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Applied Animal Behaviour Science 91 (2005) 277–288
APPLIED ANIMAL BEHAVIOUR SCIENCE
www.elsevier.com/locate/applanim

Foal behaviour in a loose housing/paddock environment during winter

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Accepted 31 October 2004
Available online 29 December 2004

Abstract

The aim of this study was to establish some basic facts about weanling horse (*Equus caballus*) behaviour in a loose housing/paddock environment during winter. The behaviour of 10 foals (seven American Standardbred and three Finnish cold-blooded foals) was observed in a cold loose housing/paddock environment from December 2002 to March 2003. The time budget, circadian rhythm and effect of weather conditions on behaviour were examined. The foals were observed for a total of 23 24-h periods by video recording. The method used was instantaneous sampling (Martin and Bateson, 1993), where the locations of foals were noted at every 15 min along with the behaviour performed at that time. Temperature, humidity and wind speed were recorded three times a day. The foals spent $43.2 \pm 6.6\%$ of the time in the sleeping hall (an insulated building with a deep-litter bed), $51.4 \pm 5.8\%$ in the open paddock and $5.2 \pm 2.7\%$ in the shelter (a two-sided, roofed entrance shelter in front of the sleeping hall). The time spent outdoors was greatest between the hours of 08:00 and 20:00, but the foals spent some time outdoors also at night. They spent most of the day eating hay ($27.6 \pm 3.0\%$) (offered ad libitum), standing ($25.5 \pm 2.8\%$) and resting ($32.1 \pm 2.4\%$). The proportion of locomotive behaviour patterns was 5% of the observations. The foals in this study were able to perform species-specific behaviour patterns (resting, eating, being active) and to follow the natural circadian rhythm of these patterns. The behaviour of the foals did not change much as the temperature dropped from 0 to $-20\ ^{\circ}C$. The time spent in the sleeping hall did not increase greatly, nor the time spent eating, resting or lying close to each other (huddling). On the basis of their behaviour, the weanling horses did not seem to suffer from the cold environment.

Keywords: Foal behaviour; Horse; Loose house; Time budget; Weather

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0168-1591/$ – see front matter
doi:10.1016/j.applanim.2004.10.012

1. Introduction

It is generally held that weanling foals are best reared in groups in loose housing combined with a paddock because of the fresh air, the opportunity for free movement and social contacts (Zeeb and Schnitzer, 1997). Group housed young horses have been found to behave better during training compared to singly housed horses (Søndergaard and Ladewig, 2004), and exercise is regarded as essential to ensure the optimal development of the musculoskeletal system of foals (Raub et al., 1989; Bell et al., 2001; van de Lest et al., 2002). The lower cost of rearing horses in loose housing compared with stables is also considered to be an advantage. In recent years, cold loose houses have become very common in Finland and other Nordic countries.

Weather conditions may be quite harsh in winter in Finland. The constant snow cover lasts for about 5 months from November to March and very low temperatures (−20 to −30 °C) may continue for weeks. Foals are transferred to a loose housing/paddock environment during October and November. There is only limited research data on post-weaning rearing methods in cold climates. While the behaviour and time budgets of feral (Duncan, 1980, 1985; Kaseda, 1983) and domestic horses (Crowell-Davis et al., 1985; Sweeting et al., 1985; Houpt et al., 1986; Flannigan and Stookey, 2002; Heleski et al., 2002) have been the subject of several studies, the behaviour of horses in a loose housing environment has received less attention. In Finland, the behaviour of animals in a cold environment has previously been studied, for example, in dairy calves (Kauppinen, 2000) and dairy bulls (Kauppinen et al., 2004).

We hypothesized that the time budget and circadian rhythm of behaviour of the foals is very similar to that recorded for feral horses. In addition, we assumed that the foals would utilise the possibility for free movement also at night, which is not possible with horse housing in stables. On the basis of the study made with feral horses (Duncan, 1985), it was presumable that the behaviour would change as the temperature dropped: the horses would be less active, spending more time resting and in the shelter. In addition, they might be expected to spend more time resting close to each other, as found with dairy calves at low temperatures (Kauppinen, 2000). This study determined the behaviour of weaned foals in a cold loose housing/paddock environment during the winter in Finland. Time budgets, circadian rhythm and the effect of weather conditions on foal behaviour were studied.

2. Materials and methods

2.1. Animals, housing and feeding

The study was carried out in an experimental loose housing/paddock environment at the Vocational Institute of Ylä-Savo, Kiuruvesi, Finland (latitude 63°29′ N, longitude 26°38′ E). The insulated facility, designed by the Equine Information Centre, consisted of two identical sleeping halls and paddocks (A and B) (Fig. 1). There was a gateway from paddocks A and B to a large paddock C. In front of both sleeping halls there were two-sided, roofed entrance shelters, in the openings of which were transparent plastic curtains. Consequently, the temperature in the sleeping halls was on average 4.3 ± 3.8 °C warmer