The Old School, Brewhouse Hill, Wheathampstead,
Hertfordshire AL4 8AN, UK
www.ufaw.org.uk

Animal Welfare 2021, 30: 315-324
ISSN 0962-7286
doi: 10.7120/09627286.30.3.009

The effect of hutch compass direction on primary heat stress responses in dairy calves in a continental region

M Bakony*†, G Kiss†‡, L Kovács§ and V Jurkovich†

† Department of Animal Hygiene, Herd Health and Mobile Clinic, University of Veterinary Medicine, Istvan Utca 2, 1078 Budapest, Hungary
‡ Extra Milk Ltd, Beled, Hungary
§ Institute of Animal Sciences, Hungarian University of Agriculture and Life Sciences, Kaposvár, Hungary
* Contact for correspondence: bakony.mikolt@univet.hu

Abstract

Heat stress reduction in hutch-reared dairy calves is overlooked on most dairy farms. We hypothesised that during summer, the microclimate within hutches is directly affected by compass direction as a result of differences in exposure to solar radiation. On a bright, mid-August day a number of behavioural and physiological heat stress response measures (respiratory rate, body posture, being in the shade or sun) were recorded in 20-min intervals from 0720–1900h on calves housed in hutches with entrances facing all four points of the compass. In conjunction with this, dry bulb (ambient) and black globe temperatures, and wind speed were recorded both inside the plastic hutches and at one sunny site at the exterior. Data were compared in terms of distinct periods of the day (0720–1100, 1120–1500, 1520–1900h). Dry bulb temperatures were higher inside hutches compared to outside while for black globe temperatures the opposite was true. Daily average temperatures and respiratory rates did not differ between hutches facing different compass points. In the morning and afternoon, hutch temperature and calf respiratory rate differed relative to compass point. Calves in east- and north-facing hutches were seen more in the shade than those in south- and west-facing ones. Our conclusion was that in a continental region having hutch entrances face towards the east or north confers some advantages in mitigating severe solar heat load in summer.

Keywords: *animal welfare, black globe temperature, calves, heat stress, hutch compass direction, solar radiation*