

(Table 1 Continued)

1	2	3	4	5	6	7
North America to near extinction, now reintroduced in Western North American prairies and wood lands; Has contributed genes to many American breeds of taurine cattle	fertile; Introduced into Caucasus mountains as feral animals	fertile; Used for meat (low in fat and cholesterol)				
Alan and Muir (1935), Decker <i>et al.</i> (2009), IUCN (2012), Meagher (1968), Pavul (2005)	Pertoldi <i>et al.</i> (2010), Pucek (2004), Van Gelder (1977)	Alan and Muir (1935), Drew and Baskin (1989), Feliuss (1995), Hammerton (1930)				Alan and Muir (1935)
3 <i>Bos taurus</i> (As in column 3, row 1)	Zubron; Hybridization is successful both ways; Analogous to Beefalo hybrid males are sterile and females are fertile; Used for meat		Hybridization is successful both ways; A very large number of successful breeds have been developed from this cross worldwide for milk, and / or meat and work animals.	Gayal bull × Taurine cow; Hybrid female Jatsha cow in Bangladesh is prized milch cattle, male Jasha is sterile draft animal	F1 hybrids sterile males are used as work animals; Animals of both sexes are used for meat	Yakow; Common in high lands (1500-2000m) of India, Nepal, Tibet, Mongolia and Northern Alberta; Produced in India since 3000 ya; Hybrid male is sterile work animal and hybrid females are prized milch animals
			Decker <i>et al.</i> (2014), Feliuss (1995), Feliuss <i>et al.</i> (2014), Verkaar <i>et al.</i> (2003)	Huque <i>et al.</i> (2001)	Pathak and Kieffer (1979), Steklenev and Elistratova (1992)	Feliuss (1995), Qi <i>et al.</i> (2010), Zhang and Duan (1999)
4 <i>Bos indicus</i> (As in column 4 row 1)				Selembu; Hybridization is successful both ways; Common in Bhutan and neighbouring areas in India and Malaysia; Males are sterile draft animals and females are milch animals;	Madura; Hybridization is successful both ways; Common in Indonesia; F1 males are sterile; Used as racing cattle and draft and for meat	Hybridization is fertile both ways; Hybrid males called Dzo are sterile and used as work animals, hybrid females are milch animal; Common in Nepal and neighbouring areas in India

(Table 1 Concluded)

1	2	3	4	5	6	7
5	<i>Bos gaurus</i> ; Gaur or Indian bison; Wild in India, Southeast Asia mainland and Malaysia; Largest in size wild <i>Bos</i> sp.; Hunted for meat	Experimental hybrids produced;	Hybrids occur in India	Simoons and Simoons (1968); Giasuddin <i>et al.</i> (2003); Mamat-Hamidi and Hini (2009)	Ward <i>et al.</i> (1999); Galbreath <i>et al.</i> (2006); Mohamad <i>et al.</i> (2009)	Sharma (1954); Zhang (2000); Takeda <i>et al.</i> (2004)
	Abdullah <i>et al.</i> (2009), Drew and Baskin (1989), Groves and Grubb (2011), Melletti and Burton (2014)	Riggs <i>et al.</i> (1997)	Srivastav and Nigam (2010), Verkaar <i>et al.</i> (2003)	Melletti and Burton (2014), Verkaar <i>et al.</i> (2003)	Galbreath <i>et al.</i> (2007)	
6	<i>Bos mutus</i> ; Wild yak; Habitat is high altitude areas of Tibet (China), Nepal and India (3000-6000 m); Wild adapted to low temperature, thin air, high levels of UV and aridity; Used for meat		Occur in Ladakh and Kashmir; Hybrids are used as mules			Hybridization occurs in Tibet
	IUCN (2012), Leslie and Schaller (2009), Qiu <i>et al.</i> (2012)		Ward (1924), Ward <i>et al.</i> (1999)			Keiffer and Cartwright (1968)

a = The diploid chromosome number in all species is 58 + XY in males and 58 + XX in females, except in *Bos gaurus* where it is 2n = 56 + XX / XY due to Robertsonian translocation between two autosomes; b = Empty space means information not available, however, hybridization is expected to be successful.

NUTRIENT REQUIREMENTS OF ANIMALS



A nutritionally balanced 'livestock feed basket' improves the productivity of animals and simultaneously the economic condition of animal keepers. Feed requirement varies from species to species and from one geographic zone to another depending upon the animal potential and plant-soil-animal relationship. Several institutes of the Indian Council of Agricultural Research, have been working on these crucial aspects of animal nutrition since their inception. Earlier, ICAR published Nutrient Requirement of Livestock and Poultry in 1985 and 1998. Changing climate, vegetation cover and expectations of human population from animal resources have greatly affected the animal sector scenario. Realizing the fact that detailed information is required on nutrient composition of various feeds and fodders, the Council constituted a National Committee on Nutrient Requirements of Animals for compilation of information generated by these institutes.

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