

# Management, Health, and Nutritional Considerations for Weaning Calves

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Weaning can be stressful for calves. This NebGuide discusses methods of separation, diet, and disease prevention.

Weaning can be a stressful time for calves that can lead to acute illness. Reducing separation and handling stress, providing proper nutrition, and preconditioning against disease can improve calf performance into the growing and finishing period.

## Methods of Separation

Separating calves from their dams causes behavioral changes and stress. Vocalization, walking fences, and reduced intake all can result in reduced performance and health concerns. Producers should choose the separation method that works best for their operation while taking precautions to maintain performance and reduce illness.

**Traditional Weaning** — Traditional weaning is defined as permanently separating cows and calves abruptly. Calves may be removed from the ranch, or confined to a dry lot or a small pasture while the cows are taken away from the immediate area. Traditional weaning results in vocalization and fence walking, which can last up to three days.

**Fenceline Weaning** — Fenceline weaning (placing cows and calves on opposite sides of a fence) has been shown to result in fewer vocalizations, less fence walking, and more weight gain postweaning compared with traditional weaning. When fenceline weaning, consider using a tight, four- or five-strand barbwire fence, reinforced with woven wire or electric fence. However, successful fenceline weaning also has been accomplished with two strands of electric fence. One key to successful fenceline weaning is ensuring the adjacent pastures share a fence long enough for the cows and calves to spread out and maintain relatively close physical proximity. After about five to seven days, the calves can be moved to a new pasture or transported to a feedlot. Fenceline weaning is

best accomplished by removing cows from the pasture that the pairs were occupying, rather than moving the calves to a new pasture. This is because the calves are accustomed to the watering location and feeding facilities. Introducing pairs into the weaning pasture about one week prior to weaning is sufficient for calves to become familiar with the pasture. If calves are going to be supplemented, consider supplementing the pairs three days a week beginning about three weeks before weaning. This will teach the calves to eat supplement and familiarize them with the supplement truck.

**Two-step Weaning** — At the time of preconditioning, a plastic nose piece (sometimes called a “weaner”) is placed in the calf’s nose. The weaner allows the calf to graze and drink water, but prevents nursing (Step 1). Calves are then returned to the cows for 10 to 14 days. After the calves wear the plastic nose piece, they and the cows are permanently separated (Step 2). Research has shown this method decreases vocalization and fence walking by cows and calves. At the time of dam and calf separation, calves and cows can be handled as described in the “traditional” weaning method. Effects on weight gain have been variable.

## Nutrition

Nutrition is a key element in the weight gain and immune response of weaned calves. Milk is rich in energy, protein, vitamins, and minerals, and needs to be replaced with high quality forage and possibly supplement to maintain preweaning nutrient intake. Fortifying the pre and postweaning diet with vitamins and minerals can contribute to improved immune function and reduced postweaning sickness. Unlimited access to fresh, clean water is essential for weaned calves. If the postweaning water source is unfamiliar, make accommodations to familiarize the calves. Allowing the water source to overflow for a brief time may help calves find the water.

**Weaning on Grass** — If calves are allowed to continue grazing after weaning, consider the nutrient content of the forage. Nutrient content declines in native range in the fall.

**Table I. Dry lot diets to adapt calves to feed over 14 days.**

Weaning Adaptation Diets	Day 1-3		Day 4-8		Day 9-14	
	% DM	% actual feed	% DM	% actual feed	% DM	% actual feed
Grass Hay	100	100	90	83.5	80	65
Corn	0	0	5	4.5	5	4
Wet Distillers Grains	0	0	5	12	15	31
Crude Protein	10		11		13	
NEg Mcal/lb	0.26		0.32		0.38	
TDN	55		61		68	
Actual lb feed/hd/d		14.6		15.9		18.1

Weaned calves grazing native range in the fall may require supplemental feed depending on the targeted weight gain. The appropriate weight gain postweaning depends on management objectives for the calves. Introducing calves to the supplement before weaning allows them to become familiar with the supplement and decreases the time required to achieve desired intake of the supplement postweaning.

**Weaning in Dry Lot** — Calves moving from grazing to a dry lot for weaning must learn to eat from a bunk. Bunk space needs to be adequate (1.5 - 2 ft/head) for the number of calves being weaned. Adding fill dirt around bunks and water may be necessary to ensure small calves can reach water and feed. Reduced intake typically results in poor weight gain and depressed immune function. Therefore, maintaining feed intake is crucial. Feeding long stem, high quality grass hay the first two or three days postweaning works well to start calves on feed. It is familiar to them and the large particle size helps maintain rumen function. After two or three days, begin adding some energy feeds to the diet. The diet can be delivered as a total mixed ration or the energy feed can be top-dressed on the hay. Fermented feeds such as silage should be avoided until calves are eating well because it is not highly palatable to them. Additionally, energy is important but energy sources high in starch such as corn should be limited to 50 percent or less of the dietary dry matter. *Table I* contains example dry lot diets to adapt calves to feed over 14 days. These diets assume 500 pound calves eating 13 pounds of dry matter (DM)/d and gaining 1.5 lb/d by day 14.

**Weaning Early** — Traditionally, calves are weaned between 180-240 days of age. However, early weaning (100-150 days) may be considered to improve cow body condition or improve pasture conditions during forage shortage. Providing palatable, familiar, nutrient-dense feed and a familiar, accessible water source as well as employing a solid health management program is critically important.

### Health Management

Respiratory disease (BRD) is the most common cause of sickness and death in weaned calves. Preparing a calf's immune system is a very important key to preventing BRD and preparing the mother's immune system is an essential first step. Ideally, all replacement heifers are immunized for

IBR, BVD, PI3, and BRSV<sup>1</sup> using a high quality modified live virus (MLV) vaccine before they enter the breeding herd. It is best if two doses are given not less than 21 days apart. An additional booster may be considered one to two months before breeding. Also, all replacement heifers and other cattle entering the herd should be tested for BVD persistent carrier status. A yearly booster for all cows will help improve BRD colostrum antibodies and decrease the likelihood of low levels of BRD virus infections moving around within the herd.

The calves' vaccination program, including BRD vaccines and clostridial (blackleg) diseases, should start when they are two to three months of age. They will have a proper immune response to the BRD MLV vaccines, and at this time the bulls have not been turned in with their mothers so vaccine issues and cow pregnancy is not a concern. The high quality BRD MLV vaccine should contain IBR, BVD, PI3, and BRSV.

Additionally, bacterial BRD vaccines can be considered. *Pasteurella multocida*, a bacterial BRD pathogen, is commonly isolated from suckling calves with "Summer Pneumonia." A BRD vaccine that includes antigens against *Pasteurella multocida* may be useful. *Mannheimia hemolytica* is another bacteria associated with BRD. Research indicates some of the newer vaccines can provide a measure of protection against this BRD pathogen. Research to date has not shown a positive response to the use of *Histophilus somni* (*Hemophilus somnus*) or *Mycoplasma specie* vaccines.

Prewaning vaccinations should be targeted for four to eight weeks prior to weaning. These should include a four-way BRD viral (IBR, BVD, PI3, and BRSV), BRD bacterial (at least *Mannheimia hemolytica*), and clostridial (blackleg) vaccines. **Many BRD MLV vaccines carry a warning against use in calves nursing pregnant cows.** It is important to visit with your veterinarian about proper selection of the type of BRD vaccine used in your calves' preweaning.

Weaning health procedures should include giving a high quality BRD MLV vaccine that contains antigens against IBR, BVD, PI3, and BRSV. Clostridial vaccines, if given when calves are castrated and dehorned at two to four months of age **and** at preweaning, may not be needed at weaning. *Tables II and III* provide information about vaccines and how to handle them. Visit with your veterinarian about proper selection of a dewormer that meets the needs of your calves.

<sup>1</sup>IBR (Infectious Bovine Rhinotracheitis), BVD (Bovine Virus Diarrhea), PI3 (Parainfluenza 3), BRSV (Bovine Respiratory Syncytial Virus).

**Table II. Vaccinations.**

Timing	Vaccines to consider	Notes
<b>Branding</b> (2 to 3 months of age)	IBR, BVD, PI3, BRSV <sup>1</sup> Clostridials <sup>2</sup> Mannheimia and Pasteurella <sup>3</sup>	MLV (modified live virus) vaccines may be used if cows are not pregnant.
<b>Preweaning</b> (4 to 8 weeks prior to weaning)	IBR, BVD, PI3, BRSV <sup>1</sup> Clostridials <sup>2</sup> Mannheimia <sup>3</sup>	Killed IBR and BVD vaccines should be used if nursing cows are pregnant and not considered immune from IBR and BVD infections — visit with your veterinarian.
<b>Weaning</b> <sup>4</sup>	IBR, BVD, PI3, BRSV <sup>1</sup> Clostridials <sup>2</sup> Mannheimia <sup>3</sup>	Clostridials and Mannheimia not needed if calves received doses at both branding and preweaning.

<sup>1</sup>IBR (Infectious Bovine Rhinotracheitis), BVD (Bovine Virus Diarrhea), PI3 (Parainfluenza 3), BRSV (Bovine Respiratory Syncytial Virus)

- The label on the MLV (modified live virus) forms of the IBR and BVD vaccines recommend not using in calves nursing pregnant cows.

<sup>2</sup>Clostridials (*Clostridium chauvoei*, *Clostridium septicum*, *Clostridium sordelli*, *Clostridium perfringens type C and D*, *Clostridium novyi*, *Clostridium haemolyticum*, and *Clostridium tetani*)

- Commonly referred to as either two-way, four-way, or seven-way “blackleg vaccines”

- As noted on the label, it is best to booster these vaccines.

<sup>3</sup>Mannheimia and Pasteurella (*Mannheimia hemolytica* and *Pasteurella multocida*)

- As noted on the label, it is best to booster these vaccines.

<sup>4</sup>Control parasites — select products appropriate to the needs of the calves (visit with your veterinarian)

**Table III. Vaccine handling.**

<ul style="list-style-type: none"> <li>• Purchase high quality vaccines.                             <ul style="list-style-type: none"> <li>– Generic and private label vaccines are not recommended.</li> <li>– Record and save all vaccine serial numbers and expiration dates.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• Keep <b>all</b> vaccines cool.                             <ul style="list-style-type: none"> <li>– Store vaccines in a refrigerator between 36° and 45° Fahrenheit (F).</li> <li>– Keep vaccine cool and out of the sunlight (UV radiation kills MLV vaccine).</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• Heat-sterilize syringes and reusable needles — <b>never</b> use disinfectants or soap on the internal working parts of syringes used to give vaccines.                             <ul style="list-style-type: none"> <li>– Repeatedly rinsing vaccine syringes in very hot (greater than 180°F) water is sufficient to disinfect vaccine syringes. Let the syringes cool before administering vaccines.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• Select and use vaccines that can be given subcutaneously (SQ).                             <ul style="list-style-type: none"> <li>– All injections should be given SQ ahead of the shoulder slope (neck region).</li> <li>– Vaccine needles should be between ½ to ¾ inches long. Best gauge is 18, and never larger than 16.</li> <li>– Biosecurity in some herds requires needles to be changed between each animal’s vaccination. For most calf vaccinations, changing needles between each dozen animals is sufficient unless the needle becomes damaged or contaminated. Calves should not be vaccinated with damaged or contaminated needles.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• Keep records for all vaccines used.                             <ul style="list-style-type: none"> <li>– Record the date, vaccine(s) used, herd identification, and person(s) administering the vaccine.</li> <li>– Keep vaccination records for at least two years.</li> </ul> </li> </ul>

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