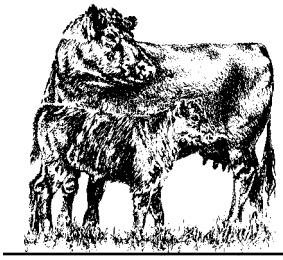

Western Beef Resource Committee *Fourth Edition*

Cattle Producer's Handbook

Management Section 747

Time of Weaning and Cow Condition

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Time of weaning can be altered to manipulate cow body condition to maintain high reproductive rates and reduce winter feed requirements. Cows nursing their calves for a longer or shorter period of time than is traditional decrease or increase their body condition. Often when a cow is declining in body condition the calf is not growing at optimum rate. Changing either the calving date and/or the weaning date will have an influence on cow condition.

Age of the calf at weaning is affected by both the date of birth and the date of weaning. Any change in time of weaning must balance the potential positive impacts on the cows with potential negative impacts on the calves or calf market weights.

Role of Cow Body Condition on Herd Productivity

The condition of beef cows at calving is associated with length of postpartum interval (time after calving before a cow begins to cycle again). It also affects lactation performance, health and vigor of the newborn calf, and in extremely fat or thin heifers the incidence of calving difficulty. The condition of cows at breeding influences the number of services per conception, calving interval, and the percentage of open cows (Herd and Sprott 1987).

For spring calving cows body condition in the fall affects the amount and type of winter feed supplements that will be needed (Momont and Pruitt 1994). Cows in adequate body condition usually need only small quantities of supplements, while thin cows usually need large quantities of supplements high in energy. Researchers in Minnesota (Thompson et al. 1983) reported a 6 to 10 percent higher energy requirement for maintaining thin cows (vs. moderate to high body condition) through the winter in a cold environment. A cost savings may also result from having cows enter the winter in good body condition.

Matching Calving and Weaning Dates to the Ranch Forage Base

Timing the start of calving in anticipation of the plant growth cycle can reduce the need for high levels of supplement or hay. The cow's nutrient requirements increase substantially after calving and continue to increase through peak lactation, generally 45 to 60 days post calving. At the same time reproductive functions must be supported in order to remain on an annual calving schedule.

As range or pasture plants mature, nutritive quality declines to the point that optimum production cannot be maintained. While an individual plant's maturation date will vary with the year, temperature, rainfall, soil, elevation, aspect, etc., it is well established that with maturation comes a decline in both digestibility and protein content. Regardless of the date, this decline in quality begins at the boot stage for grass plants and at the bud stage for broad leafed forbs.

Research at the Squaw Butte Experiment Station in Oregon indicates northern Great Basin desert ranges typically reach maturity in mid-July. More arid sites will be earlier and high elevation forest ranges will be later. After plant quality declines due to season, it is difficult for a lactating cow to consume sufficient nutrients to maintain her calf, herself, and her own body condition.

Traditional Weaning at 7 Months of Age

The beef industry historically has adjusted weaning weights to 205 days to make a fair comparison of animals born on different dates. Older calves normally weigh more than herd mates. If weights were not adjusted to a constant, producers would probably just select older cattle. The practice of adjusting weights to 205 days of age has led many to the notion that their calves should be weaned at that age. There is little basis for this practice in commercial herds.

Appropriate reasons for the traditional weaning age of 7 to 8 months of age include: (1) in spring calving cows the decline in forage quantity and quality, (2) possibility of early winter storms, (3) a beef cow's lactation curve has declined substantially, (4) it gives the cow time to prepare for her next calf, and (5) tradition. There are just as many reasons to reevaluate time of weaning, particularly with regard to managing cow body condition.

Time of Weaning Alternatives to Decrease the Impact on Reproduction

Anestrus (absence of estrus or heat) is a condition that exists in most mammals after they give birth. This allows time to recuperate after pregnancy. Postpartum anestrus in cows is defined as the time after calving when estrous cycles do not occur (Short et al. 1994). The combined effects of the suckling stimulus, behavioral responses, and nutritional demands of milk production cause anestrus in beef cows.

Suckling and lactation impact reproduction in two ways. The short-term effect of suckling lengthens the postpartum interval. It may reduce or delay pregnancy during the breeding period in the year the suckling occurs. This is especially true in young cows (or thin cows).

Secondly, long-term effects of lactation may have an indirect effect on reproduction by reducing cow body condition. If a cow does not regain enough condition, pregnancy may be delayed or the cow may not become pregnant in the year(s) after the lactation. This is frequently seen in young cows who may breed adequately as 2-year-olds, but because they lose condition during their first lactation, fail to breed as 3-year-olds.

Suckling and lactation management are certainly not the only alternatives available for achieving reproductive success. Nutrition, disease, genetics, and management play vital roles in this regard as well.

Weaning Options

Many possibilities exist, from partial and temporary weaning to complete weaning (Whittier et al. 1995). Complete weaning treatments can occur anytime from immediately after calving up to near the time of the next calving. Partial weaning is when calves are separated from the dams for most of the day and allowed only one or two short periods during the day to suckle.

Reducing the length of time a cow is suckled will often result in shortening the postpartum interval to estrus. However, the response to this management is variable and the practicality of such a system greatly limits its usefulness in commercial herds.

Temporary weaning is when calves are completely removed from their dams for a short period (at least 48 hours). Temporary weaning has been successfully coupled with estrus synchronization programs that use progestins (Smith et al. 1979). The practical application of temporary weaning is frequently limited to use only at the beginning of the breeding season and in conjunction with estrus synchronization. A minimum of 45 days postpartum interval is recommended for temporary weaning to be effective.

Complete weaning is permanent separation of a calf from its dam. Complete weaning can be done at any time after birth and is discussed in relation to five time periods:

1. **Early weaning** before the start of the breeding season (birth to 90 days),
2. **Early weaning** during the breeding season (90 to 160 days, with a 70-day breeding season),
3. **Normal weaning** (180 to 240 days),
4. **Late weaning** (240 to 280 days), and
5. **Variable weaning**, or manipulating the time of weaning from year to year to match the circumstances of the production cycle. This would likely occur between 120 and 280 days of age.

Early Weaning (Less Than 100 Days)

Oklahoma researchers (Lusby et al. 1981) reported a 37 percent advantage (97 vs. 59 percent) in return-conception in low body condition first-calf heifers that began calving in February when calves were weaned at 6 to 8 weeks of age compared to heifers whose calves were weaned at 7 months. Additionally, the average interval from calving to conception was shortened by 18 days (91 vs. 73 days). However, weaning at less than 90 days will increase the need for harvested and purchased feeds for calves after weaning and increase labor and management needs.

Early Weaning in First Calf Heifers (More Than 100 Days)

A Nevada study (Conley et al. 1995) showed time of weaning had a dramatic influence on heifer body condition. One hundred first-calf heifers were either weaned at 150 days (EW) or after 205 days (LW). On September 2, at the time of weaning of the LW group, 77 percent of heifers from the EW group had BCS of 4+ to 5 compared to 29 percent of heifers from the LW group.

Little change in BCS was seen 1 month later on Oct. 8, 1992, at gathering. On Nov. 23, 1992, after spending the interim on alfalfa aftermath, heifers from the EW group still held an advantage in body condition. This demonstrates the advantage of maintaining the body condition of heifers over the attempts to improve body condition once it is lost.

After adjusting to a 205-day weaning date, the average weights of calves from the EW group were 401 pounds, compared to 421-pound average of calves from the LW group. Feed and forage costs were calculated for the period from Oct. 1, 1991, to Sept. 1, 1992, for the EW and LW groups. A cost of $15.50 per head was incurred for the EW calves as a result of pasture and supplemented feed costs during the period from July 1 to September 1.

The 20-pound weight disadvantage observed in the EW calves cost an additional $20 (20 lb @ $1.00/lb). Total costs of EW calves over LW calves was $35.50. To bring heifers from the LW group to a comparable body condition to EW heifers would cost $100/head in increased supplemental feed (one ton of alfalfa hay/head @ $100). The increased costs associated with the weaning strategy can be offset by costs incurred to improve the body condition of heifers.

Early Weaning in Mature Cows (More Than 100 Days)

The results of early weaning programs vary depending on available quality and quantity of forage and body condition of the cows. Weaning calves during or soon after the breeding season in drought years is an accepted practice for stretching a limited forage supply.

Research with early weaning of fall-born calves in Ohio (Peterson et al. 1987) (110 vs. 222 days of age) estimated the hay consumption by the early weaning dams 45.3 percent less than cows with normal weaned calves. When TDN consumption for both the cow and the calf was compared, early weaned cow/calf pairs consumed 20.4 percent less TDN than normal weaned cow/calf pairs. A study in Oklahoma (Purvis et al. 1995) indicates that cows consume approximately 1 percent of their body weight less after early weaning.

Variable Weaning

Variable weaning is used to describe a management system designed to manipulate the time of weaning from year to year to match the circumstances of the particular production year. Variable weaning may serve as a technique for tempering the match or mismatch of cattle to resources. Changing the genetic characteristics of a herd takes time unless the cow herd is sold and other cows purchased to replace them. This approach is generally not feasible.

Precipitation, market, and management circumstances often change from year to year. By using some type of variable weaning system a rancher may be able to: (1) manage under drought conditions, (2) manage cow condition relative to available feed supply, (3) minimize the purchase of "off ranch" inputs, and (4) meet certain markets for the calves.

There are, however, limitations and challenges to adopting a variable weaning approach. Since time of weaning may vary considerably from one year to the next it is important to plan well. Factors that must be addressed include marketing at different times each year, adjusting stocking rates to utilize grazing after calves are weaned, or stretching grazing if calves remain with cows beyond typical weaning time.

Late Weaning (Over 205 Days)

If conditions exist where adequate forage quality and quantity are available, weaning calves later than the traditional 7 to 8 months of age may be feasible. Calf weights will likely be greater in late weaning systems. However, if cow condition is reduced to the point that it impacts subsequent cow reproduction, or if calf weight gains during the late sucking period are reduced significantly, the risks will outweigh the advantages.

A 4-year experiment was conducted in Montana (Short et al. 1996) to determine effects of protein supplementation and age at weaning on cow and calf performance during fall grazing. Treatment factors were: (1) no supplement or an individually fed supplement (6.6 lb of a 34% protein supplement fed to cows every third day); and (2) calves weaned in mid to late September or mid to late December of the trial each year.

The results of this study showed that change in cow weight and condition score were increased by fall supplementation and September weaning, but these responses interacted and were not the same each year. Forage intake was decreased by supplementation and September weaning. Some carryover effects of treatments were observed the next spring in cow weight, condition score, and birth weight of calves (September weaning decreased birth weight by about 4.5 lb), but there were no effects by the next fall on weaning weights or pregnancy rates.

The Montana authors concluded:

1. Effects of feeding a 34 percent protein supplement to cows were to increase calf gains and improve persistency of lactation and efficiency;
2. Delaying weaning decreased cow weight and condition score;
3. Effects of weaning age and protein supplementation were highly dependent on forage and environmental conditions in any given year; and
4. Whatever effects existed in a given year did not carry over to effects on next year's production as measured by pregnancy rates and weaning weights.

Time of Weaning Management in Fall Calving Herds

Most of the discussion in this paper focuses on spring calving cows. That is because most calving seasons in the West occur in the spring. In some regions of the country, fall calving has a distinct advantage and is a common practice. In fall calving systems, one disadvantage is that peak demand for nutrients to support lactation for most environments occurs out of synchrony with peak nutrient availability from grazed forages.

Therefore, early weaning systems with mature cows may be more advantageous in fall calving herds than spring calving herds.

Implications

Several options are available to cattle producers to use time of weaning as a management tool to manipulate cow body condition. Advantages of early weaning are greater in young cows, especially first-calf heifers, than in mature cows. Weaning calves from mature cows at 5 or 6 months of age will increase the cows' body condition and reduce their forage intake demands. To maintain any advantages to early weaning, the calf must receive adequate post weaning nutrition and care.

Perhaps the most favorable months to change body condition in spring calving cows are September, October, and November. Before these months the demand for milk production is high and makes it difficult to increase cow condition. After these months the impact of colder temperatures also makes it difficult to add condition because expensive and oftentimes lower quality processed feeds are being fed.

Remember, the forage resources in the western U.S. vary tremendously. In some situations where forage conditions are favorable, cows may actually be gaining weight late in lactation. And in some cases calves may also be gaining. The relative performance depends on forage conditions that will depend on lactation, year, and forage management.

If a herd analysis shows low reproductive rates and low condition scores at weaning, altering weaning date is one option to be considered for cows that are too thin going into the winter, but the cost of maintaining the cow and calf needs to be part of the equation. In some cases changes in forage management to improve forage quality may be the appropriate option.

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