

Research Summaries 1

The Association Between Body Condition Score Change During the Dry Period and the Incidence of Calving-Related Disorders, and Milk Production in Holstein Cows

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Introduction

Body condition score (BCS) is a practical tool used to monitor energy nutrition of dairy cattle. Body condition score at calving has been associated with lactational performance; however, little information is available about cows calving with low, optimum or high BCS that either maintain, gain or lose BCS during the dry period. Therefore, the objective of the present study was to determine the association of BCS of cows that calved with low, optimum or high BCS that either gained or lost BCS during the dry period and the incidence of periparturient disorders, and milk production in Holstein cattle.

Materials and Methods

The study was conducted in a large commercial Florida dairy (3,200 milking cows, ME 305 d milk yield 11,500 kg/cow/year). Cows were milked 3 times a day and were housed in free-stall tunnel ventilation barns. Cows were fed a TMR 3 times a day with a diet formulated to meet or exceed the requirements of NRC 2001. Records from 850 cows that were dried-off in August and September 2005 that were 45-75 days before expected parturition were evaluated. BCS was consistently conducted by the same person at dry-off and at calving, using a 1/4 point scoring chart. Animals were handled homogeneously during the entire period. Six categories based on BCS at dry-off and at calving were created. Group 1 were cows with BCS at calving between 2.5 and 3.0 (low) that gained at least 0.25 unit of body condition (BC) between dry-off and calving (n= 67). Group 2 were cows with BCS at calving between 2.5 and 3.0 (low) that lost at least 0.25 unit of BC between dry-off and calving (n= 87). Group 3 were cows with BCS at calving between 3.25 and 3.5 (optimum) that gained at least 0.25 unit of BC between dry-off and calving (n= 373). Group 4 were cows with BCS at calving between 3.25 and 3.5 (optimum) that lost at least 0.25 unit of BC

between dry-off and calving (n= 119). Group 5 were cows with BCS at calving between 3.75 and 4.25 (high) that gained at least 0.25 unit of BC between dry-off and calving (n= 101). Group 6 were cows with BCS at calving between 3.75 and 4.25 (high) that lost at least 0.25 unit of BC between dry-off and calving (n= 11). The six groups were compared for incidence of dystocia, RFM, metritis, ketosis, DA, mastitis, milk yield, fat and protein percentage of the first 10 test days during lactation, and 305 d ME milk yield. Incidence of periparturient disorders were analyzed by logistic regression using a backward elimination procedure. Milk yield and milk components were analyzed by ANOVA, constructing mixed models for repeated measures. Statistical analysis was conducted using SAS.

Results

The incidence of dystocia, metritis, DA and mastitis were not different among groups ($P > 0.05$); however the incidence of RFM was 18.2% for the group calving with high BCS that lost BCS during the dry period than for the group calving with high BCS that gained BCS during the dry period (5.0%). In addition, the group calving with high BCS that lost BCS during the dry period had a significantly higher incidence of ketosis (27.3%) than the rest of the groups ($P \leq 0.05$). For milk production, the group calving with high BCS that lost BCS during the dry period had a significantly lower test day 1 and 2 milk production (21.1 and 40.4 kg, respectively) than the rest of the groups (37 kg and 43.5 kg, respectively) ($P \leq 0.05$); however ME 305 d milk yield was not different among groups ($P > 0.05$).

Significance

It is imperative to manage and monitor BCS properly during the dry period in order to optimize performance of the following lactation.