

## Performance characteristics of the Yak in Nepal and its crosses with Mountain cattle

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### Background

Yak (*Bos grunniens*) is one of the most wonderful, multipurpose, domesticated strong and hardy animals, which survive in severely low temperature ( $<-55^{\circ}\text{C}$ ) and scanty feed resources (Shrestha, 1998). Yaks in Nepal are found at an altitude of 3000-5000 meters above sea level. They are raised for a variety of purposes such as production of milk and milk products (cheese, butter, ghee, *churpee*), wool, hides, manure, draft power and as a pack animal for sustaining the livelihood of the Himalayan people. According to the National Sample Census of Agriculture in 1991/92 the average herd size among the yak herders is 6.5 animals (Shrestha *et al.*, 1996). Over the years however, their population has reduced substantially. This reduction has been attributed to an increased emphasis on crossbreeding, a shift in profession from agriculture to the tourism industry, threats from predators and diseases, reduction in the availability of fodder, and a reduced enthusiasm among herders (Kharel, 2000).



Plate 1: Yak

Purebred mating among the Yak in the sub-alpine region of Nepal is not very popular due to its lower productivity (Kharel, 2000). Instead, the crossbred female (Dimjo) obtained

from mating yak bulls with high mountain cattle (Kirkho), and the crossbred female (Urang) that is obtained from mating yak bulls to low mountain cows are preferred as they have higher milk production. All crossbred female animals are referred to as Chauri. The crossbred males (Zhopkyo) are sterile and are used as pack animals.



Plate 2: Chauri, a female hybrid of Yak and Hill cattle

Presently yak production does not yield high economic returns when compared with other enterprises. The overall productivity and production level of purebreds and crossbreds

needs to be improved (Sherchand and Karki, 1996). Studies have been conducted in the past on the physical conformation of the animals however, a systematic approach to evaluate performance of the Yak and its crosses with cattle is now essential for any future breeding and conservation strategy.

This paper presents a summary of information available on the Yak, Nak and Chauri in the country.

### Reproductive performance

Productive and reproductive performance of the Yak and its crosses as reported by Joshi (1982) are presented in Table 1.

**Table 1: Productive and reproductive performance of Yak/Nak and Chauri**

| Traits                        | Yak/Nak            | Dimjo Chauri       | Urang Chauri       |
|-------------------------------|--------------------|--------------------|--------------------|
| Lactation yield (Kg)          | 720                | 1690               | 1300               |
| Age at first oestrus (days)   | 1095               | 812                | 1095               |
| Age at first calving (days)   | 1355               | 1082               | 1365               |
| Calving interval (days)       | 665                | 425                | 425                |
| Gestation period (days)       | 260                | 270                | 270                |
| Lactation length (days)       | 180                | 180                | 180                |
| Calf mortality %              | 40                 | 80                 | 80                 |
| Average body weight (kg)      | M = 300<br>F = 225 | M = 365<br>F = 235 | M = 360<br>F = 230 |
| Annual mortality rate %       | 20                 | 20                 | 15                 |
| Total average life span (yrs) | 15                 | 20                 | 20                 |

M = Male, F = Female

Source: Joshi (1982)

Reports indicate that the Dimjo Chauri has the lowest age at first calving. Differences are also evident in the calving intervals between the Yak and Chauri. Shrestha *et al.* (1996) also reported a higher age at first calving for Yak ( $4.68 \pm 0.75$  years) than that of chauri ( $3.94 \pm 0.09$  years), but the difference was not significant.

Paudyal (1995) and Neopane *et al.* (1999) reported an average calving interval of 1.7 years for the Yak, whereas Shrestha *et al.* (1996) reported a calving interval of  $1.53 \pm 0.48$  years for the same. Calving intervals reported for the Chauri range from 425 days (Table 1) to  $1.99 \pm 0.08$  years, (Shrestha *et al.*, 1996). The reports indicate that the Chauri on average outperform the Yak in terms of reproductive characters. However, the numbers of animals considered in each study were too few for meaningful statistical comparisons.

### Mortality

Calf mortality rates from both the Yak and Chauri are presented in Table 1. The results indicate that the Chauri have very high calf mortality rates (80%). Mortality rates

reported in adult animals are much lower, and range from 9.3% to 22% in both the Yak and the Chauri (Sherchand and Karki, 1996).

### **Productive Performance**

Lactation lengths reported for the Yak range from 167 to 180 days, whereas that reported for the Chauri ranges from 120-180 days (Joshi, 1982; Sherchand and Karki, 1996). However, Neopane *et al.* (2001) reported a lower lactation length of 3 months (98 days).

Milk yields reported for the animals are also highly variable. Joshi (1982) reported yields of 720 kg in 180 days lactation for the Yak and 1300 to 1690 kg in 180 days lactation for the Chauri (Table 1). Sherchand and Karki (1996) reported yields of 220 kg in 167 days lactation for the Yak and 300 to 540 kg in lactations ranging from 120 to 180 days for the Chauri. Shrestha (1998) reported yield was 200 kg in 180 days for the Yak and 500 litres in 180 days for the Chauri. In all the studies, Chauri tend to produce higher milk yields in shorter lactations than the Yak. Reports on selection for milk yield within the animals are however scarce.

### **Pack performance**

The male Yak has been reported to have a working life of 10 – 12 years, while male crosses (Zhokpyos) have a working life of 12 -15 years (Shrestha *et al.*, 1996). Both Yak and Zhokpyos can carry between 50 to 100 kg depending on the body condition of the animals, which is highly influenced by the feed conditions. Heavier loads are carried during the summer months which have better grazing conditions (Shrestha *et al.*, 1996).

### **Implications**

There is limited documented information available on the performance of the Nepalese Yak and its crosses with mountain cattle. Efforts for conservation of the breed and increasing their productivity within the given environment are also limited. Heterotic effects are evident in the crosses, but these need to be further classified and exploited.

Over the years, the Yak population has been declining. This decline can be curbed through the introduction of selection and mating programmes that could encourage both productivity and the maintenance of biodiversity.

### **Questions for discussion**

Outline how crossbreeding can be used to help conserve the declining Yak population of Nepal.

How can Yak and Nak be promoted both for pure breeding and crossbreeding to produce hybrids, Chauri and Jhopkyos?

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