
ABSTRACT

Factors influencing the priority of access to food and their effects on the carcass traits for Japanese Black (Wagyu) cattle

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The factors influencing the priority of access to food and the effects of the priority of access to food on their carcass traits were analyzed for Japanese Black (Wagyu) cattle in a semi-intensive fattening production system. The records of 96 clinically healthy steers and heifers were analyzed. The calves at ~3 to 4 months of age were allocated to pens with four animals per pen; all four animals in the same pen were of the same sex and of similar body size. The ranking of the animals' priority of access to food (1st, 2nd, 3rd and 4th), which was determined by the farm manager, was used as an indicator of social dominance in the present study. Four models including sire line, maternal grandsire line and the difference in the animals' birth dates as fixed effects were used to analyze factors influencing the priority of access to food. Ranking was represented by ordinal scores (highest=4, lowest=1) in Model 1, and the binary scores were assigned in Model 2 (highest=1; 2nd, 3rd and 4th=0), Model 3 (1st and 2nd=1; 3rd and 4th=0) and Model 4 (1st, 2nd and 3rd=1; lowest=0). The results showed that the difference in the animals' birth dates had a significant effect on the establishment of the priority of access to food in Model 3 ($P<0.05$), suggesting that animals born earlier may become more dominant in the pen. The maternal grandsire line tended to affect the social rank score in Models 2 and 3 ($P<0.10$). Our results indicated that the maternal grandsire line may affect the temperament of calves through their mothers' genetic performance and thereby more aggressive calves may be more dominant and have higher priority of access to food. On the other hand, there was a significant effect of the priority of access to food on beef marbling score (BMS; $P<0.05$), and the priority of access to food also tended to influence the carcass weight ($P=0.09$). The highest BMS was observed for animals with the first rank of the priority of access to food ($P<0.05$), and the higher-ranking animals had the tendency to be heavier carcass than the lower-ranking animals. Our findings emphasized the importance of information about the priority of access to food determined by farmers' own observation on implementing best management practices in small-scaled semi-intensive beef cattle production systems.