



# Cattle Producer's Handbook

Animal Health Section

651

## Preparing Calves for the Feedlot

*Jack C. Whittier and Tim Stanton, Colorado State University**Clell Bagley, Utah State University**James England, University of Idaho*

It has been shown that when poorly prepared calves are shipped to the feedlot they are nearly 20 times more likely to become ill compared to suitably managed and immunized calves. Specific preparation of calves for their feedlot experience is the best way to reduce the risk of a disease outbreak in the feedlot. When properly prepared, calves adapt quickly to feedlot rations, environmental stresses, and challenges to their immune system (e.g., infectious diseases).

In the cattle business, the extra costs avoided may be the only profit from your animals. For example, the average sick animal will shrink 10 to 20 percent and require 1 to 2 hours of labor. Information from the Rocky Mountain Ranch-to-Rail program indicates that one of the primary factors that impacts feedlot profitability is whether steers required treatment for health problems after being placed on feed. One time through the chute is considered equal to a 7-day feeding period. It is cheaper to prevent disease than to treat it.

For optimal reduction of feedlot disease risk, owners must direct their attention to the four areas that impact most on the calf's ability to perform and stay well. These include: (1) stress management, (2) resolving nutritional deficiencies (including minerals), (3) controlling parasite burdens, and (4) pre-immunization against feedlot diseases.

Economic return on investment should be taken into account. Failure to control all four areas of risk management will greatly increase the risk of disease and economic loss. For example, programs that rely on prevaccination alone and ignore nutritional deficiencies and/or stress management do not have the same economic and health benefits as programs that balance all four areas.

The cost of your program also must make economic sense for your operation. Some cow/calf units cannot effectively manage newly weaned calves. Arrangements should be made to move these calves into a backgrounding operation at weaning.

### Management to Reduce Stress and Optimize Immune Response<sup>1</sup>

The best programs are those that have the calves weaned and their immune systems well primed before shipping. Calves should be weaned at least 45 days before they are shipped. Studies have shown that at least 4 to 6 weeks may be needed to regain weight loss experienced at weaning time.

#### Management at Weaning

1. Calves should be eating some dry feed 2 to 4 weeks before weaning.
2. Vaccination procedures should be reviewed and implemented, if necessary. Specific suggestions follow.
3. Provide an adequate supply of fresh water.
4. Assess vitamin and mineral needs and resolve deficiencies.
5. Provide high-quality hay as the forage base.
6. Check feed and water consumption; both should increase during the weaning period.
7. **Dehorning and Castration**—The preferred time for these procedures is when calves are 1 to 3 months old. If that is not possible the next best time is 2 to 3 weeks before weaning.
8. Design rations targeting desired weight gains and cost of gain. Consult a nutritionist for best results.

#### Management at Marketing and Transportation

1. Calves should be weaned 4 to 6 weeks before shipment for expected recovery of weaning weight losses.
2. Avoid prolonged processing. It is crucial to get calves moving and delivered quickly.
3. Avoid crowding and bruising.
4. Avoid excessive working, sorting, etc.

<sup>1</sup>Recommended in a joint effort between the National Cattlemen's Beef Association and the American Association of Bovine Practitioners.

5. Avoid conditions of extreme dust or wetness.
6. Do not ship calves that have not been fed and watered.

#### Other Management Factors

1. Be sure the tractor exhaust stacks are tall enough for gasses to clear the trailer.
2. Avoid ammonia build up in yards or trucks (from excess urine, manure, or moisture). Ammonia causes irritation and contributes to respiratory disease.
3. Identify and segregate sick animals. Inspect new arrivals at least twice daily.
4. Start adequate treatment for sick calves promptly and continue for an effective period of time necessary for each case.
5. Avoid commingling of calves from different sources whenever possible. Consider placing mixed calves in a lower stress environment for a period of accommodation.

### Nutrition to Reduce Stress and Optimize Immune Response

Poor and/or inadequate nutrition interfere with optimum immune response. Pre-shipment diets need to contain adequate levels of energy, protein, and the essential vitamins and minerals. In addition, calves should be acquainted with feedbunks and water troughs to minimize stresses in transition to the feedlot environment.

It is also beneficial for calves to have access to rations that are similar to those they will receive after arrival. Weaned calves, already started on feed, adjust more readily to shipping stresses and adapt to the feedlot with less shrink, thereby reducing the overall risk for disease.

#### Nutritional Management

1. Offer a ration balanced for energy, protein, minerals, and vitamins. Be sure the diet meets the needs of weaned calves, especially for vitamins and minerals that may affect the immune system.
2. Provide fresh, clean water, preferably in a trough, so calves will be acquainted with this source of water.
3. Feed calves in a bunk to minimize feed contamination and assist adaptation to bunk feeding.
4. Observe each calf twice or more daily. Those calves not eating or drinking may need individual attention or treatment.
5. Calves will usually shrink 3 to 5 percent because of weaning but will gain 30 to 50 pounds during a 30-day feeding period if ration is adequate.

### Parasite Control to Enhance Immune Response

Parasite burdens can affect performance as well as reduce the immune system's ability to respond ad-

equately. Monitoring and controlling parasites close to weaning time are important for any good calf preparation program.

1. **External Parasites**—Lice, ticks, and grubs can be controlled by application of labeled insecticide as a spray, dip, or pour on.
2. **Internal Parasites**—Since the need for deworming cattle varies between areas, check with your veterinarian for the need and appropriate product to control internal parasites.

### Immunization Against Specific Feedlot Diseases

The fourth area to address is proper vaccination and immunization before shipment. Personal experience and trial data demonstrate that pre-shipment programs that emphasize vaccination without addressing other areas of potential impact are not as successful in feedlot performance as those that balance immunization with nutrition, parasite control, and stress management.

Meeting all the nutritional needs of calves, parasite control, and managing stress are three of the four equally important areas that require attention in a calf preparation program. Calves not completely immunized against the respiratory viruses before shipment are three times more likely to experience pneumonia than calves that are completely immunized before shipment.

### Example Immunization Programs

**Disclaimer:** The following are examples of immunization programs that have trial-proven effectiveness only for calves prepared as described. Evidence for success with other variations is inconclusive. No one immunization program will fit all situations, therefore, a variety of trial-proven products and their uses are shown here. The described protocols may be used to fit individual situations. *NOTE: Give all injectable products in the neck area.*

**Young Calves (1 to 3 Months of Age)**—If the cow herd has been given annual boosters, immunization may need to be delayed until colostral antibody levels will no longer interfere with the vaccine induced immune response (usually 4 to 6 months).

**Respiratory Vaccines: IBR/PI<sub>3</sub>**—Use temperature sensitive modified-live vaccine intranasally (IN), a chemically altered vaccine, or two doses, properly spaced in time, of a killed vaccine. BVD, BRSV, Pasteurella species, or *Haemophilus somnus* also may be recommended at this time in some areas. Check with a veterinarian for vaccine recommendations.

**Clostridia Species Vaccines**—Ask a veterinarian about clostridial vaccines best suited for your area. Administer the vaccine by subcutaneous (Sub-Q) injection.

**Other Vaccines**—Leptospira species vaccines may be recommended in some areas so check with your veterinarian for vaccine recommendations.

*NOTE:* Immune response to vaccines given at 1 to 3 months of age may be completely or partially blocked by colostral antibodies circulating in the calf at the time of vaccination. In all cases calves vaccinated at this age will need to have booster doses of vaccine for optimal protection in the feedlot. Vaccination at this time should not substitute for pre-weaning or later vaccinations.

### **Older Calves (3 to 6 Weeks Before Weaning)**

Shortly before weaning (3 to 6 weeks) is considered an ideal time to use vaccines to prime the immune system for the feedlot disease challenge. All calves should receive an initial and a booster dose of vaccines for optimal protection.

If begun early enough, depending on vaccine choices, both initial and booster vaccine doses may be administered within 6 weeks of weaning. Consult with your local and/or your feedlot veterinarians for their recommendations for the most protective vaccine products and when to use them.

### **Respiratory Vaccines: IBR/PI<sub>3</sub>, BVD, and BRSV—**

Use chemically altered or killed vaccine, or use a temperature sensitive modified-live IBR/PI<sub>3</sub> vaccine. Most modified-live IBR/PI<sub>3</sub>/BVD vaccines are not approved for calves running with pregnant dams. However, some MLV products have now been approved for use on these calves, with specific guidelines.

Pasteurella species or *Haemophilus somnus* bacterins may be recommended in some areas. Adverse reactions have been reported with the use of certain combinations of killed antigen products (especially the gram-negative bacterins) both at the time of initial vaccination and after boosting doses have been given. Check with your veterinarian for current vaccine recommendations.

**Other Vaccines**—See comments under young calves for clostridial and potential leptospira vaccination recommendations.

**Other Procedures**—Implant with growth stimulants (except those heifers to be kept for replacements). Castration and dehorning performed before weaning will remove that stress experience after weaning. Vitamin A injections may be recommended in some situations.

### **Calves at Weaning Time**

1. If original and boosting doses have been given using products of known effectiveness, no additional immunization may be needed at weaning for feedlot disease protection. However, Brucella vaccination for potential replacement heifers may be administered at this time, if needed, since some states have an age restriction of less than 10 months. Check with your veterinarian for age restrictions.
2. If the first (priming) doses have been given, give booster doses as recommended by your veterinarian.
3. For calves not previously vaccinated, the following scheme is presented for consideration. Keep in mind that any process is stressful on the calves and may lead to lowered gain and feed efficiency during the post-weaning period.

*NOTE:* This one-time vaccination scheme, which includes Brucella vaccine at the same time, is believed to inhibit overall immune response.

**At Weaning**—(1) IBR/PI<sub>3</sub>, BVD, and BRSV modified-live or other type vaccine according to label; (2) clostridial bacterin; and (3) other selected vaccines.

**14 to 21 Days Later (if calves are eating and doing well)**—(1) BVD and/or BRSV booster if required (Be certain to use the same product for the booster that you used for the initial dose); (2) booster doses for clostridial and other bacterins given at weaning; and (3) brucella vaccinate the heifers if required (*NOTE:* Potential adverse reactions mentioned previously).

If these procedures or products do not fit with your management, consult with your veterinarian and develop a program specific for your operation.

*NOTE:* Immunizing calves with killed IBR/PI<sub>3</sub>/BVD/BRSV vaccine has demonstrated efficacy only when calves have been prepared as has been described.

### **Product Disclaimer**

Read and follow label directions on any product used. Be sure to administer all injection products in compliance with quality assurance standards (e.g., intramuscular injections should be given in the neck area). A veterinarian should be consulted when selecting the type of vaccine to be used.

