A System for Evaluating the Body Condition of Dairy Cows

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Story in Brief

A system for quantifying the body condition of dairy cows has been developed. Cows were evaluated on a scale of 1 to 9, with 1 representing a very thin, emaciated cow, whereas 9 denoted an excessively fat cow. Scores on a group of 45 cows over a period of approximately 5 months after calving will be related to various measures of performance.

Introduction

The nutritional status of dairy cows has been related to reproductive efficiency, milk yield, susceptibility to disease and metabolic disorders. It is generally accepted that the amount of fat cover or body condition of a cow is a direct indicator of her energy reserves and that changes in condition reflect shifts in energy balance. However, body condition has been evaluated in a very general, vague manner such that it is difficult to apply the information to other groups of cows with precision. Estimates of changes in energy status are often based on body weight changes over time. Weight changes do not take into account animal frame size and muscle conformation, and may be a poor indicator of total adipose reserves because of exchange of water and fat with changes in energy balance. A system to define the amount of adipose tissue carried by different types of dairy cows would be helpful in characterizing their energy reserves.

Quantitative descriptions of body condition of beef cattle have been used to help define the relationship between adipose reserve and reproductive performance (Cantrell et al., 1982; Wettemann et al., 1982). Body condition was scored on a 9 point scale with 1 being very thin and 9 very fat. A body condition scoring system has been described recently for dairy cattle (Wildman et al., 1982). This was a 5 point scale with 1 indicating severe undercondition and 5 severe overcondition.

There was a need for a reliable system for scoring cows on body condition in our dairy cattle nutrition and reproduction research at OSU. The 5 point system for dairy cattle developed by Wildman et al. (1982) was considered inadequate to describe all the possible degrees of body condition that could be perceived by an evaluator. Thus, that system did not provide the maximum resolution that could be attained in describing the energy reserves of a dairy cow. The objective of this paper is to describe a 9 point system for characterizing the body condition of dairy cows.

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Evaluation Procedure

The scale developed for scoring cows on body condition related the amount of fat cover in different locations of the body to a numerical rating (Table 1). In general, it was observed that dairy cows tend to accumulate fat first in the lower rib and thigh areas, followed later by deposition over the ribs, chine, loin and rump. As these areas become more filled with fat it also accumulates in the brisket, neck, shoulders, thighs and rump. Examples of cows with different amounts of body condition are shown in Figure 1 for purposes of illustration.

This body condition scoring system is being utilized in our current research. At regular weekly intervals four individuals are scoring each of 45 cows independently during the first 20 weeks after calving. The four scores are averaged to provide a condition score that will be related to various performance criteria, e.g., weight change, milk production, feed efficiency and reproductive performance.

Discussion

This report mainly concerns a description of the body condition scoring system that was developed. Information on the relationship of the condition scores to cow performance will be reported at a later date.

After scoring cows for three or four weeks, the four individuals involved assigned scores that varied little for specific cows. The difference between the high and low scores given to a cow was often only ½ point and seldom more than 1 point. Factors that contributed to variation were degree of rumen fill, bloat, body frame size and conformation and the manner in which the cow deposited body fat. Degree of rumen fill or bloat can be compensated for to some extent by evaluating the right side of the cow. Experience and multiple evaluations also help achieve the proper score for cows that differ from the norm in their pattern of adipose deposition, frame size and degree of muscling.

Visual appraisal of dairy cattle for body condition is a feasible means of estimating adipose reserves. It is a system that could be followed easily and used in the field, provided meaningful relationships with various performance criteria are established in future research. In research studies where body condition of cows is an important criterion of response to different dietary or managerial treatments this system should provide a basis for quantifying treatment effects. A definite relationship between body condition of beef cows and conception in the postpartum period has been established (Wettemann et al., 1982). Wildman et al. (1982) noted a negative relationship between body condition of dairy cows and dairy merit (milk production/lb of metabolic body weight). This indicates that the more efficient milk producers preferentially deposit nutrients in milk and not body tissue. However, the body condition favoring overall long-term productivity of dairy cows, including re-breeding performance, has not been established in an objective well-defined manner.

As the relationships between body condition score and various cow performance criteria are evaluated, it may be possible to describe the ideal or most efficent body condition for a cow at different stages of the lactation cycle.

Table 1. Body condition characteristics for each unit of the dairy cow condition scoring system.

| Group	Score	Body condition characteristics
Thin	1	EXTREMELY THIN - Prominent ribs, transverse processes, hip bones and obviously thin thighs with skin stretched tightly over the skeleton with no visible subcutaneous fat.
	2	THIN - Visible ribs, transverse processes, slight amount of fleshing between the hooks and pins, adequate tissue on hind legs, and chine-shoulder area is thin. There is a slight amount of fat cover over the lower ribs.
	3	MODERATELY THIN - Some flesh covering over the ribs (especially lower ribs) and transverse processes with minimum fleshing between hooks and pins and in the chine-shoulder area.
Moderate	4	LOW MODERATE - Some fleshing over the ribs and transverse processes, yet they are still visible. Sufficient fleshing between hooks and pins such that there is only a moderate depression in this area. Light fat covering over the loin and chine-shoulder area.
	5	MODERATE - Lower ribs are not visible. Upper rear ribs are distinguishable, evident fleshing along sides of chine and in loin area with transverse processes barely visible. Evident fat cover over hooks and pins with a small depression in the rump area. The brisket area is thin.
Excellent	6	EXCELLENT CONDITION - Obvious flesh covering over the shoulder-chine area extending down the top line; the hooks, pin bones and transverse processes have rounded appearance, the ribs are not visible, thighs are moderately thick; only a slight depression exists between hooks and pins and there is some fat deposition in the brisket.
Fat	7	FAT - Smooth but moderate fat covering over entire body with crop and chine area filled with fat, patchy fat around the tailhead and pin bones; thighs are obviously thick. The brisket is moderately full of fat.
	8	EXTREMELY FAT - Excessive fat covering over entire body with patchy fat deposition over most bone structures.
	9	OVERCONDITIONED - Extremely thick fat cover over entire body, especially in the neck, shoulders, loin, hind quarters and lower barrel. Dewlap is not easily distinguishable.
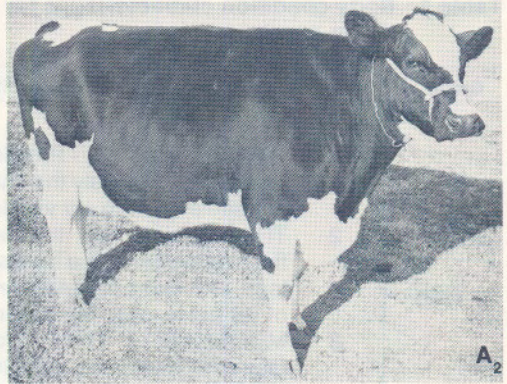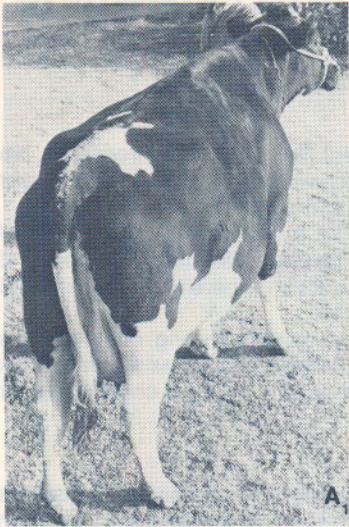
Figure 1 (A). Cow given a score of "8" on the dairy cow condition score system.
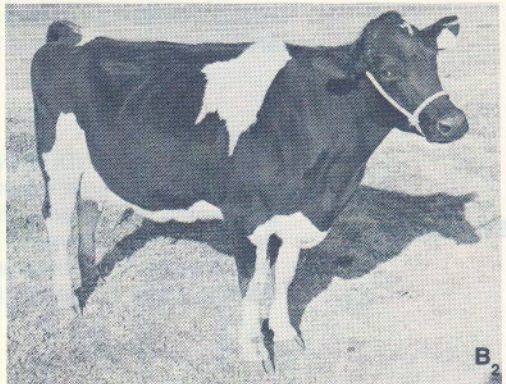
(B). Cow given a score of "5" on the dairy cow condition scoring system.

Moreover, after more data are accumulated, it should be possible to predict the outcome of feeding dairy cows to achieve different condition scores. Condition scores may become another criterion to be used along with data on milk yield and composition in selection and management of dairy herds.

Literature Cited

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