

Effects of instantaneous stocking rate, paddock shape and fence with electric shock on dairy cows' behaviour

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Abstract

We assessed the effect of high instantaneous stocking rate, paddock shape and fence with electric shock on dairy cows' behaviour under rotational grazing system. Twelve Holstein Friesian lactating cows were used in two consecutive experiments. Experiment 1 used a 4×4 Latin square design with 4 two-day periods and 4 treatments: 2 paddock shapes (rectangular and square) and 2 instantaneous stocking rates (500 and 200 cows/ha). For Experiment 2, cows were divided in 4 groups of 3 cows and submitted to two treatments – smooth wire fence with electric shock (4000 V) and smooth wire fence without electric shock – in a cross-over experimental design with two replicates. Data were analysed in PROC GLIMMIX of SAS. The models included treatments as fixed effects and the group as the experimental unit. Cows in higher instantaneous stocking rate performed less grazing behaviour ($P \leq 0.05$). This finding was expected, as larger area per animal increase the herbage allowance for grazing, and thus grazing time. These same animals also performed more aggressions, but less idling behaviours ($P \leq 0.05$). Cows in paddocks without electric shock performed almost 15% more grazing behaviour than cows in paddocks with electric shock ($P \leq 0.05$), which indicates that they may have recognized the absence of shock, hence not avoiding being close to the fence. Paddock shape did not affect any of the behaviours analysed ($P > 0.05$). The results from this study reinforce the importance of paddock characteristics on dairy cows' behaviours.

Keywords: Grazing behaviour | Paddock | Animal density | Shape | Bovine

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