

## **REPRODUCTIVE PERFORMANCE OF INDIAN BREEDS OF CATTLE**

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**Abstract:** Reproductive performance has been defined as the number of cows that got pregnant divided by the number of cows that were eligible to get pregnant. It is generally a measure of the speed at which cows get pregnant after the voluntary waiting period however, estimates of reproductive performance also include one more parameter (age at first calving) that refers to heifers and not postpartum cows. Estimates to evaluate reproductive performance in dairy and beef cows have utilized parameters such as age at first calving, day's open, calving interval and conception rates. However, all these parameters might have effects of management on reproductive performance and thus many other estimates have been recently suggested. Data on reproductive performance of a few Indian breeds of cows located at organized farms in India such as Sahiwal, Gir, Red Sindhi and Rathi is available however, scientific data on the performance of these cows at farmers herds are scarce. Moreover, data on other breeds is not available. In this manuscript the available data on the reproductive performance of indigenous cattle breeds of Indian cows is summarized.

**Keywords:** Cattle, Breeds, Calving.

### **Introduction**

Reproductive performance has been defined as the number of cows that got pregnant divided by the number of cows that were eligible to get pregnant (Dayyani et al., 2013). It is generally a measure of the speed at which cows get pregnant after the voluntary waiting period (Dayyani et al., 2013) however, estimates of reproductive performance also include one more parameter (age at first calving) that refers to heifers and not postpartum cows. Estimates to evaluate reproductive performance in dairy and beef cows have utilized parameters such as age at first calving, day's open, calving interval and conception rates. However, all these parameters might have effects of management on reproductive performance and thus many other estimates have been recently suggested (Cook, 2010). Estrus detection and conception rates have the highest impact on reproductive performance of dairy cows (Dayyani et al., 2013). In general reproductive performance of indigenous breeds of cows of India has been low compared to European breeds or the crossbreds (Dandapat et al., 2010; Hussain et al., 2012) however, it has been mentioned that the *Bos indicus* breeds have less reduction in reproductive function in response to heat (Pregorer et al., 2007). Data on reproductive

performance of a few Indian breeds of cows located at organized farms in India such as Sahiwal, Gir, Red Sindhi and Rathi is available (Pundir and Singh, 2007; Kumar and Gandhi, 2011; Singh et al., 2012; Balasubramaniam et al., 2013; Saini et al., 2014) however, scientific data on the performance of these cows at farmers herds are scarce. Moreover, data on other breeds is not available. In this manuscript the available data on the reproductive performance of indigenous cattle breeds of Indian cows is summarized.

### Age at first calving

First calving marks the beginning of a cow's productive life. Age at first calving is closely related to generation interval and, therefore, influences response to selection. The average age at first calving in Indian cows is about 44 months (Table 1), compared with about 34 months in *Bos taurus* and *Bos indicus* x *Bos taurus* crosses in the tropics.

Heritabilities of age at puberty, at first conception and at first calving are generally low (Table 2), indicating that these traits are highly influenced by environmental factors.

**Table 1.** Some estimates of age at first calving in Indian cattle

Breed	Location	Estimate (months)	Source
Red Sindhi	India	35.6	Basu et al (1979)
Sahiwal	India	35.8	Basu et al (1979)
Tharparkar	India	37.2	Basu et al (1979)
Haryana	India	42-56	Luktuke and Subramanian (1961)
Nagori	India	47.43 ±1.06	Sharma (1983)
Non-descript	India	58.6 ±1.0	Singh and Raut (1980)
Haryana	India	51	McDowell (1971)
Ongole/Nellore	India	48-54	Bais et al. (2012)
Kankrej	India	47.78	Khiriari et al. (2014)
Gir	India	45.8	Mathur and Khosla, (1993)
Deoni	India	54-60	Bais et al. (2012)
Red Sindhi	India	52.7	Pundir et al. (2007)

Sharma and Bhatnagar (1975) found a significant effect of parity on NSC in Sahiwal, Red Sindhi and Tharparkar cattle. The NSC was highest at the fourth lactation for F<sub>1</sub> crosses with Brown Swiss. Kumar and Bhat (1979) noted that Haryana heifers needed more services per conception than cows. In a recent study at Bangladesh (Sharifuzzaman et al., 2015) the

number of services per conception were lowest (1.44) in local cows, intermediate (1.47) in Sahiwal cross and highest (1.75) in Friesian cows. The number of services per conception was also influenced by age and parity.

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