

## Management of Early Weaned Calves

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This NebGuide discusses the benefits and disadvantages of weaning beef calves early, including rations and methods for both drylot and pasture-weaned feeding strategies.

### Introduction

Early weaning of beef calves is a management practice that can be considered for spring or fall calving herds, drylot cow-calf production systems, and during drought. In areas where forage quality is low and quantity is not adequate in late summer and early fall, early weaning can be a management practice, especially for young cows raising their first calf. Early weaning can enhance the efficiency of drylot cow-calf operations by allowing greater use of poor quality roughages for the cow herd.

### How Early Is Early Weaning?

Most calves raised in Nebraska beef production systems are weaned from their dams between 180 and 220 days of age. Early weaning is typically applied when calves are 45 to 150 days of age.

The rumen of a newborn lacks the symbiotic microbial population that enables adult cattle to process forage fiber via fermentative digestion. Rumen development proceeds rapidly once solid food consumption begins. Research has demonstrated spring-born calves consume significant amounts of native range forage at 45 days of age.

Weaning beef calves as early as 45 days of age has been researched and used by producers. This is early enough to encourage the cows to cycle and rebreed. Weaning calves this early is used as a “last resort” management strategy when cows are thin prior to the start of the breeding season. Weaning at 3 to 5 months of age is too late to cause early cycling; therefore, it doesn’t contribute to the improvement of reproduction. However, weaning calves at that age may be a viable alternative if forages are scarce in the latter part of the grazing season. In this situation, cows will usually gain body condition because nutrients are not needed for lactation.

### Considerations for an Early Weaning Program

Before deciding to wean calves early, plan how the calves will be handled, taking into account their age and available feed supply. When you do not have the facilities to manage the young, lightweight calves, it may be necessary to sell early

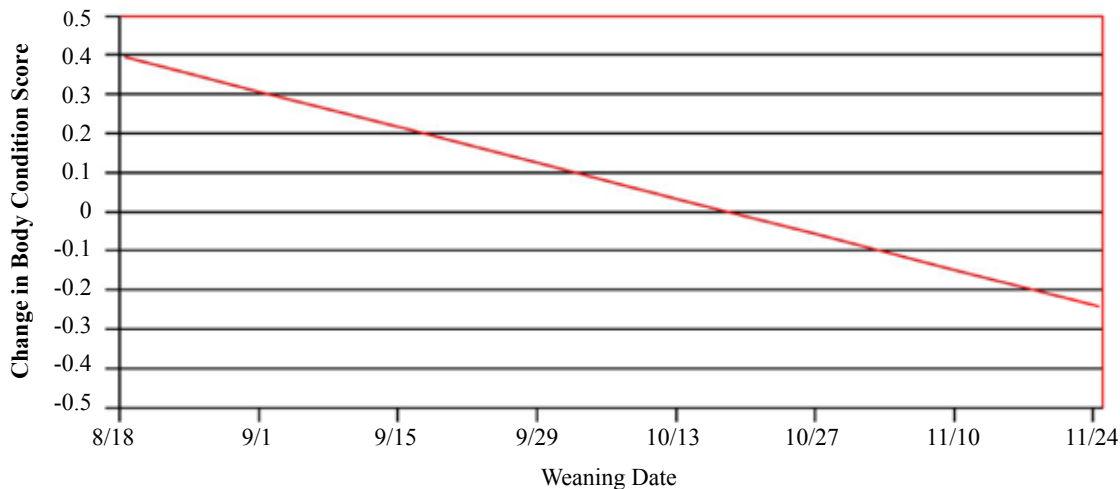


Figure 1. Effect of weaning date on change in cow body condition score. (2002 Nebraska Beef Report, <http://beef.unl.edu/beefreports200201.shtml>)

weaned calves. In this case, you may realize more income by locating a buyer ahead of time and doing more preconditioning than is usually done under normal weaning. At best, cow-calf operators must determine what benefits can be realized in terms of income for that calf crop. Because of the price slide, lightweight calves will be worth more in terms of dollars per pound. The question that needs to be addressed is: Do early weaned calves weigh enough to generate enough dollars to pay for annual expenses if sold directly at weaning?

A number of items should be considered prior to early weaning calves. Calves can adapt quickly to the change in environment and diet if a management plan has been carefully developed. Regardless of weaning age, calves that start eating dry feed immediately after separation from their dam have fewer incidences of morbidity and mortality than calves that do not eat for 24 to 48 hours after separation. Bunk and waterer height needs to accommodate the smaller calf. Offering a creep feed three to four weeks prior to weaning will help calves adjust to eating processed feeds and make the weaning transition period less stressful. Using creep feeding in this manner will bunk break the calves and will teach them to eat. Commercial creep feeds, byproducts such as wheat middlings, barley, distillers grains, gluten feed, soyhulls, or whole oats all make excellent creep feeds.

### **Effect of Early Weaning on the Forage Resource**

The immediate result of early weaning is the premature end of milk production by the dam.

There are not many reports in the literature on the “forage-sparing” effects of early weaning. University of Nebraska–Lincoln research (Jenkins-Hollingsworth et al. 1995 Nebraska Beef Report) estimated that a 290 lb beef calf consumed approximately 5.3 lb forage DM per day. The National Research Council (NRC, 2000) estimates DM intake of a 1,200 lb beef cow (peak milk production = 20 lb) averages about 27 lb per day during lactation. The same animal, without producing milk, is estimated to consume an average of 24 lb DM per day during mid-gestation. Using this scenario, the savings in range forage accrued on a daily basis would average 3.0 lb per day or 93 lb of forage dry matter per month. If the calculated forage-sparing effect from the non-lactating cow and weaned calf are added together, it would result in 8.3 lb forage dry matter per day or 257.3 lb forage dry matter per month. For a 1,200 lb, non-lactating cow, this is another 11 days of grazing per month.

### **Effect of Early Weaning on the Beef Female**

Early weaning eliminates the nutrients required for milk production; thus, nutrients will be available for maintenance, body condition gain, and reproduction. The impact of time of weaning on cow body condition is clearly illustrated in *Figure 1*. Spring-calving cows nursing calves late in the grazing season lose 0.1 units of body condition for every two weeks that the calf remains on the cow. During early weaning, the calf significantly reduces the nutrient demands placed on the cow and more closely matches her requirements to nutrients supplied under drought or poor

range conditions. Spring-calving cows need adequate body condition (BCS 5) prior to calving. Producers need to accomplish this economically, which may necessitate using winter range, corn stalks, or harvested forages. Removing the calf early helps improve body condition, which has the potential to carry over through the winter. This can cause increased body condition at calving that is also evident during the next breeding season. The nutritional program must be adequate during gestation to have cows in good condition at calving and breeding time. For spring-calving cows, poor condition at calving results in an increased postpartum interval, lower percent of the cows exhibiting estrus (heat) early in the breeding season, and a lower conception rate.

Early weaning of calves from 2-year-old, first-calf females reduces the stress of nursing and raising a calf. As a result, these females will be in better body condition at calving, which should result in cows that cycle and breed back earlier in the breeding season. For heifers bred for higher milk production, early weaning takes on greater importance. The greater the milk output, the greater the nutrient demands, and the more difficult it is to keep young females in adequate body condition on a limited forage base, and the subsequent impact on reproduction.

Weaning calves before the start or early in the breeding season is not a common management strategy. Again, it is usually considered a last-resort effort to correct a management problem that is usually related to inadequate nutrition prior to and after parturition. Reducing nutrient requirements of the dam associated with lactation and eliminating the suckling stimulus has the potential to allow non-cyclic, thin cows to resume estrous cycles and become pregnant. Research conducted at the U.S. Meat Animal Research Center at Clay Center, Nebraska, showed that when calves were weaned eight days before the start of a 42-day breeding season, the percentage of cows exhibiting estrus increased by 29 percent in 2-year-olds, 27 percent in 3-year-olds, and 16 percent in mature cows (4 years of age and older). Pregnancy rates were likewise increased by 26 percent in 2-year-old cows, 16 percent in 3-year-olds, and 28 percent in mature cows.

Early weaning to improve fertility of first calf heifers can be done when the calves are 35 to 60 days of age. Clemson University studies have shown that 81 percent of heifers whose calves were weaned at 56 days of age calved within the first 30 days of the subsequent calving season. In contrast, only 46 percent of the control females calved within the same period.

### **Performance of Early Weaned Calves**

Early weaned calves can be grown for a period of time before entering the feedlot or put back on grass pasture. They also could be grown for a short period of time (two to three weeks) and then stepped up on a finishing diet. Calves that are on this “fast track” feeding program are very efficient at converting feed to gain (5.2 lb of feed dry matter per pound of gain) and have a high proportion grade USDA average choice or better. There is the potential for lower carcass weights for these calves. Because they have a greater propensity to grade

choice average or greater, consider marketing these calves into a program that offers premiums for high quality carcasses.

It is critical to get calves to eat as soon as possible after being separated from the cow. If calves are creep fed before weaning, they will adapt quickly to being separated from their dams. Depending on the weight of the calf, the starter ration should be fed until the calves are consuming 4 to 5 lb per animal per day (e.g., 1 to 1.5 percent of body weight). This usually takes 10 to 14 days.

Daily gain of calves during the period that they are nursing is usually 2.1 to 2.3 lb. Calves that are weaned early should be managed to gain in this range as well. At first calves will have a low dry matter intake (DMI) for 3 to 14 days following weaning. During this time, dry matter intake will be in the range of 1 to 1.5 percent of body weight. Starter diets are energy-dense (i.e., 65 percent to 75 percent TDN), relatively rich in crude protein (i.e., 14 percent to 16 percent), and highly palatable. Diets for early weaned calves need to include high quality ingredients. Diets need to be dust-free and the particle size of the ingredients needs to be similar so that calves cannot sort the diet components.

Two weeks after weaning, calves should eat about 2.5 percent of their body weight on a dry matter basis. A high-quality diet will allow calves to achieve their targeted level of performance. Avoid the use of low-quality forages in diets for recently weaned calves, especially straw, corn stalks, soybean stubble, or mature hay. Also, avoid grain screenings, and moldy, dusty, or damaged feeds. Make sure diets are mixed thoroughly. Ingredients that add moisture to the diet (e.g., ration conditioners) such as liquid molasses, wet corn gluten feed, corn steep liquor, wet distillers grains, condensed distillers solubles, or even water can be added to the diet while mixing to make feed particles adhere to one another. Calves will not adapt quickly to rations that are dusty. Silages and other fermented feeds should be introduced gradually into the diets of calves that are inexperienced with such feeds. Silages, while nutritious, should only be used in limited amounts in diets for recently-weaned calves. The high moisture level and the palatability characteristics of silage make it unlikely that calves will consume silage-based diets in amounts adequate to grow at targeted levels.

Early weaned calves should be provided with about 1 foot of bunk space per animal. This allows all animals within a pen to come to the bunk at the same time. It also affords managers the opportunity to watch for symptoms of illness. If there is more than one feeding pen, consider grouping calves based on body size. This discourages undesirable social interaction within the pen and at the feed bunk.

Numerous feed combinations can be used in rations for early weaned calves. Corn, milo, and barley are excellent energy sources, and roughage may be supplied by cottonseed hulls, high quality hay, or other forages. Distillers grains and cottonseed and soybean meals are suitable crude protein sources. Adding an antibiotic will reduce health problems and increase gains, but should be used per a veterinarian's recommendations and label directions.

Rations will need to include some level of forage to allow for proper rumen health. Consider feeding about 0.5 lb of long

grass hay per head daily in addition to a complete ration. When a grain-supplement mix follows the starter ration, feed hay to appetite and gradually increase grain and supplement. Then reduce the forage to a level that will produce the desired gain without fattening. Examples of rations that give satisfactory performance are presented in *Table I*. Average daily gains of 2.0 to 2.8 lb should be attainable with these rations when starting with calves weighing about 200 lb.

**Table I. Some typical rations of early weaned calves in drylot<sup>1</sup>.**

Ingredient	Percent		
	56	60	62
Corn, Milo, or Barley (rolled or cracked)	56	60	62
Soybean or Cottonseed Meal	20	12	10
Dehydrated Alfalfa Meal	—	—	10.5
Ground Alfalfa Hay	15	20	10
Molasses	5	5	5
Limestone	3.0	2.0	1.5
Trace Mineral Salt	1.0	1.0	1.0

<sup>1</sup>Add 2,000 IU of vitamin A and 200 IU of vitamin D per pound of complete feed. If an antibiotic is used, read label directions for amounts and length of feeding time.

Water quality and quantity also should not be overlooked. A reduction in water intake will decrease dry matter intake, which will decrease desired rate of gain. Calves should have access to fresh, clean water daily.

### Pasture Weaning/Feeding Programs

Fence-line weaning is separating calves and dams into adjacent pastures. In most fence-line weaning, calves and cows are separated using an electric fence. If cows and calves are not trained to an electric fence, expose them to electric fencing prior to weaning. There should be sufficient straight fence line (i.e., no corners) between pastures to allow all dams and calves simultaneous nose-to-nose positioning across the electric fence. When the goal is to have the calves remain on pasture with supplement, begin supplementation about two weeks before weaning. Dams will teach the calves to eat the supplement.

Another method is offering calves creep feed for a two- to three-week period before weaning. At the time of weaning, cows are moved to an adjacent pasture, and calves are allowed to remain with the creep feeders. When using the fence-line weaning technique, consider placing a docile, unrelated cow in the pasture with the weaned calves. This animal acts as a companion and teacher, teaching calves the locations of water and feed and demonstrating how to use these resources. For more detail, refer to NebGuide G2057, *Management, Health, and Nutritional Considerations for Weaning Calves*.

Labor and feeding equipment needs can be reduced by limit-feeding the grain mix through the use of salt that could be provided using a creep feeder. The amount of salt needed in the ration will depend on the desired gain (refer to NebGuide G2046, *Limiting Feed Intake with Salt in Beef Cattle Diets*). As calves adapt to the salt, some adjustment in the salt level may

be required so that grain intake is limited to about 1 percent of body weight. Concentrate mixtures such as those shown in *Table 1* can be used for this purpose by simply deleting the roughage source and substituting salt and additional grain to make up the difference.

### **Advantages of Early Weaning**

- Dams of early weaned calves should be in better condition at calving and cycle earlier during the next breeding season.
- Calves can be fed to grow to their genetic potential.
- Early weaning may be the key to more efficient feed utilization during times of drought or other periods of feed shortage.
- Early weaned calves are very efficient at converting feed to gain.
- A high percentage of early weaned calves fed a growing ration for a short period of time (two to three weeks) and then stepped up on a high concentrate diet achieve a USDA Quality Grade of average choice or better.
- Early weaning fits for fall calving cow herds when grazed resources are limited, and harvested forages and supplements would be needed to meet the lactating cow's nutrient requirements.
- Early weaning permits more cows to be carried on a limited forage supply.
- If calves are weaned before or very early in the breeding season, pregnancy rates will be greater for thin cows.

### **Disadvantages of Early Weaning**

- Excellent calf nutrition and management is required.
- More labor is necessary.

- The facilities and feed must be available for small calves.
- Calves spend a lot of time in a dry lot prior to slaughter.
- If you have developed a cow herd that has above average milk output, the potential increase in weaning weights through milk production is not realized.
- Information on dam performance from production records will be of limited use.

### **Economic Considerations**

Most studies of early weaning have concluded that ownership of early weaned calves needs to be retained for some period of time after weaning to generate enough revenue to increase the profit potential of the cow-calf enterprise, compared to weaning calves at a more conventional age. Early weaned calves weigh less at weaning compared to calves weaned at conventional ages, and positive price slides are usually insufficient to offset the lower body weight.

Another reason not to sell the early weaned calf directly after weaning is that these calves are more efficient at converting feed to gain than older calves. Managers need to consider taking advantage of this attribute of the early weaned calf. Many ranchers believe that early weaned calves will not gain as well as calves that remain with their dams until they reach a conventional weaning age; however, this belief is erroneous. If diets are well-designed using the concepts outlined previously, early weaned calves will achieve a daily gain equal to or greater than calves that remain with their dams.

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