months. It is intriguing to note that calving to conception interval of 14 -28% buffaloes was more than one year. Obviously they remained anoestrus round the year, which suggests that apart from season, other etiological factors may also be responsible. Vale (2000) opined that management governed the duration of postpartum anoestrus. Intercalving intervals extended beyond 1230 days in buffaloes exposed to nutritional, climatic and suckling stressors (Perera, 2000).

Our survey revealed that the pregnant buffaloes were kept on seasonal conventional fodders without any feed supplementation. Mustard oil and/or ghee (butter fat) in variable quantity and frequency was fed during last 1-2 months of gestation by 34, 54 and 40% farmers in groups 1, 2 and 3 respectively. Higher proportion of early conceptions in group 2 (50%) and 3 (49%) than 1 (34%) (Table 2) might have been the effect of prepartum feed supplementation

Table 1. Reproductive status of buffaloes (% animals) during the month of June 1999 at different locations

Group	Pregnant	Early postpartum	Late postpartum	
			Anoestrus*	Evidence of cyclicity*
Group 1 (n=337)	67.35[a]	10.38	62.83[a]	37.16
Group 2 (n=288)	74.30	13.88	73.91	26.08
Group 3 (n=190)	75.78[b]	3.68	82.97[b]	17.02

*% of the late postpartum non-pregnant buffaloes
*Values with different superscripts within a column are significantly different (P<0.05)

Table 2. Calving to conception interval in buffaloes at different locations

	<4 Months (% animals)	4-12 Months (% animals)	>1Year (% animals)
Group 1 (n=240)	34.28	37.14	28.57
Group 2 (n=178)	51.68	22.47	25.84
Group 3 (n=190)	49.28	36.42	14.28

Table 3. Commonly observed symptoms of oestrus in buffaloes in different locations

	Doka (% animals)	Vaginal Mucus (% animals)	Overt Signs (% animals)
Location 1 (n=337)	77.57	53.27	53.27[a]
Location 2 (n=288)	90.38	66.34	93.26[b]
Location 3 (n=190)	100	0	46.66

*Values with different superscripts in columns are significantly different (P<0.05)

which in turn appears to be area - based tradition, farmer education and /or their economic status.

The incidence of repeat breeding in the present study (3.0- 4.0 %) was much lower than at Punjab Agricultural University dairy farm (23.29%; Singh *et al.*, 1983). Improper record keeping and the practice of impregnation through natural service in village buffaloes might have been the cause of this variation.

In the present study, more farmers relied on doka as a sign of ensuing oestrus rather than mucus discharge or overt signs of oestrus (Table 3). In general, Doka has been recorded as the most consistent feature associated with oestrus in buffaloes. Animals had doka for a variable period of 3-4 days before showing other signs of oestrus. A higher proportion of group 2 buffaloes was showing overt signs of oestrus than others which could be the effect of wallowing that provides cooling and exposure to other animals specially males and / or prepartum supplementary feeding provided to group 2 buffaloes. Improved reproductive efficiency has been reported in buffaloes exposed to wallowing or bathing (Roy *et al.*, 1968; Srivastiva *et al.*, 1978).

It is concluded that tradition and/or resource derived variations in nutrition and management of buffaloes at different areas result in their variable reproductive performance. There appears to be a scope of enhancing fertility through emphasis on prepartum supplementary feeding and prevention of summer stress through improved management.

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