REPRO TRACKS

by Cliff Lamb, Texas A&M University

Nutrition and reproduction

Cattlemen face many challenges during a single year of production, but 50%-70% of input costs are associated with feed. Therefore, strategic manipulation of nutrition can make operations more profitable. Knowing when to supplement cows and what form of supplement will work in a given operation at a given time is often clouded by what feedstuffs a producer has available.

In essence, understanding the production cycle of the cow (see Fig. 1), the cow's nutritional needs, and how to manipulate the diet may save producers financially and will prevent future reproductive failures.

Insufficient intake of energy, protein, vitamins, and micro- and macrominerals have all been associated with suboptimal reproductive performance. Therefore, use of body condition scoring (BCS) is a reliable method to assess the nutritional status of a cow herd (see Table 1).

A visual body condition scoring system developed for beef cattle uses a scale from 1 to 9, with 1 representing emaciated and 9 obese cattle. A relationship exists between body weight change and body condition score (using a 1-to-9 scale), where approximately an 80-pound (lb.) weight change is associated with each unit change in BCS.

In spite of the advantages of using BCS as a management tool, fewer than 25% of cattlemen throughout the United States utilize this simple, effective method of analyzing the nutritional status of a cow herd.

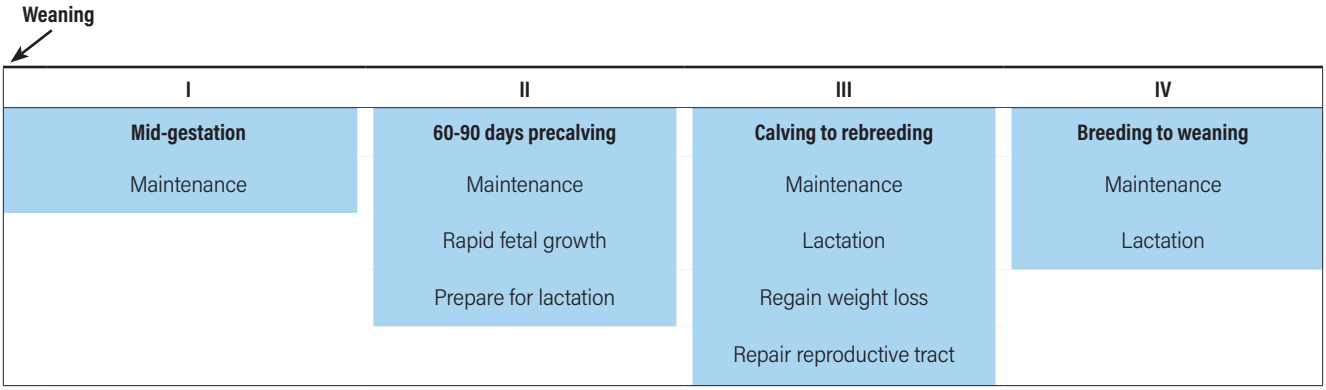
Regardless of the scoring system or monitoring system, it is important to understand when cows can be maintained on a decreasing plane of nutrition, when they should be maintained on an increasing plane of nutrition, or when cows can be kept on a maintenance diet. Understanding the production cycle of the cow and how to manipulate the diet will improve reproductive performance, but may also reduce feed input costs and increase economic efficiency of the operation.

Live weight at

Table 1: ***Body condition scores and animal appearance at each BCS***

BCS	Condition	Appearance
1	Emaciated	Shoulder, ribs and back are visible
2	Very thin	Some muscle, no fat deposits
3	Thin	Some fat deposits, ribs visible
4	Borderline	Foreribs not noticeable
5	Moderate	12th and 13th ribs not visible
6	Good	Ribs covered, sponginess to tailhead
7	Very good	Abundant fat on tailhead
8	Fat	Fat cover thick and spongy
9	Obese	Extremely fat throughout

Fig. 1: *Production cycle of a beef cow emphasizing important nutritional and reproductive requirements*



calving has no effect on reproductive performance; whereas, calving condition score is a better indicator than prepartum change in either weight or condition score on the duration of postpartum anestrus (the period from calving until cows resume their estrous cycles). When cows are thin at calving or have BCS of 4 or less, increased postpartum level of energy increases percentages of females exhibiting estrus during the breeding season.

Likewise, heifers that calve with a BCS of 4, and are fed to maintain weight after parturition, have a reduction in ovarian activity and lower pregnancy rates than heifers that calve at a similar body condition and gain weight after calving. Body condition score at parturition and breeding are the dominant factors influencing pregnancy success.

Three stages

Strategic feeding to obtain ideal condition scores can be achieved by understanding the production cycle of the cow. Shortly after weaning, beef cows should be in mid-gestation. This is the period at which producers can manipulate the diet to either increase or decrease a cow's condition. At this point, cows require very little in terms of nutrients to maintain their metabolism. If cows are in poor condition, there is no better stage to adjust a cow's feed regimen to increase her condition.

During Stage 2 of the cow's production cycle, the fetus begins to grow rapidly (up to a pound of gain per day shortly before parturition). In addition, cows also require several other physiological mechanisms to occur to prepare a cow for lactation. Therefore, adjusting a cow's condition requires more feed and very often occurs during the worst part of winter when feed quality tends to be poorer and supplementation becomes expensive.

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The period of greatest nutritional need is Stage 3, shortly after calving. A cow is required to produce milk for a growing calf, she must regain any weight lost shortly before and after parturition, and she must repair her reproductive tract to become pregnant within three months after birth. During this stage a cow usually is consuming as much feed as she can to support herself.

Adjusting condition at this stage often is futile. Cows usually are grazing and tend to consume their full protein, vitamin and mineral requirements; however, the grass is often lush with a high percentage of moisture, which occasionally can cause a deficiency in energy.

During Stage 4 of a cow's production cycle, lactation requires the majority of nutrients, but condition can be manipulated here with some innovative feeding practices.

Finally, BCS should be an essential management tool in every cattleman's philosophy. This is a simple procedure that, if used correctly, can ensure the management of a successful beef cow-calf operation. However, manipulating the diet is pointless if the diet composition is unknown. Producers should request feed analyses from their feed companies and analyze their own forage stores. Without knowing diet composition, adjusting BCS is not as simple. AJ

Editor's Note: Cliff Lamb is a professor and head of the Department of Animal Science for Texas A&M University.