Synchronisation of behaviour of bulls on pasture and in pens

Jaakko Mononen, Leena Tuomisto and Arto Huuskonen
Natural Resources Institute Finland, Green Technology, Finland; jaakko.mononen@luke.fi

High synchronisation of behaviour in cattle has been proposed to indicate the animals' freedom to express their natural social behaviour. Hence, synchronisation is also a putative on-farm welfare measure in cattle. We compared behavioural synchrony of bulls on pasture and in pens. Fifteen Finnish Ayrshire and four Holstein-Friesian bulls (Year 1) and 29 Hereford bulls (Year 2) were allotted semi-randomly to two treatments. PAS treatment animals (n=5 groups of 4 or 5 animals) were housed in winter in group pens in an uninsulated barn but kept on pasture from early June to late August. PEN treatment animals (n=5 groups of 4 or 5 animals) were kept in group pens in the uninsulated barn in winter and summer. The groups of animals remained the same throughout the study. The behaviour of the bulls was recorded for 24 h with instantaneous sampling (6 min sampling interval) in June and July, i.e. when the animals were 14-15 and 15-16 months old, respectively. Three mutually exclusive categories of behaviour were used: grazing or eating, lying and standing. Kappa co-efficient was calculated as an index of behavioural synchrony for each group and day from the 240 (=1,440/6) sampling points per day. The data for the two years were pooled and the Kappa co-efficients were compared between the treatment groups with the Mann-Whitney Test separately for June and July. The PAS bulls showed markedly higher synchronisation of behaviour than the PEN bulls both in June (0.63±0.029 vs 0.29±0.050; mean ± SD; P=0.008, n=5 per treatment) and July (0.63±0.043 vs 0.32±0.042; P=0.008, n=5 per treatment). Our bull results are in accordance with earlier findings in dairy cows: larger space with more behavioural freedom increases behavioural synchrony in cattle.