

Management, Health, and Nutritional Considerations for Weaning Calves

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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 feed intake can all 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 3 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 to traditional weaning of calves. If fences are not strong enough to hold both cows and

calves, fenceline weaning is not very successful and is very frustrating to producers. When fenceline weaning, consider using a tight, 4–5 strand barbwire fence, reinforced with woven wire or electric fence. Metal panel fences in corrals also work well, however another key to successful fenceline weaning is ensuring the adjacent pastures or pens share a fence long enough for the cows and calves to spread out and maintain relatively close physical proximity. After about 5–7 days, the calves can be moved to a new pasture or transported to a feedlot. Introducing calves to feed bunks and the water source before separation helps them adapt quickly. If calves are going to be supplemented, consider supplementing the pairs three days a week beginning about three weeks before weaning. If pairs are being fed a total mixed ration in a bunk prior to weaning, producers will want to allow 2 feet of linear bunk space per cow and 1 foot per calf. When calves learn to eat from the bunk with their mothers, they become more familiar with consuming a total mixed ration or supplement and it will familiarize them with the feed truck.

Two-step weaning

At the time of preconditioning, a plastic nose piece (sometimes called a “weaner”) is placed in the calf’s nose which allows the calf to graze and drink water, but prevents nursing (step 1). Calves are then returned to the cows for 10–14 days. After 10 to 14 days of wearing the plastic nose piece, calves and cows are permanently separated (step 2). Research has shown this method decreases vocalization

and walking by cows and calves. At the time of dam and calf separation, calves and cows can be handled like that 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. Fortifying the pre- and post- weaning diet with vitamins and minerals can contribute to improved immune function and reduced post-weaning sickness. Unlimited access to fresh, clean water is essential for weaned calves. If the post weaning water source is unfamiliar to the calves, make accommodations to familiarize the calves. Allowing the water source to overflow for a brief time may help calves find the water.

Weaning on dormant range

Although the calf has been eating 1–1.5% BW (on a dry matter basis) in forage or feed, the rumen is small. Low quality hay or forage moves slowly through the digestive tract and does not provide a lot of nutrition. If calves continue grazing after weaning, consider the nutrient content of the forage. Native range in the fall is in a state of declining nutrient content. Weaned calves grazing native range in the fall may require supplemental feed depending on the targeted weight gain. The appropriate weight gain post-weaning depends on management objectives for the calves. Introducing calves to the supplement before weaning will allow the calves to become familiar with the supplement and decreases the time required to achieve desired intake of the supplement post-weaning.

Weaning on annual forages

Annual forages can be more nutrient dense than dormant native range and can provide a high quality diet for weaned calves. Grazing cool season annuals, such as oats or oat-brassica mixes have resulted in 1–2 lb/d gain in weaned calves. However, since most cropping fields do not have strong perimeter fences, weaning calves for 5–7 days elsewhere, prior to turn out on annual forages may be a better option than weaning on the fields.

Weaning in dry lot

Calves moving from grazing to dry lot for weaning must learn to eat from a bunk. Bunk space needs to be

adequate (1–1 1/2 ft/hd) for the number of calves being weaned. Adding fill dirt around bunks and water tanks 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 post-weaning, works well to start calves on feed, especially if calves were in a grazing situation prior to weaning. It is familiar to them and the large particle size helps maintain rumen function. After two or three days, begin adding supplemental protein and energy to the diet. The diet can be delivered as a total mixed ration or supplement can be top-dressed on the hay. Fermented feeds such as silage can be unpalatable if not familiar to the calves and should be introduced slowly after they are eating well. However, if they were eating silage in a total mixed ration with the cow prior to weaning, they will eat it well. Rumen undegradable protein (RUP), which is protein that escapes digestion by the microbes in the rumen and is available to the animal at the tissue level for structural and muscle growth, is important for the growing calf. Milk provides a good source of RUP, but has now been removed from the diet. Distillers grains, a by-product of the ethanol industry is a good source of both RUP and energy. The energy in distillers grains is from digestible fiber and oil in the corn germ and is therefore a good complement to a forage diet. Corn grain is another energy source, but is high in starch, and should be limited to 50% or less of the dietary dry matter to prevent digestive upset in the calf. The following table contains example dry lot diets to adapt calves to feed over 14 days. These diets assume 500 lb calves eating 13 lb 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 times of 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

Table 1. 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

Table 2. Vaccination Table

Timing	Vaccines to consider	Notes
Branding (2 to 3 months of age)	IBR, BVD, PI3, BRSV ¹ Clostridials ² Mannheimia & Pasteurella ³	MLV (modified live virus) vaccines may be used if cows are not pregnant.
Prewaning (4 to 8 weeks prior to weaning)	IBR, BVD, PI3, BRSV ¹ Clostridials ² Mannheimia ³	Killed IBR & BVD vaccines should be used if nursing cows are pregnant <i>and</i> not considered immune from IBR & BVD infections. Visit with the local consulting veterinarian.
Weaning ⁴	IBR, BVD, PI3, BRSV ¹ Clostridials ² Mannheimia ³	Vaccinations at this time point may not be needed if calves received doses at both branding and preweaning. Discuss with the local consulting veterinarian.

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

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

2. Clostridials (*Clostridium chauvoei*, *Clostridium septicum*, *Clostridium sordelli*, *Clostridium perfringens* type C & D, *Clostridium novyi*, *Clostridium haemolyticum* and *Clostridium tetani*)

2. Commonly referred to as either 2 way, 4 way or 7 way “blackleg vaccines”

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

3. Mannheimia & Pasteurella (*Mannheimia hemolytica* & *Pasteurella multocida*)

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

4. Control parasites—select products appropriate to the needs of the calves (visit with your veterinarian)

first step. It is best if all replacement heifers are immunized for IBR, BVD, PI3 and BRSV¹ 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 persistently infected (PI) carrier status. Yearly booster for BRD of all cows will help improve BRD colostrum antibodies and decrease the likelihood of a low level of the BRD virus infections moving around within the herd.

The calf’s vaccination program, including BRD vaccines and clostridial (blackleg) diseases, should start when calves 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 available 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* species Vaccines.

Timing for preweaning vaccinations should be targeted four to eight weeks prior to weaning. These should include a 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 will be important to visit with the consulting veterinarian about proper selec-

Table 3. Vaccine Handling Table

Purchase high quality vaccines

Generic and private label vaccines are not recommended.

Record and save all vaccine serial numbers and expiration dates.

Keep ALL vaccines cool

Store vaccines in a refrigerator between 36° and 45° Fahrenheit (F)

Keep vaccine cool and out of the sunlight (UV radiation kills MLV vaccine)

Heat-sterilize syringes and re-usable needles . . . NEVER use disinfectants or soap on the internal working parts of syringes used to give vaccines.

Repeatedly rinsing vaccine syringes in very hot (greater than 180 ° F) water is sufficient to disinfect vaccine syringes. Let the syringes cool before using to administer vaccines.

Select and Use Vaccines that can be given subcutaneously (SQ)

All injections should be given SQ ahead of the shoulder slope (neck region)

Vaccine needles should be between ½ to ¾ inches long and best gauge is 18 and never larger than 16.

Biosecurity in some herds requires needles to be changed between each animal vaccinated. For most calf vaccinations, changing needles between each dozen animal is sufficient unless the needle becomes damaged or contaminated. Calves should not be vaccinated with damaged or contaminated needles.

Keep records for all vaccines used

Record the date, vaccine(s) used, herd identification and person(s) administering the vaccine.

Keep vaccination records for at least two years.

tion of the type of BRD vaccine used in a given herd of calves preweaning.

Weaning health procedures may include giving a high quality BRD MLV vaccine that contains antigens against IBR, BVD, PI3 and BRSV. If MLV vaccines and clostridial vaccines were given when calves were castrated and dehorned at two to four months of age and at preweaning, these vaccinations may not need to be repeated at weaning.

Producers will want to visit with their veterinarian about whether to vaccinate at this timepoint and about proper selection of a dewormer that meets the needs of the calves.

NOTES

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