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Comparative study on conception rate in Indian yak (*Poephagus grunniens* L.) under farm condition

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Conception rate (CR) is one of the most important parameters of any livestock farm enterprise as it is directly related to the profitability. It is associated with the production attributes and responsible for monitoring life time productivity of an individual animal. CR is also considered to be the best parameter to assess the quality of frozen thawed semen or to evaluate the breeding bull. Application of artificial insemination technology in yak breeding is at infancy as compared to cattle and buffaloes in India. CR in yak was reported by various workers and found to varied from 37.5% to 94.0% (Badamdorj *et at.* 2000, Dorji 2000). Badamdorj *et al.* (2000) also reported a comparative CR of female yaks when mated naturally or artificially. However, review of literature revealed that there is scanty of reported literature on CR in Indian yaks. Hence, the present study was undertaken to evaluate the comparative CR of Indian yak when inseminated with frozen semen and mated naturally.

The study was conducted at institutional farm of National Research Centre on Yak (ICAR), Dirang, Arunachal Pradesh located at 9022 ft above mean sea level. All the experimental animals were managed under uniform managemental conditions. Heat detection of the breedable female yaks were carried out using vasectomised male twice daily at morning and evening hours. Female yaks 189 were allowed to mate naturally with fertile proven bulls while 43 numbers were inseminated with frozen yak semen during standing natural oestrus. Semen sample having minimum 45–50% post thaw motility was used for artificial insemination by the same operator. The semen was deposited at mid to posterior part of cervix @ 30 million spermatozoa by recto-vaginal method of insemination. Double inseminations were done at 12 h interval during mid to late stage of oestrus. For natural service, female yaks on oestrus were kept all the time along with the bulls at open paddock and services were recorded. The CR was calculated on the basis of pregnancy diagnosis by transrectal palpation of uterus at 45 to 60 days post breeding or insemination and on the basis of actual calving.

Table 1. Conception rate in female yaks bred naturally and artificially inseminated.

Groups	No. of animals	Conception rate (%)	
		On 45–60 days of pregnancy	At actual calving
Natural service	189	69.84	62.96
Artificially inseminated	43	62.79	53.49

The results of the CR of female yak were presented in the Table 1.

The CR was higher at 45 to 60 days of pregnancy when diagnosed by transrectal palpation then actual calving in both the groups. Similar observation was also reported by Zhang Yun (2002) in yak where 44 calves were born from 54 pregnant females. Decreased pregnancy rate at actual calving might be due to the abortion and other gestational disorders. Deori *et al.* (2010) reported an overall incidence of 14.3% abortion in yaks in a study over a period of 6 years data consisting of 209 pregnancies. In the present study, the CR in Indian female yak was found to be higher in natural mating than in artificial insemination with frozen semen. Similar observation was also reported by Shoudong (2002) in China. Any treatment applied to semen is likely to affect the fertilization rate. Frozen mammalian semen is generally acknowledged to have an impaired fertility in comparison with fresh semen. Watson (2000) explained the causes of reduced fertility and reported that the lower post-thaw viability and sublethal dysfunction in a proportion of the

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surviving subpopulation of spermatozoa causes reduction in fertility rate of cryopreserved semen. The CR of female yak inseminated with frozen semen in the present study was higher (37.5%) than the earlier report of Badamdorj *et al.* (2000) and much lower (94%) than the report of Dorji (2000). The variation of the results may be due to various factor associated with success of artificial insemination viz. detection of oestrus, optimum time of AI, site of deposition of semen, semen quality, number of viable spermatozoa at the site of fertilization, number of inseminations, skill of the inseminator, number of animals involved in the trial and method of diagnosis of pregnancy etc. However, results of the present findings were comparable with the earlier report of Xie (1991), who recorded 52.0% CR in yaks when frozen semen was deposited at intracervically (3–5 cm beyond the external os).

SUMMARY

A study was conducted at institutional farm of National Research Centre on Yak (ICAR), Dirang, Arunachal Pradesh to record the conception rate in female yaks. A total of 189 and 43 yak females were bred naturally and artificially using frozen semen respectively. Conception rate was determined by transrectal palpation of uterus at 45 to 60 days of post breeding and on the basis of actual calving. The conception rate was 69.84 and 62.96%; and 62.79 and 53.49%, when mated with naturally and artificially on 45 to 60 day of post service and actual calving respectively.

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