

## **Welfare and management practices of free-ranging yaks (*Bos grunniens*) in Bhutan**

*N Dorji*<sup>\*†</sup>, *M Derks*<sup>‡</sup>, *PWG Groot Koerkamp*<sup>‡</sup> and *EAM Bokkers*<sup>§</sup>

<sup>†</sup> Department of Animal Science, College of Natural Resources, Royal University of Bhutan, Lobesa, Bhutan

<sup>‡</sup> Farm Technology Group, Wageningen University & Research, PO Box 16, 6700 AA, Wageningen, The Netherlands

<sup>§</sup> Animal Production Systems Group, Wageningen University & Research, PO Box 338, 6700 AH, Wageningen, The Netherlands

\* Contact for correspondence: nepdorpion186@yahoo.com/nedup@cnr.edu.bt

### **Abstract**

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*Inaccessibility of veterinary and livestock extension services, and shortages of labour and forage could potentially impact the welfare of yaks (*Bos grunniens*) in Bhutan. The objective of this study was to assess practices relating to the welfare and management of free-ranging yaks in Bhutan and explore variations between different yak-farming regions. We interviewed herders and observed the behaviour and health status of their animals, using an adaptation of the Welfare Quality® protocol, in three yak-farming regions (east, central and west) of Bhutan between October 2018 and January 2019. In total, for 567 cows and 549 calves, integumentary condition, body cleanliness, ocular and nasal discharge, diarrhoea, signs of damage, and gait were scored. In addition, we assessed 324 cows and 272 calves for avoidance distance and examined 324 cows for subclinical mastitis. The behaviour of the herds was observed in six consecutive 20-min blocks with each block divided into two stages. The first stage (5 min) consisted of counting the number of animals eating, lying down, standing idle and walking. The second stage (15 min) consisted of counting the number of events of agonistic, allogrooming, flehming, self-licking, rubbing/scratching and playing behaviour. Avoidance distance differed between regions for calves, but not for lactating cows. Integumentary lesions, dirty body areas, nasal discharge, ocular discharge, signs of diarrhoea, subclinical mastitis and lameness were virtually absent. A few instances of agonistic behaviour (6% of all counted behavioural events) and flehming behaviour (5% of all counted behavioural events) were observed. Yaks in the central and western regions exhibited more scratching and rubbing behaviour than those in the eastern region. Herders perform a variety of painful management practices (castration, ear tagging, nasal septum piercing) without analgesia, which is a prominent welfare issue. Furthermore, mortality among yaks is relatively high and water sources often dirty, creating a health risk. Nevertheless, the welfare status of yaks living in various regions of Bhutan was assessed as good at the time of visit.*

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**Keywords:** animal health, animal welfare, behaviour, livelihood, pastoralists, yak