

Weaning is one of the most stressful events in a calf's life. Two primary stressors affect calves at weaning: social separation from their mothers and moving to a new environment where they must develop new feeding and watering skills and habituate to new surroundings. Management practices that minimize stress by making this transition less abrupt can improve calf health and weight gain. Facilities, labor, and feed resources should be considered when deciding which weaning protocol is most likely to minimize stress on calves while still preparing them for the next stage of production.

SOCIAL TRANSITION

Prior to weaning, calves rely on their mothers as a source of food and social direction. At weaning calves must transition into a new social structure within a group of their peers. That transition can be a major source of stress.

California researchers conducted a three-year study that compared behavior and post-weaning performance of calves that were 1) not weaned, 2) fenceline weaned, 3) abruptly weaned on pasture, 4) abruptly weaned in a drylot without being preconditioned to hay, or 5) abruptly weaned in a drylot after being preconditioned to hay. Calves in the fenceline-weaned treatment were allowed nose-to-nose contact with their dams for seven days, but were prevented from nursing by a separating fence. Results of the study indicated that, aside from vocalization, fenceline-weaned calves exhibited similar behavior to non-weaned control calves, and the fenceline-weaned calves spent more time eating than did calves weaned according to other methods (Table 1). Seven days after weaning, all calves in the study were managed together. Fenceline-weaned calves gained at least 50% more weight during the first two weeks after weaning than calves weaned according to the other methods, and retained the weight advantage through at least 10 weeks post-weaning.

In the Southwest, fenceline weaning is not practical on all ranches. However, some ranches have employed this

low-stress weaning approach successfully. In 2006 and 2007, beef calves at the NMSU Corona Range Livestock Research Center were fenceline weaned for seven days. Other than the challenges associated with keeping cows and calves separated by marginal fencing, the NMSU fenceline weaning experience was positive. During both years, calves gained weight during the seven-day fenceline weaning period (Table 2), and outward signs of stress were minimal.

Allowing fenceline contact between calves and their dams for four to seven days after weaning can lessen stress and minimize post-weaning performance decline. However, it may not always be possible to fenceline wean calves. In situations where fenceline weaning is impossible or impractical, cost-effectively minimizing stress is still important.

ENVIRONMENTAL TRANSITION

Whether fenceline weaned or weaned by traditional methods, most calves are eventually transitioned from pasture forage to the textures, consistencies, and flavors of grain-based rations, and are adapted to feeding from a bunk and drinking from troughs. At the same time, calves must habituate to sounds and sights of tractors, feeders, and humans. In addition to the nutritional challenges of dietary change, the new environment can cause a great deal of stress to calves.

The two key elements of environmental transition are acclimatizing calves to a new water source and training them to eat from a feed bunk. When introduced to a new environment, newly weaned calves tend to spend a significant proportion of their time walking the perimeter of the pen or pasture, exploring its limits and searching for their dams. When calves are weaned into a small trap or drylot, managers can capitalize on this tendency by placing feed and water troughs along the fence to decrease unnecessary energy use by perimeter walking. If calves are weaned into a large pasture, it is recommended that, where it is practical, water and feed

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Table 1. Average percentage of observations in which calves exhibited various behaviors on days 1 through 3 and average cumulative weight gain at 2 and 10 weeks post weaning¹

Variable	Pasture Control	Pasture Weaned		Drylot Weaned	
	Not Weaned	Fenceline contact	No contact	Preconditioned to hay	Not preconditioned to hay
Eating, %	41 ^a	37 ^a	24 ^{bc}	29 ^b	22 ^c
Walking, %	9 ^a	10 ^{ab}	28 ^c	10 ^{ab}	15 ^b
Lying down, %	23 ^a	23 ^a	16 ^b	22 ^a	21 ^{ab}
Vocalizations/hr	0.1 ^a	216.7 ^b	434.6 ^c	371.2 ^{bc}	518.2 ^c
Gain—2 wks, lb	44 ^a	47 ^a	30 ^b	23 ^b	20 ^b
Gain—10 wks, lb	143 ^a	110 ^b	91 ^c	79 ^c	82 ^c

^{abc} Means with different superscripts within rows differ P<0.05

¹ Price, E. O., J. E. Harris, R. E. Borgwardt, M. L. Sween, J. M. Connor. 2003. Fenceline contact of beef calves with their dams at weaning reduces the negative effects of separation on behavior and growth rate. *J. Anim. Sci.* 81:116-121

Table 2. Performance of fenceline-weaned calves at the NMSU Corona Range Livestock Research Center

Year	Weaning Wt. (lb)	7-Day Post-Weaning Wt. (lb)	Difference
2006	468	484	16
2007	520	524	4

likewise be placed along a perimeter fence to increase the likelihood of calves finding feed and water within the first few hours in the new pasture.

SUMMARY

Weaning is a physically and psychologically stressful time in a calf's life. Although it is impossible to completely avoid calf stress at weaning, producers can minimize weaning stress on the calf. When developing a low-stress weaning program, producers are encouraged to consider the following practices.

Tips to Minimize Stress from Weaning

- Provide calves access to the weaning area (pen, trap, or pasture) a few weeks prior to weaning so calves do not undergo the stress of environment change at weaning. At weaning, move the cows to a new location when cows and calves are separated at weaning. Do not move the calves.
- Allow fenceline contact between calf and dam for four to seven days following weaning. Fences should be sturdy and allow nose-to-nose contact while preventing nursing.
- If fenceline contact is not practical, move cows far enough away that they cannot hear the calves vocalizing.
- If weaning in a drylot or corral, place feed bunks, hay, and water troughs along the fence to minimize perimeter walking and increase encounters with feed and water.
- Placing large water troughs inside the pen and letting water troughs overflow slightly may attract calves to the water and help calves that are accustomed to drinking from live water sources adjust to troughs and to the sounds that occur when the float is activated.
- Do not add unnecessary stress by castrating, dehorning, or branding calves at weaning. These practices should be completed at least three weeks before weaning and preferably prior to three months of age.

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