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Study of Buffalo Husbandry Practices in Tarai Area of Maharajganj District of Uttar Pradesh

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ABSTRACT: Husbandry is the scientific control and management of a branch of farming and especially of domestic animals. The term 'buffalo' refers to three species in the family Bovidae. The African buffalo (*Syncerus caffer*) and the North American buffalo (*Bison bison*) have yet to be domesticated. On the contrary, the Asian buffalo (*Bubalus bubalis*) was domesticated around the same time in history as cattle for draught power, milk and meat. The domestic buffalo is also known as the 'water buffalo' because of its fondness of cooling itself in water. Buffaloes polyestrous, breeding throughout the year, but the calving pattern is influenced by rainfall, feed supply, ambient temperature and photoperiod. The buffalo attains puberty at a later age than cattle. On recommended levels of nutrition, most conceptions occur when the female weighs 250–275 kg. In the male viable sperm appear at about 24 months of age. The oestrus cycle length is about 21 days with oestrus lasting 12 to 30 hours and ovulation occurring spontaneously after the end of oestrus. India has ten well-defined buffalo population in Maharajganj District is 1.13 lakh. The present review deals with varied buffalo husbandry practices in the Tarai area of Maharajganj district of UP.

KEYWORDS : buffalo, husbandry, tarai, milk, meat, breeding

I. INTRODUCTION

In Uttar Pradesh Tarai Region of Maharajganj district, the dairy farmers rearing buffaloes use mixed farming system and lack the latest technology knowledge of feeding and management etc. Buffaloes (*Bubalus bubalis*) have been maximum used for milk production. However, the buffalo is an excellent milk producer, given the correct circumstances. The onset of lactation is with the birth of the calf. The initial yield is a reliable indicator of the animal's genetic potential. The highest yield is reached after five to six weeks of lactation and maintained for some weeks. Thereafter the yield decreases until the end of lactation. The lactation ends as the dry period starts. In buffaloes, the highest milk yield is seen in the fourth lactation where after it declines. The shape of the lactation curve depends on factors such as feed, management, milking frequency, diseases among others. [1] The length of lactation and yield for various breeds. Lactation and milk yield depend on both genetic and non-genetic factors. The genetic influence is due to species, breed, and individual. Further, it is affected by ability to reproduce, e.g. fertility and thereby calving interval. Improvement on these may be the result of breeding and selection. The non-genetic factors are management, amount and quality of feed and skill of the farmer to detect heat and illnesses. Factors which are outside the farmer's control such as climate, temperature, humidity etc. also influence lactation and milk yield. Feeding is the most important factor for increasing and sustaining the milk yield. Sufficient amount of energy, protein, minerals and water must be provided in order to achieve maximum yield. [2]

Table 1: Macro and micro elements (ppm) in buffalo milk

Macro and micro elements		
Sodium	750	317
Potassium	1390	908
Calcium	2030	1880
Magnesium	200	91.9
Iron	-	0.325
Phosphorus	1290	-
Zinc	-	6.26
Copper	-	0.303

Colostrums is vital for the newborn calf and its composition reflects the calf's need (see Table 2). Colostrums contains the important proteins; the immuno globulins, which are the newborn calf's source of antibodies. The content of iron and copper is markedly higher in the colostrums as compared to normal milk.[3]

Table 2: Composition of colostrums

Water (%)	Fat (%)	Total Protein (%)	Lactose (%)	Vitamin A (µg/kg)
68	15	13.6	3.1	-
73	9.55	9.59	7.54	1.8

Physical stimulation of the teats, either by the calf's suckling or the milkers hands, excite receptors from which nerve impulses are sending to the posterior pituitary gland causing secretion of the hormone oxytocin. The hormone is transported via the blood to the mammary gland. Because both hormones and nerve impulses are involved in the milk ejection reflex, it is called a neurohormonal reflex. Oxytocin stimulates the contraction of the alveoli and small ducts thereby emptying the milk into the larger ducts and the cistern. Hereafter the milk can be evacuated from the udder.[4] After milking the teats should be disinfected. This reduces, if not completely inhibits, bacterial growth on the teats. The teat canal stays open for a while after milking is completed, thus eliminating the important protection against entry of bacteria. The dip solution will both act as a physical hindrance for bacteria and as a disinfectant. Preferably the teat-dipping-solution should contain some lubricant in order to maintain teat condition and to prevent chapping and sores.[5]

II. OBSERVATIONS

Breeding of buffaloes is essential for maintaining the species. Natural breeding (85%) is more prominent practice and buffaloes mainly showed heat in winter. About 45% and 60% farmers practiced irregular vaccination and de-worming, respectively.[6]

Buffalo semen is routinely collected in AI centres with an artificial vagina. Several laboratories have produced buffalo embryos by IVF. Pregnancy is routinely diagnosed by rectal palpation of the uterus from about 40 to 45 days following insemination. The foetus is delivered in anterior presentation with fully extended limbs and foetal membranes are expelled 4–5 h later. In smallholder farms, calves are allowed to suckle their dams both for milk letdown and to suck 1–2 l of milk. As they grow older, suckling time is gradually reduced and replaced by grass and small quantities of concentrate. Beyond 4–6 weeks of age, the calf is used only for milk letdown. [7]



Milking from Buffalo manually



Buffalo bucket milking machine

Feeding systems of buffaloes for milk can be broadly classified as (1) extensive, (2) semi-intensive, and (3) the intensive system. The second system is most common, with animals tethered in the farmer's backyard and fed mainly on cut fodder and crop residues. The dry matter intake and digestibility of roughage can be improved by supplementing with a mixture of urea and molasses. The mixture is available as a block lick (UMMB). [8] This block supplies fermentable energy, bypass protein, and macro- and microminerals to make the rumen microflora and fauna more efficient in digesting roughages. Buffaloes fed these supplements show better body condition, shorter calving intervals and higher milk yields. Calcium, iron and phosphorus in milk are higher in buffalo than in cow. [9]



Feeding of Buffaloes

The rapid expansion of the buffalo dairy industry in the past two decades can be attributed to the Cooperative Milk Marketing model, first developed in Gujarat, India. Amul is a cooperative factory in Gujarat which produces a range of milk products exclusively manufactured from buffalo milk. The products include butter, full cream milk powder, skim milk powder, ghee, infant formulae, cheese, chocolates, ice cream and nutramul. Amul products are exported to the United States, New Zealand and the Gulf States.

Cattle health is one of the prior importance to continue the industry. Common diseases and disorders of the domestic buffalo in Asia. Cattle are prone to several diseases as shown in table 3.

Table-3: Common diseases and disorders of the domestic buffalo

Aetiology	Disease or disorder
1. Viral	Rinderpest; foot and mouth disease; malignant catarrhal fever
2. Bacterial	Haemorrhagic septicaemia (<i>Pasteurella multocida</i>); Johne disease (<i>Mycobacterium paratuberculosis</i>); tuberculosis (<i>Mycobacterium bovis</i>); mastitis (<i>Staphylococcus</i> and <i>Streptococcus</i> spp.; <i>Escherichiacoli</i> ; <i>Corynebacterium pyogenes</i>)
3. Parasitic	Haemoprotozoa: <i>Anaplasma</i> , <i>Babesia</i> , <i>Theirleria</i> , <i>Trypanosoma</i> and <i>Schistosomia</i> species Gastointestinal nematodes: <i>Haemonchus contortus</i> ; <i>Toxocara vitulorum</i> ; liver fluke (<i>Fasciola 11502rolapse</i> , <i>F. hepatica</i>) Ectoparasites: tick infestation (<i>Boophilus microplus</i> , <i>B. annulata</i>); mange (<i>Sarcoptes scabiei</i> ; <i>Psoroptes</i> spp.)
4. Metabolic disorders	Hypocalcaemia (milk fever); hypoglycaemia (ketosis); hypomagnesaemia; hypophosphataemia; selenium toxicity; bracken fern poisoning
5. Abortion, retention of foetal membranes, repeat breeding	Brucellosis (<i>Brucella abortus</i>); vibriosis (<i>Campylobacter fetus</i>); trichomoniasis (<i>Trichomonas foetus</i>); leptospirosis (<i>Leptospiriosis 11502rolap</i> and <i>L. hardjo</i>)
6. Vaginal, uterine and ovarian disorders	Prepartum vaginal 11502rolapsed, postpartum uterine 11502rolapsed; puerperal metritis, endometritis; cystic ovaries; delayed resumption of ovarian cycles



Mastitis in buffalo



Foot and mouth disease in buffalo

III. DISCUSSION

India is the highest buffalo milk producer in the world with over 20 breeds of river buffaloes. Among these, Murrah and Jaffarabadi are popular because of high milk yield, although several other breeds have unique economic traits. With genetic improvement, health care, proper feeding and establishment of marketing network, it is possible to enhance the milk and meat production of buffaloes in the future. Regarding the treatment of anoestrus and repeat breeding problem, majority 70.42% of the respondents properly treated their problematic buffaloes with the help of veterinary doctor and stockman. The present studies are indicative of very high level of awareness regarding this most important economic trait of dairy animal. Thus, it is quite evident from the emerging results of various breeding practices followed by the buffalo keepers in the study area of Tarai region of Mahrajganj district (UP) that majority of the respondents were adopting the recommended breeding practices. Vaccination was adopted by 76.25% respondents for their animals against footand-mouth disease and hemorrhagic septicemia disease. The majority (68.75%) of the buffalo keepers follow manual method of picking followed by (31.25%) dusting of insecticides to control to control ecto-parasites. Regarding to Sanitary condition of shed it was found that 13.75% animals sheds cleaned and good condition followed by satisfactory (25.83%). The majority of (52.08%) respondents got treated their sick animals by livestock inspector. Our study revealed that 63.75% of the buffalo keepers isolated their sick animals from healthy ones. Based on the observations collected it may be concluded that enhanced productive and reproductive performance of buffaloes and also a good amount of income can be generated by providing scientific knowledge to the buffalo keepers about buffalo rearing, which will not only be remunerative as source of income for livelihood but also contribute to the nutritional security.[10]

IV. RESULTS

Buffalo is the largest capital asset as well as the friend of small farmers which is the back bone of rural economy in many parts of India. Buffalo has been found to be better suited as milch animal because they produce milk with higher energy and better suitability for most of the products. Buffalo has the unique ability to utilize coarse feeds, straws and crop residues and convert them in to milk and meat at a higher rate of feed conversion efficiency than that of cow. They are reported to have 5% higher digestibility of crude fibers than high yielding cows and 4-5% higher efficiency of utilization of metabolic energy for milk production . In India buffalo has been the back bone of rural economy. Basically, milk production and productivity depends on four dimensions of animal husbandry practices i.e. breeding,

feeding, health-care and management practices. Animal Husbandry sector plays a vital role in providing household nutritional security, increased income and employment in rural transformation. Livestock provide economic security and social status to the family. Thus progress in livestock sector is directly related to a more balanced development of rural economy and upliftment of poorer sections of the society. [11]

Uttar Pradesh, highest milk producing state in India, has share of 44.5 per cent buffaloes in its own livestock population which is contributing 69.3 per cent of total milk production of the state. The productivity of buffaloes in the state is not good. Average per capita milk production for buffaloes (litres) is 4.4 . There is a large scope in improvement of productivity of buffaloes in this state and it can be maximize through adoption of improved buffalo husbandry practices. The extent of adoption of these practices by the dairy farmers .[2]

Table 4 : Distribution of dairy farmers according to adoption level of buffalo husbandry practices in Tarai area of Maharajganj district , UP

Practices	Category	Frequency	Percentage
Breeding (Range:4-12) (Mean:8.3)	Low (<7)	15	12.5
	Medium (7-10)	91	75.83
	High(>10)	14	11.67
Feeding (Range:2-10) (Mean:6.1)	low (<4)	26	21.67
	Medium(4-6)	75	62.5
	High(>6)	19	15.83
Management (Range:7-14) (Mean:11.6)	Low(<10)	8	6.67
	Medium(10-12)	78	65
	High(>12)	34	28.33
Clean Milk Production (Range:2-10) (Mean:6.2)	Low(<5)	26	21.67
	Medium(5-7)	64	53.33
	High(>7)	30	25
Health care practices (Range:1-12) (Mean:5.7)	Low(<5)	30	25
	Medium(5-7)	73	60.83
	High(>7)	17	14.17
Overall Adoption (Range:22-60) (Mean:40.4)	Low(<40)	57	47.5
	Medium(40-60)	58	48.33
	High(>60)	5	4.17

The study of the profile of the respondents of Tarai area of Maharajganj district , UP, indicates that most of them were medium aged with education up to intermediate level. It was found that, where majority of respondents possessed medium level of overall adoption regarding breeding, feeding, health and management practices, although a large fraction of respondents were under low level of overall adoption regarding these practices. It was also found that there was no significant relationship between age and educational level on the overall adoption but mass media exposure, land holding, herd size, milk sale, overall knowledge were having significant positive relationship with overall adoption. So it could be concluded that awareness and knowledge level of respondents regarding improved buffalo husbandry practices is very important factor for adoption of all these practices and any effort which can improve knowledge level of these farmers certainly can contribute higher adoption level. Hence it was suggested that an educational programme having maximum emphasis on the perceived needs of dairy farmers in buffalo husbandry practices should be developed including a variety of informal teaching methods, short duration training programmes, demonstrations and utilization of maximum potential of mass media exposure.[6]

V. CONCLUSION

Genetic improvement in bovines is a long term activity and Government of India has initiated a major programme “National Project for Cattle and Buffalo Breeding” (NPCBB) from October 2000 over a period of ten years, in two phases each of five years, with an allocation of Rs 402 crore for Phase–I. In order to consolidate gains made during Phase-I, Phase-II has been initiated from Dec 2006 with an allocation of Rs 775.87 crore. The NPCBB envisages genetic up gradation on priority basis with a focus on development and conservation of important indigenous breeds. The project envisages 100% grant-in-aid to Implementing Agencies.



The Objectives of the scheme is to:

1. Arrange delivery of vastly improved artificial insemination service at the farmers door-step.
2. Bring all breedable females among cattle and buffalo under organized breeding through artificial insemination or natural service by high quality bulls within a period of 10 years.
3. Undertake breed improvement programme for indigenous cattle and buffaloes so as to improve the genetic makeup as well as their availability.[11]

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