

Effects of body weight change on body condition and reproductive performance of lactating Holstein cows

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Changes of body weight (BW) may not determine proportional variations on body condition (BC), specially during the first part of lactation. The trend and magnitude of reserves mobilization may affect the overall reproductive performance via an enlargement of the calving-conception interval. The objectives of this work were : to test if body weight changes (VBW) produce proportional variations on BC (VBC), measured as score (1 = very thin, 9 = very fat) ; to analyze the effects of losses of BC and current energy balance on the number of days from parturition to first (DFP1), second (DFP2), and third (DFP3) estrous ; and to study the relationship among VBW, VBC, energy balance and reproductive performance, measured as DFP1, DFP2, and DFP3.

Fifteen Holstein cows, clustered in five blocks, were randomly allocated to three treatments from parturition up to the sixth month of lactation. The treatments consisted of 3 different levels of intake : (T1) = *ad libitum*, (T2) = food enough to meet the maintenance requirements plus a milk production of 15 kg per day (3 % fat), and (T3) = food to meet only the maintenance requirements. The diet composition (47.8 % alfalfa hay, 40.5 % corn and 11.7 % bone meal) was the same for each treatment.

Measurements of BW, BC, milk production and composition, were made every fourteen days.

The presence of estrous was defined as the day a cow stand to be mounted by another cow and observed twice daily during the whole experimental period.

Treatment effect was highly significant ($P<0.01$) for BW and VBW, as well as for BC and VBC, for each sampling date. The general linear regression was $VBC = 14.32 + 0.091 * VBW$ ($R^2 = 0.62^{**}$, $n = 150$). The data for DFP1, DFP2, and DFP3 forced a non-parametric analysis. The results showed a negative effect of the level of reserves mobilization on the reproductive performance. T1 attained a 60 % of the total possible estrous during the experiment, while T2 and T3 attained 45 % and 20 %, respectively. The effects on milk production were highly significant ($P<0.01$) for each sampling date. Milk yield for T1 was three and two times higher than for T3 and T2, respectively. However, milk composition was not affected, except for percentage of lactose. T1 showed a significantly higher ($P<0.05$) lactose content than T2 and T3.

It is concluded that changes in BW produced proportional changes in BC during lactation. The losses of BC, fostered by the negative energy balance, have a strong negative effect on the restart of the estrous cycle post-partum, and on the whole reproductive performance of lactating cows.