



# Early Weaning Beef Calves

Guide B-126

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## Introduction

In the Southwest, precipitation is highly variable, and drought situations are common. Cow-calf producers in this region undoubtedly have to manage cattle and pastures through drought periodically. Times of below average precipitation challenge producers to: 1) maintain appropriate stocking rates and levels of forage utilization to avoid overstocking, and 2) maintain acceptable reproductive performance of the cow herd. Early weaning of calves is a management tool that producers can implement to reduce the forage needs of the cow-calf enterprise and improve cow condition and reproductive performance. "Early weaning" is weaning calves anytime earlier than "normal." Calves in the Southwest are typically weaned when they are 6 to 8 months old; however, calves can be weaned as early as 6 weeks of age. Early weaning can reduce the forage needed by the cow herd when implemented in response to a forage shortage. The magnitude of the shortage and extent of other management changes required dictates when calves should be weaned in order to balance forage supply and forage demand. When calves are weaned early to improve reproductive performance, they may be weaned just prior to the breeding season to impact reproduction in the breeding season that immediately follows. Or they may be weaned 30 to 90 days earlier than normal in attempt to reduce the postpartum interval during the breeding season that follows 6 to 8 months later.

This paper will outline how early weaning can be used as a tool to help maintain reproductive performance and manage grazing pressure.

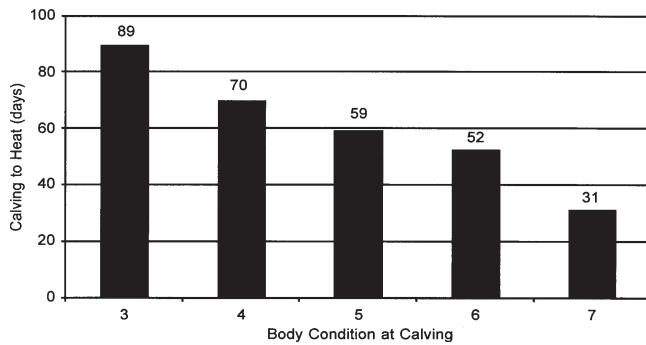
## Reducing Forage Needs

When forage production is low and it becomes necessary for producers to make management adjustments to reduce forage needed for the cow-calf enterprise, there are several options that can be employed:

- Sell cows
- Lease additional pasture
- Feed additional energy to reduce grazing
- Wean calves early

It can be challenging to cost effectively lease pasture, feed energy, or sell cows just to buy them back when forage production improves. Early weaning, especially when combined with one or more of the other options listed, can be a useful tool to manage forage supply while minimizing the need to feed energy or dramatically liquidate cattle.

By September, or maybe even August for ranches at higher elevations, most producers in the Southwest have a fairly good idea of how much forage will be available at the end of the growing season. For example, in southern New Mexico precipitation that falls after the middle of September generally has minimal impact on forage production because temperatures are too cool for warm season forages to grow substantially. Thus, as early as the middle of September a forage budget can be developed in this region. If adequate forage is available to support the current stocking rate, no change is needed. However, if estimated forage supply by the end of the growing season is not sufficient to meet the demands of the cow herd until forage growth is expected to resume, producers must decide what management practices to implement to balance forage supply and demand.



**Figure 1. Effect of body condition at calving on postpartum anestrus duration (Houghton et al., 1990)**

A forage budget can be developed mathematically or visually estimated by experienced producers. Regardless of the method employed, during years of low forage production, producers should calculate or estimate stocking rate reductions needed to balance forage supply and demand.

Forage needs are reduced by early weaning because calves are removed from the ranch (sold, placed in a feedlot, or moved to leased pasture), cow energy requirements decline when they stop lactating, and culls are sold earlier than normal. In the short-term, less income is generated from calf sales when they are sold at a lighter weight than normal; however, there is some price per pound advantage to selling lighter calves. Additionally, regardless of the weight of the early weaned calves or culled cows, July, August and September prices have historically been higher than the normal low prices of the year in October and November.

Example 1 shows how early weaning can be used in combination with reducing cow numbers to lower forage needs of the cow-calf enterprise. In this example, selling early weaned calves and cull cows 45 days earlier than normal saves 62,000 and 13,000 pounds of forage, respectively. Not purchasing replacement females reduces forage needs by another 100,000 pounds. The total forage savings in this example is an estimated 175,000 pounds, surpassing the estimated reduction needed by more than 8,000 pounds. To achieve the same level of forage demand reduction by lowering stocking rate alone at normal weaning time would require removal of approximately 25 percent of the females. Using the same example and assuming a greater forage shortage, calves could be weaned 90 days earlier than normal to save an estimated 240,000 pounds of forage. This level of

forage savings is equivalent to a 35 percent reduction in cow numbers. Regardless of how early calves are weaned to save 175,000 or 240,000 pounds in this example, the cow inventory is only reduced by 15 percent, and reproductive performance is likely to improve.

### **Improving Reproductive Performance**

The relationship between reproductive success and body condition at calving is based on energy. Cows must have energy to support all bodily activities, but some functions have a higher priority for energy use than others. Cows can only direct energy toward resuming the estrous cycle after calving if energy intake exceeds the combined requirements for maintenance, growth and lactation. Energy demands of a lactating cow can be very high. It is important that the cow is in adequate body condition at calving so that stored energy can be used to support her needs. If she does not have enough stored energy at calving, she must gain weight during lactation so that she will have enough energy to begin cycling again. However, it is difficult to cost effectively increase body condition of cows in early- to mid-lactation with supplemental feed. This is why body condition at calving is strongly related to the length of the postpartum anestrus period (time between calving and first heat) in beef cattle. Cows that are thinner at calving take longer to resume cycling after calving and are less likely to become pregnant during the breeding season. This relationship is illustrated in fig. 1.

Since body condition at calving influences reproductive performance, early weaning can be utilized to improve the chance that a cow is in acceptable body condition. Figure 2 shows the lactation and total energy requirement of an 1100-pound cow on specific days from calving until the calf is weaned at 210 days of age (7 months). It is evident in this example that weaning calves early can greatly lower a cow's nutrient requirements by ceasing lactation. More specifically, if the calf is weaned at 60 days of age (2 months), the cow's daily energy requirement declines by 37 percent. If the calf is weaned at 6 months of age (30 days early), the cow's daily energy requirement declines by 18 percent. Reducing the nutrient requirements of lactation by weaning the calf makes early weaning an option to manage thin cows to achieve short- and long-term improvements in reproductive performance.

## EXAMPLE 1. RESPONDING TO BELOW-NORMAL FORAGE PRODUCTION BY WEANING CALVES EARLY

### Scenario:

It is September 1, 2005 and your ranch got less rain than “normal”. You expect that forage available for the winter and spring will be about 25% lower than that required to support your current stocking rate until September 1, 2006. You have 100 cows and typically get 85% pregnant and wean 85% calf crop. In the fall you typically sell the 15 open cull females and replace them with 15 purchased bred females. Therefore, you wean 100 calves. Your average calving date is February 15, and you wean on November 1. Calves average 500 pounds at weaning.

### Management Response:

Wean calves and sell cull cows 45 days early (Sept. 17th). Do not buy any replacement females.

### Weight at each marketing date

Weaning on Nov. 1	= 500 lb calves
Weaning on Sept. 17 (45 days early)	= 421 lb calves
<i>Assumptions:</i> Calf ADG for last 45 days	= 1.75 lb/day
1.75 lb/day * 45 days	= 78.8 lb
500 lb – 79 lb	= 421 lb
Cull cows on Sept. 17	= 1,050 lb culls
Cull cows on Nov. 1	= 1,100 lb culls
<i>Assumptions:</i> Cows gain 50 lb during late Sept. and Oct.	

### Forage Intake Estimates

Cows + calf annual forage intake*	= 8,030 lb/pair
1,100 lb cow * 365 days * 2% of BW/day	
Cows + calf forage intake from Nov. 1, 2005 to Sept. 1, 2006	= 6,688 lb/pair
1,100 lb cow * 304 days * 2% of BW/day	
Weaning 45 days early reduces cow + calf annual intake**	= 621 lb/pair
(500 lb + 421 lb)/2 = 460 lb average wt. Sept. 17 to Nov. 1	
460 lb * 3% of BW/day * 45 days = 621 lb	
Sell cull cows 45 days early reduces forage intake***	= 871 lb/cull
(1,100 lb + 1,050 lb)/2 = 1,075 lb average wt. Sept. 17 to Nov. 1	
1,075 lb * 1.8% of BW/day * 45 days = 871 lb/cow	

#### *Intake Assumptions*

- \* Annualized daily dry forage intake for a cow-calf pair is 2% of cow avg. wt (22 lb/day for 1,100-lb cow).
- \*\* Early weaning reduces forage intake 3% of calf avg. wt (13.8 lb/day for pair with a 460-lb calf). The estimated 3% incorporates calf forage intake plus the decrease in forage intake by the cow.
- \*\*\* Cull, non-lactating cow eats 1.8% of avg. wt. in dry forage (19.4 lb/day for 1,075-lb cow).

Normal Forage Needed to last from Nov. 1, 2005 to Sept. 1, 2006	= 668,800 lb
100 cow-calf pairs * 6,688 lb usable forage needed/pair	
Budgeted Forage for this Year	= 501,600 lb
668,800 lb * 75%	
Forage Usage Reduction Needed	= 167,200 lb
668,800 – 501,600	
Total Forage Usage Reduction	
100 pairs weaned early * 621 lb forage saved/pair	= 62,100 lb
15 culls sold 45 days early * 871 lb forage saved/cull	= 13,065 lb
15 replacement females not purchased * 6,688 lb forage saved/replacement	= 100,320 lb
Total Forage Savings	= 175,455 lb

**Table 1. Conception rate, postpartum interval, and calf weight at normal weaning time (October 11) for very thin first-calf Hereford heifers and their calves.**

	Treatment			Difference
	Normal Weaning (7 months)	Early Weaning <sup>b</sup> (6-8 weeks)		
Conception rate (%)	59	97		38
Calving to conception (days)	91	73		18
Cycling at 85 days postpartum (%)	34	90		56
First-calf heifer weight at normal weaning (lb)	788	875		87
	Normal	Early Weaning Pasture	Drylot	Norm. -Past.
Calf weight at normal weaning (lb)	373	330	374	43

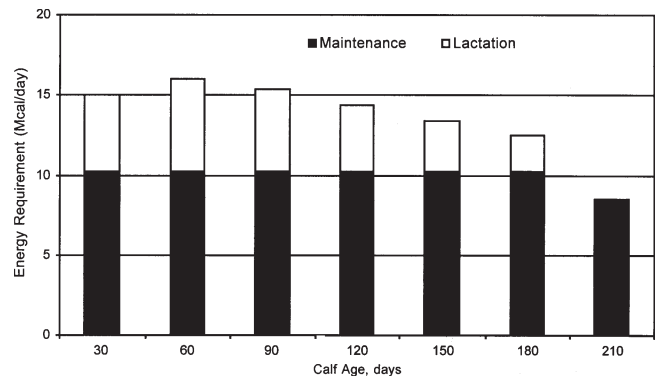
<sup>a</sup>Lusby et al, 1981.

<sup>b</sup>Early weaned calves were managed in a drylot or on pasture.

### Weaning Prior to or During the Breeding Season

When calves are weaned prior to or during the breeding season (45 to 100 days of age), reproductive performance can be improved. Weaning prior to breeding is practiced among females that are at high risk of conceiving late in the calving season or not conceiving at all. These are usually thin cows or first-calf heifers. Table 1 shows that weaning calves of very thin (body condition score 3 to 4) first-calf Hereford heifers as early as 6 to 8 weeks of age can increase conception rate and reduce the postpartum interval. First-calf heifers whose calves were weaned early had a 38-percentage unit advantage in conception rate during the breeding season that immediately followed; plus, the first-calf heifers were 87 pounds heavier on the normal weaning date. Average calving date was 18 days earlier the following calving season; thus, their calves were 18 days older at weaning the next year. In addition to raising more calves, there is substantial long-term benefit to maintaining a relatively short calving season that in some cases may only be practically achieved by early weaning. Assuming 1.75 pounds average daily gain for the last 18 days prior to weaning, this would equate to 32 more pounds per calf at weaning the following year. If the calves were worth \$120/cwt., females whose calves were early weaned would produce 38 more calves per 100 females and generate almost \$40 more per calf weaned the following year.

The improved reproductive performance comes at a cost. Calves must either be sold at a very light weight, or retained and sold later. Neither of these



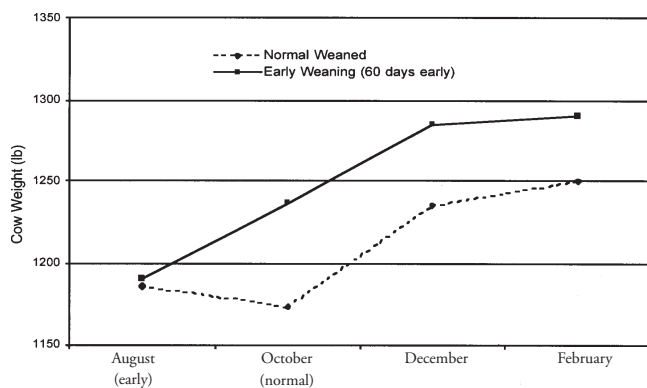
**Figure 2. Maintenance and lactation energy requirement of an 1,100-pound Angus cow with 17.5-pound peak milk yield on specific days between calving and weaning (NRC, 1996)**

options will likely generate as much short-term net income as leaving the calves with their mothers until normal weaning time; however, the long-term benefits of early weaning may well exceed the reduction in short-term profit.

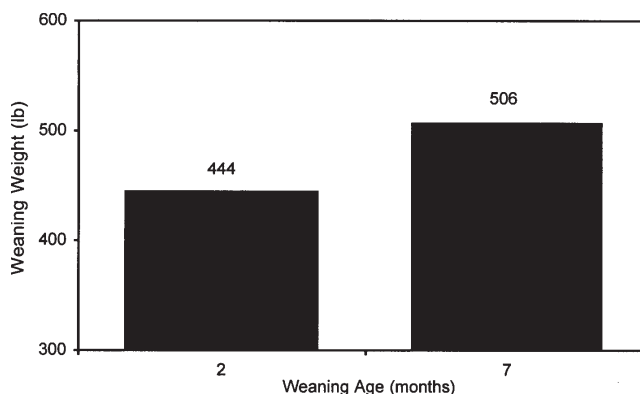
### Weaning 30 to 90 Days Earlier than Normal

Reproductive performance may also be improved by weaning calves less than 90 days earlier than normal. For example, weaning calves in August or September when they would normally be weaned in October or November. This approach allows the cows to gain extra weight before winter. In turn, cows are in better body condition on the normal weaning date, and the need for supplemental feeding to maintain adequate body condition at calving is reduced. Figure 3 illustrates the impact of weaning calves 60 days early on cow body weight. In this study, cows whose calves were weaned in August weighed 40 pounds (about half a body condition score) more the following February than cows whose calves were weaned at the normal October date.

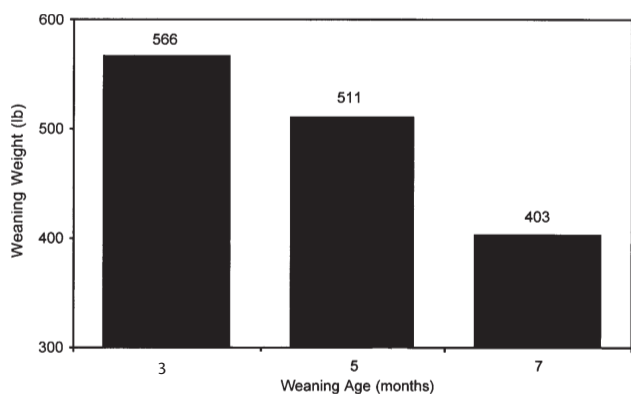
By weaning early, but after the breeding season, improved reproductive performance resulting from increased body condition at calving is not realized until the following breeding season. Therefore, the monetary benefits are a reduction in winter feed cost and increasing the weaning rate and calf weaning weight two years after early weaning is implemented.



**Figure 3. Influence of weaning calves 60 days early on cow body weight (Story et al., 2000)**



**Figure 4. Difference in weaning weight on the normal weaning date (October 10) for calves weaned at 2 months of age managed on pasture versus calves weaned at 7 months of age (Purvis et al., 1995)**



**Figure 5. Difference in calf weights on the normal weaning date for calves weaned at 3 and 5 months of age and placed in a feedlot versus calves normally weaned at 7 months of age (Myers et al., 1999)**

If the calves are weaned early to reduce forage needs by the herd, then the calves need to be removed from the ranch. It is generally less expensive to grow calves on grass than feeding them in a feedlot; however, calf gain on pastures is usually lower as well. Figure 4 illustrates difference in weaning weight on the normal fall weaning date for early weaned calves managed on pasture versus calves weaned at 210 days of age. Early weaned calves were weaned at 65 days of age and grazed native range pasture and fed 2.5 pounds per day of a 25% protein pellet. The early weaned calves weighed 62 pounds less than calves weaned at 210 days of age.

On the other hand, early weaned calves fed in a feedlot will usually weigh more on the normal weaning date, especially if they are weaned more than 90 days early. Figure 5 shows the difference in calf weights on the normal weaning date for calves weaned at three or five months of age and placed on feed in a feedlot compared to calves that remained with their mothers until the normal weaning date. Rate of gain for early weaned calves placed in a feedlot can be programmed to most cost-effectively take advantage of feed commodity prices and market seasonality. It is also important to note that early weaned calves often have improved feed efficiency when placed on feed and finished immediately after weaning, but usually have lighter carcasses when harvested.

### Options for Early Weaned Calves

Producers have several options for managing early weaned calves. The strategy chosen depends upon the availability of alternative resources and the reason that early weaning was implemented. Some options are:

- Place calves on another owned pasture
- Sell the calves immediately
- Growing calves on lease pasture
- Growing calves in a feedlot
- Finishing calves in a feedlot

## Conclusion

Early weaning is a management tool that producers can use to balance the forage needs of the cow-calf enterprise and avoid overgrazing, while reducing supplemental feed costs and the need for herd liquidation. At the same time, early weaning reduces nutrient requirements of the cows and enables them to recover body weight more easily. The additional weight gain achieved by early weaning shortens the postpartum interval and can improve pregnancy rate among cows that are otherwise nutritionally stressed. It can be difficult to justify implementing a management practice that reduces income in the short-term; however, overuse of forage resources, an extended calving season, and/or rebuilding a liquidated cowherd may have greater long-term financial consequences.

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