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Proceedings Editor: D. A. McGilloway

Publisher: Wageningen Academic Publishers, The Netherlands

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Effect of a summer period at pasture on the performance of young bulls offered concentrates *ad libitum*

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Keywords: bulls, pasture, concentrates *ad libitum*, carcass

Introduction Holstein bull calves can produce a 250 kg carcass at 11 to 12 months of age on indoor feeding of *ad libitum* concentrates. An outdoor period at pasture would reduce housing costs. Two experiments were undertaken to determine the effect of an outdoor period at pasture on concentrate intake, liveweight gain and selected carcass traits of Holstein young bulls.

Materials and methods In year 1, thirty-six 14-week-old spring-born Holstein-Friesian bull calves (initial weight of 126 kg) were allocated on a liveweight basis to indoors on concrete slats for 250 d (In) or outdoors (Out) at pasture for 112 d and then indoors on slats for 138 d. Throughout the experimental period both treatment groups had *ad libitum* access to a rolled barley/soyabean meal ration (150 g/kg crude protein). At pasture the animals were stocked heavily to minimise grass consumption to that required to maintain rumen health and to maximise concentrate consumption. Thus, the pasture area was divided into three paddocks of 1500 m². Within each paddock, the space allowance was 83 m²/animal. While indoors the animals had a daily barley straw allowance of 50 g/kg total dry matter intake and each animal had a pen space allowance of 2.5 m² in a naturally-ventilated house (6 animals/pen according to treatment). Water was available to all animals at all times. In year 2, thirty-six 12-week-old spring-born Holstein-Friesian bull calves with an initial weight of 114 kg were assigned to either indoors on concrete slats for 266 d (In) or to outdoors at pasture for 140 d (Out), followed by a period indoors of 126 d. Feeding and management of animals were similar to year 1.

Results Concentrate intake, liveweight gain and selected carcass traits for each of the years are presented in Table 1. There were no differences between the treatments in any of the measured traits.

Table 1 Effect of an outdoor period at pasture on the performance of young bulls offered *ad libitum* concentrates

| | Year 1 | | | Year 2 | | |
|---------------------------------|--------|------|-------|--------|------|-------|
| | In | Out | sed | In | Out | sed |
| Initial weight (kg) | 125 | 126 | 1.7 | 114 | 114 | 1.6 |
| Outdoors (days) | 0 | 112 | | 0 | 126 | |
| Concentrate intake (kg DM/d) | | | | | | |
| Pasture period | 5.0 | 4.6 | | 5.1 | 4.6 | |
| Indoor period | 7.6 | 7.6 | | 6.9 | 7.3 | |
| Total period | 6.3 | 6.2 | | 6.0 | 5.9 | |
| Liveweight gain (g/d) | | | | | | |
| Pasture period | 1390 | 1420 | 23 | 1260 | 1340 | 54 |
| Indoor period | 1180 | 1220 | 32 | 1240 | 1300 | 39 |
| Total period | 1270 | 1310 | 28 | 1250 | 1320 | 47 |
| Final liveweight (kg) | 442 | 452 | 7.5 | 447 | 464 | 6.4 |
| Carcass weight (kg) | 237 | 237 | 0.21 | 237 | 244 | 4.2 |
| Kill-out (g/kg) | 536 | 524 | 8.4 | 531 | 525 | 4.2 |
| Kidney and channel fat (kg) | 8.47 | 8.49 | 0.016 | 6.88 | 6.76 | 0.087 |
| Conformation score ¹ | 1.89 | 1.97 | 0.059 | 1.85 | 1.90 | 0.042 |
| Fat score ² | 3.08 | 3.47 | 0.27 | 3.18 | 2.94 | 0.036 |

¹Based on E = 5, U = 4, R = 3 and 0 = 2; ²Based on 1 (leanest) to 5 fattest.

Conclusion It was concluded that a period of 4 to 5 months at pasture did not have any negative effects on performance. Such an outdoor period reduces slurry storage capacity and handling costs and may improve animal welfare.