



Effect of body condition score at calving on body condition during lactation in Holstein and Brown Swiss cows

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Abstract.

A total of 37 cows, including 20 Holsteins and 17 Brown Swiss, are part in the research. Both breeds use the same method for rearing: free-roaming in separate cubbies. In a milking parlor, milking occurs twice. There are three technical categories for cows based on their physiological state: dry cows, I-st up to 120-150th day, and II-d lactation phase. Feeding is based on a complete diet mix that includes vitamin and mineral additions, concentrated feed, alfalfa haylage, and maize silage. A 5-point assessment method, ranging from 0 to 5, has been used to record the cows' bodily status on a monthly basis, with an accuracy of up to 0.5 points. Brown cows typically have a BCS of 3.0 at calving and 1.64 when nursing. Holstein cows typically have a BCS of 2.8 points when they give birth and a BCS of 1.38 points while they are nursing. The body condition score (BCS) of heifers from both breeds is somewhat lower (3.0 points) when they give birth compared to older cows, but they have less body condition loss (1.66 points) when nursing. Lactation loss is more severe in cows at \geq II-d from the first month of lactation until they reach the lowest BCS, a total of 2.04 points. Compared to Brown Swiss cows, Holsteins lose an average of 2.14 points and attain a lower BCS of 1.05 at the beginning of lactation, whereas the corresponding figures for Brown Swiss cows are 1.85 and 1.20 points, respectively. When it comes to lactation, cows of both breeds who are in poor bodily condition when they give birth (2.5 points and 2 points, respectively) have the lowest BCS values. Body condition score (BCS) increases in cows who were at 3.5 or 4 points upon calving are the most consistent.

Keywords: body condition score, losses of body condition, Holstein cows, Brown Swiss cows

Introduction

There are a lot of elements that affect the individual diversity of cows' bodily condition, including genetics (both breed and individual), biology (specific to the animal's present physiological state and its current stage of development), and the environment. A dairy cow's body condition score (BCS) may tell you how much energy they've stored up (Broster and Broster, 1998). The assessment of fat depositions in dairy cows is a fast, non-invasive, inexpensive, and somewhat subjective method that does not apply to the assessment of the cows' bodily condition in practice. Producers may improve management and nutrition control with consistent BCS determinations in herds. This research aims to compare Holstein-Friesian and Brown Swiss cows reared and fed under identical circumstances to determine the influence of various body condition scores at calving on the change of body condition scores throughout lactation. subject to the same conditions (Waltner et al., 1993). Broad use for monitoring is based on the well-established extremely excellent association between BCS and total body fat content. The research includes 37 cows, 20 of which are Holsteins and 17 of which are dairy cows' nutritional and metabolic state. Agricultural Institute's Brown Swiss cows and BCS values: how the cows' health and fertility are affected by BCS variations Zagora Stara, Pryce et al., 2001; Veerkamp et al., 2000) and De Vries et al., 2000 all state that both breeds are reared in free stalls, which means that they have separate cubicles for relaxation. When it comes to a significant index for selection, the fact that lactating cows may walk freely every day in yards can be a helpful indication. In a milking parlor, milking occurs twice. Aggregated genotype is used to classify



cows. Depending on the patient's physiological condition, three distinct technical groups are identified for either improvement or stability.

A measure of animal well-being that may be derived from BCS is Bastin et al. (2007). There has been evidence of decreased BCS values in cows with strong genetic potential just for productive qualities, as contrasted to those with According to Pryce et al. (1999), the feeding is based on a complete ration mix that includes average genetic dairy potentials in maize. Simlage, alfalfa haylage, concentrated fodder, and vitamin and mineral diet cannot fulfill the high milk output supplements in the beginning of lactation. The average milk output of the group begins with the mobilization of body tissues, which is triggered by concentrated feed during lactation according to the needs. According to Van Arendonk et al. (1991), rations have been distributed to all categories. The massive mobilization of body parts ready to meet the demands of modern cow feed

tissue damage, which ultimately leads to decreased fertility and health (Todorov, 1995). The last two months of a pregnant cow's pregnancy (Harrison et al., 1990; Waltner et al., 1993). Todorov and Mitev (1992) developed a 5-point assessment method that allows for the transmission of calving differences to a group of dry cows. The cows with high body condition scores at calving (3.5–4 points) and a 40.5 system (0–5 points) are monitored monthly. The percentage of body fat (Figure 1). Following this group is the one for whom a score accurate to within half a point has been recorded at calving, as per BCS. In the trial that began in December 2008, all dry cows had a body condition score of 2.5 or below, and the lowest percentage was 20.7%. The highest percentage was 378.8%. Discussed by until April 2009. In 2009, the proportion of cows with a poor body condition score was lowest in the spring, and the lowest was in the middle of summer, when most breeds had their calves. Therefore, in both breeds, the year and season of calving are elements to consider before to calving. Holstein does not include its cows in the models since their proportional shares are balanced. While the number of lactation is most prevalent in Brown Swiss cows, the age of cows with a medium body condition score at calving is greater at 45% (BCS 3 is recorded as the number of lactation and they are classified in points).

the subsequent groups, namely I-st, II-d, and III-rd, as well as further lactations. In the seven to ten days leading up to calving, cows' body condition scores have been documented. The reported ratings for both kinds of cows range from 2 to 4, with each instance representing a single case. Between 2.5 and 3.5 points is where the majority of cows fall. The following groups of cows have been established according to their BCS upon calving, in order to get a better idea: 2 and 2.5 points for 1st class, 3 for 2nd class, and 3.5 and 4 points for 3rd class. A monthly body condition score has been documented during the breastfeeding period. The greatest possible body condition score (BCS) loss for each cow has been determined by subtracting her BCS at calving from her minimal BCS achieved throughout lactation. The following model has been used to evaluate the impact of factors:

$$Y_{ijkl} = \mu + P_i + L_j + BCS_k + e_{ijkl}$$

Where: those with high body condition score at calving at 3.5 - 4 points (47.1 %).

A large percentage of both breeds' cows have a physical condition score of 3 or below when they give birth. Looking at the type specificity of the two breeds, it is reasonable to expect that there would be variances between them; for example, 65 percent in Holstein cows and 52.9% in Brown ones. The dry period feeding schedule and length of the dry period are factors outside the purview of this study that may explain why some of the cows from both breeds had lower BCS, even though they were both fed consistently during the dry period.

The distribution of heifers and all other cows (II-d and later lactation) according to BCS at calving is shown in Figure 2, with percentages. The percentage of older cows having a body condition score of 3.5–4 points at



calving is 47.1%, whereas the percentage of heifers with this score is 35%. Compared to older cows, 25% of these animals had a low physical condition score of 2.5 or 2 points at calving, whereas 17.6% of older cows had the same score. Despite the lack of a consistent difference, the average BCS for cows at II-d and subsequent calving

lactation is higher than that of heifers, 3.12 and 3.00 points,

population mean; P_i is the breed effect, L_j is the effect of lactation, BCS_k is the BCS effect at calving and e_{ijk} is the effect of not included random factors.

The data have been analysed by using the Harvey (1987) computer programme LSMLMW. Through the variance analyses (ANOVA) for each model the least square mean (LSM) have been obtained by classes of fixed factors.

Results and discussion

In the total number of cows predominant is the relative share of respectively. Placed under the same conditions of feeding with the older cows during the last months of pregnancy not all heifers manage to reach higher body condition score at calving. The results obtained by us correlate to the publications by other authors. Samarutel *et al.* (2006) point out that in primiparous Holstein cows the share of cows with medium body condition score at calving is predominant - BCS from 3.25 to 3.75 points, lean cows with BCS ≤ 3.0 are 28 % and these with high body condition score ≥ 3.75 points are 26%.

Average milk yield for 305-day lactation of the Holstein cows included in the study is higher than that of the Brown ones ($P < 0.01$), (Table 1). All BCS values are higher for the Brown cows compared to the same for the Holstein, respectively - average BCS at calving - 3

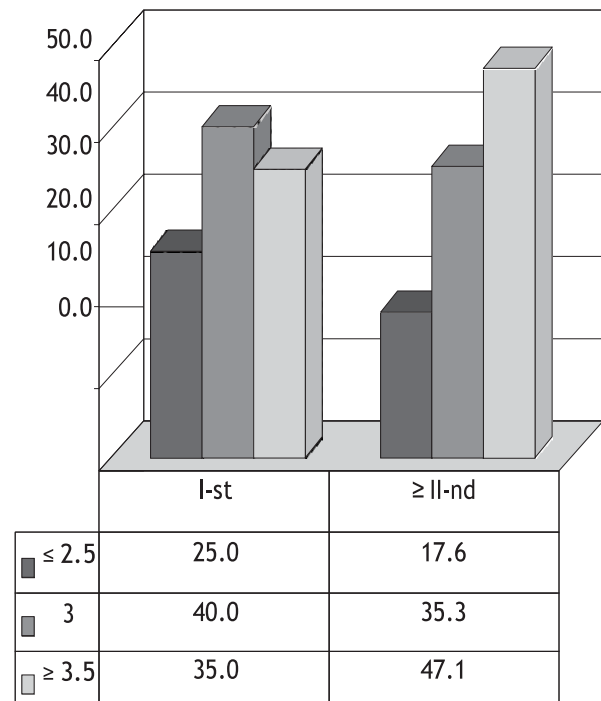
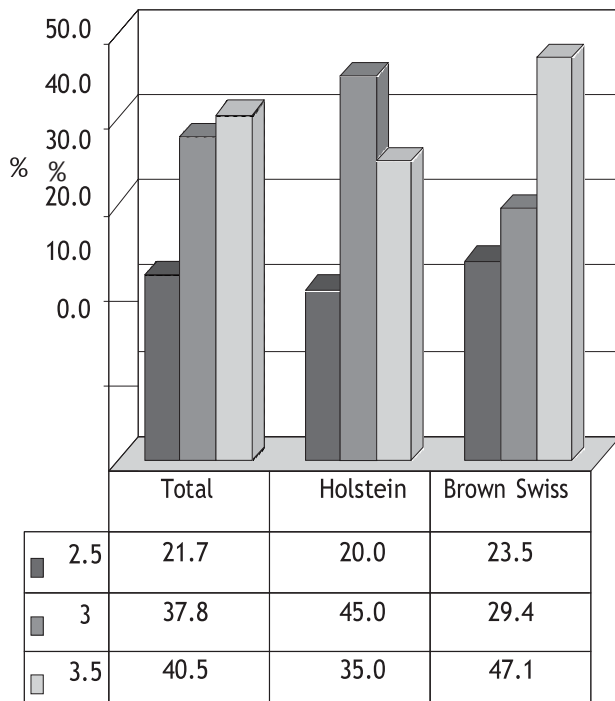




Figure 1. Distribution of cows (in %) according to bodycondition score at calving.

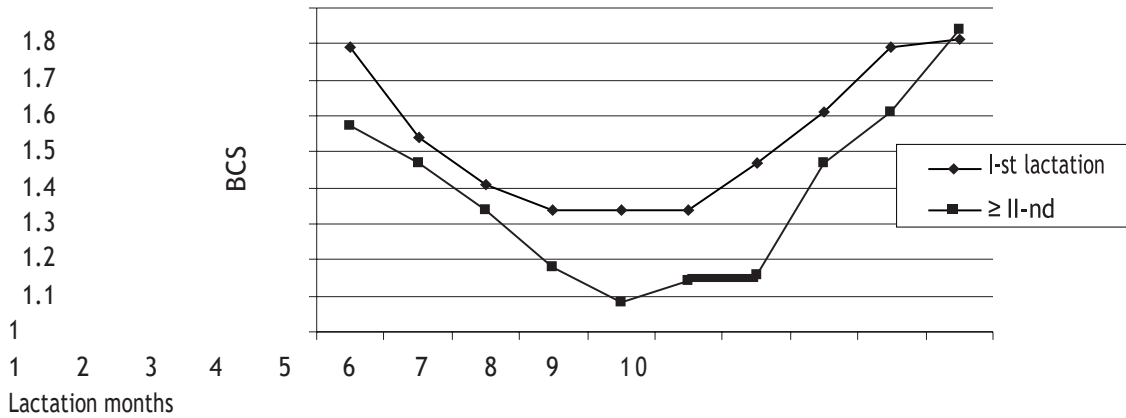


Figure 4. Effect of the number of lactation on variation in BCS during lactation

When the amount of Holstein is increased, the average BCS value drops by 2.04 points. One likely explanation for such is the decrease. Holsteins have a larger average loss of BCS after calving, and the rate of metabolic change varies with age. When compared to red-and-white cattle, Waltner et al. (1993) found a difference of 1.2 points. (1993) found that the amount of breastfeeding had a definitive impact on the Cows' varying levels of production are a result of the physiological changes that occur during lactation, according to the authors. According to their findings, Holsteins had a 1000 kg higher body reserve gain due to lactation (8003 kg vs. 6975 kg). Holstein cows have a higher BCS than other breeds, with research showing an increase of 0.3 points during first lactation and 0.9 points during fourth lactation. Since subsequent lactations, according to Rossoni et al. (2007). The Italian Brown Swiss Cattle Breeding Association reports lower lactation losses in heifers in 2002 compared to older cows, according to Gallo et al. (1996).

used BCS as part of the method to evaluate the morphologicalResults on the influence of BCS on calving characteristics of cattle are shown in Figure 5. The evaluation is done on a 1 to 5 scale. Normalized body condition score (BCS) in lactating Holstein cows. Brown cattle have a reported body condition score of 3.2 points before giving birth, which falls sharply to almost 1 point after giving birth. Cows with a BCS of 2-2.5 points at calving and those with a BCS of 3 progressively raise it to 3.5 points toward the conclusion of lactation, after a minor reduction up to the 90th day. There is a difference in this statistics.According to reports from Italy, Holstein cows with the best physical condition after calving (BCS 3.5–4.5) had the smallest fluctuations in BCS throughout lactation compared to other breeds. The cows in the study by Gallo et al. (1996) had an average BCS of 3.55 points at calving and maintained that condition until the end of lactation, when it dropped to 1.3 points. Most lactation, say the authors. These variations in brown cows' milk supply are likely the result of disparities in the breed effect, according to the body. Neither breed's condition score drops below 1.3 points in any group, level, or raising organization.See Figure 6. The slowest to restore their body temperature are cows with BCS at the lowest levels (Figure 4 shows the difference in BCS changes in heifers and calving 2 - 2.5 points).

cows during the second incubation period and subsequent lactation. Despite a slightly lower body condition score (3.0 points) before calving, heifers have a reduced loss of BCS throughout lactation, both in the first month and when they reach the state when nursing is complete. Reducing body reserve loss during lactation is easier for cows having a body



condition score of 3 or higher after calving. The lowest BCS that either group achieved was 1.5 on average.

with a BCS of just 1.34 points. From the beginning of lactation until the minimum BCS, a total of 1.66 points is lost, including higher values towards the 10th and points before calving. Lactation month is the most common time of loss in older cows. rigorous beginning in the very first month of breastfeeding and continuing down to the lowest BCS. There is a consistent relationship between body condition score during calving and BCS loss.

Conclusion

Before giving birth, Brown Swiss cows typically have a BCS of 3 points, and when nursing, it drops to 1.64 points. The average body mass index (BMS) in Holstein cows is 2.8 points just before calving and 1.38 points when lactation is underway. Dairy Science, 84, 2508-1515 reports that both breeds' heifers are three points less fit before giving birth than their older cow counterparts. The work of Pryce, Nielsen, Veerkamp, and Simm in 1999. Effects of genotype on health and fertility in dairy cattle, as well as relationships between genotype and feeding systems. In Livestock Production Science, volume 57, pages 193-201. In 2007, Rossoni A, Nicoletti C, Bonetti O, Testa L, and Santus E published. A genetic study on Italian Brown Swiss cattle was conducted to determine their body condition score. Journal of Animal Science in Italy, Volume 6, Supplement 1, Pages 198–200.

reduce BCS loss by 1.66 points when nursing. According to Ruegg P. and Milton R. (1995), in cows at \geq II-d. Holstein cows' physical condition ratings

starting in the first month of breastfeeding and continuing until the lowest BCS, the loss becomes more intense, totaling 2.04 points. Cows of both breeds who are underweight before giving birth had a lower body condition score (BCS) during lactation, dropping to 2 and 2.5 points, respectively. The most gradual shifts in BCS occur in cows that have attained BCS 3.5 or 4 points before giving birth. Beginning lactation, Holstein cows lose an average of 2.14 points and attain a lower BCS of 1.05 points, compared to 1.85 and 1.20 points, respectively, for Brown Swiss cows. Better dietary control in line with animals' demands will be possible with reporting of cows' BCS at various physiological phases.

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