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*Field-tested ways to improve
beef calf survival and growth*

Management of Neonatal Beef Calves

Calf losses at birth and during the first few weeks of life are often caused by diseases, death and poor growth performance. Calf losses remain a major problem in many beef cow/calf herds. Field observations suggest that good herd management may help prevent these calf losses. An Idaho Total Beef Program field research and demonstration project, conducted in a five-county area in southeastern Idaho, identified clinical and management practices during and after birth that may be directly or indirectly important in determining the survival and growth performance of neonatal calves.

This publication summarizes findings and recommendations based on observations made of the calves during the field research and demonstration project.

Birth Date, Breed, Sex and Identification

A complete beef cow/calf herd record system must include information about the birth date, breed, sex and ear tag numbers identifying all calves. This information is important because it provides part of the basis for making short- and long-term health, breeding and feeding management decisions for the herd.

Weighing Calves

Body weights should be recorded for all calves at birth, at 1 month of age and at weaning. Hanging scales, suitable for use on young calves, are commercially available. These scales should be placed conveniently near the calving area and should be calibrated to assure accuracy. The information gained from weighing calves is important because it provides a direct measure of the success of the feeding and breeding programs for these animals. In addition, obtaining weight data helps to identify calves that are unthrifty and that require special attention because they suffer from the effects of poor nutrition or disease.

Body Temperature

Producers should measure and record the rectal temperatures of all calves at birth. They should also record the rectal temperatures of a representative number of calves once a day for the first 3 days of life. Mercury or electronic

digital thermometers are commercially available and are rapid and convenient to use. Rectal temperatures of normal beef calves range between 99.8°F and 102.5°F. Neither breed nor sex of the calves nor age of the respective dams has a significant effect on the normal rectal temperatures of calves.

Elevated rectal temperatures (103.0°F or greater) are routinely observed in calves that are sick because of infection caused by disease-producing organisms. Elevated rectal temperatures often give producers the earliest sign that a problem exists, before other clinical signs of disease become apparent. Measuring rectal temperatures of calves allows early detection and treatment of diseases. Early detection and treatment of illness in calves will assure a prompt response and recovery from most diseases.

Vigor and Suckling Activities

Vigor and suckling activities provide direct evidence of the health status of young calves. Calves should be observed one or more times each day to evaluate their vigor, behavior, responses to surroundings and their interest in maintaining a close physical relationship with their dams. Special attention should also be given to the suckling activities of calves to observe how aggressive they are while suckling and how satisfied they appear after a feeding.

Ranchers should develop a numerical scoring system to evaluate the observed vigor of calves. For example, a score of "3" might indicate aggressive behavior and a thrifty appearance; "2" would indicate passive behavior and physical weakness, and "1" would indicate severe physical weakness and depression. Similarly, a numerical scoring system should be developed to evaluate suckling activities. For example, a score of "3" might indicate normal suckling behavior; "2" would indicate that the calf was hand suckled, and "1" would indicate that the calf was fed with an esophageal tube feeder. Vigor and suckling scores of healthy beef calves are generally high, regardless of the age or sex of the animals or the age of the dams. In

contrast, the vigor and suckling scores of sick calves are usually low and are a direct reflection of the effects of disease on these animals.

Age at First Suckling

Close attention must be given to the age when newborn beef calves suckle for the first time. This information is important because calves are able to absorb from their intestines most of the protective immunoglobulins found in colostrum for only the first 24 to 36 hours of life. After this time, the immunoglobulins remain in the intestine and are denatured by digestive enzymes. Another important reason that beef calves should suckle at the earliest possible age is because of the rapid decrease in concentration of total immunoglobulins in the colostrum from cows after calving. For example, by 12 hours after calving, the total immunoglobulin concentration in colostrum decreases from about 98.0 milligrams/milliliter (mg/ml) to 28.0 mg/ml, a 73 percent decrease. By 24 to 36 hours after calving, the total immunoglobulin concentration of colostrum is only about 17.0 mg/ml, an 83 percent decrease.

Most beef calves suckle unassisted for the first time at a remarkably young age. About 50 percent of beef calves suckle unassisted for the first time by 2 hours of age and close to 90 percent of these animals suckle unassisted for the first time by 5 hours of age. Beef heifer and bull calves have no significant difference in age at first suckling (2.7 hours for each). Newborn calves from cows who are 3 to 5 years old may suckle for the first time at an earlier age than calves from cows who are 6 to 13 years of age (2.1 hours compared to 3.6 hours). The reason newborn calves from older-aged cows may suckle unassisted for the first time at a slightly older age may be due to larger-sized teats, low suspension and other conformational changes more commonly seen in the udders of these animals.

Based on these facts, we recommend that newborn beef calves suckle for the first time within the first hour after birth to assure the maximal passive immune protection by early intake of adequate amounts of colostrum. This recommendation requires that a person be available to help all newborn calves if they are unable to suckle on their own by 1 hour of age.

Passive Immune Status

Passive immune status refers to the amount of colostrum-derived immunoglobulins present in the blood of young calves. Generally, high concentrations of colostrum immunoglobulins in the blood of calves correspond to a high

level of protection against disease-producing organisms. A high level of passive immunity in calves is directly related to an early age at first suckling and the availability of superior quality colostrum.

Unfortunately, no visible signs indicate the passive immune status of calves. Instead, simple and rapid laboratory tests are used to estimate the total immunoglobulin concentration in the blood serum of calves. These tests include the sodium sulfite or zinc sulfate turbidity tests and the single radial immunodiffusion test. These tests are useful in cases where a calf, less than 24 hours of age, has not suckled or may have consumed inferior quality colostrum. In either case, we recommend that these animals be hand- or tube-fed from 0.5 to 1 gallon of supplemental, superior-quality colostrum.

Protective Shelters

Most beef calves reared under range conditions are exposed to severe environmental conditions including cold temperature, strong winds and excessive moisture such as snow, rain and surface water. Cold stress causes a variety of changes in young calves that can lead directly or indirectly to disease and death. Providing either natural or man-made protective shelters for beef calves has become a common management practice for many cow/calf producers. Small, portable shelters are especially useful because each one is designed to house a small number of calves, and they can easily be relocated onto fresh ground to avoid a build up of disease-producing organisms. Portable calf shelters bedded with straw help keep calves dry and protected from chilling winds.

Pocket Field Book

A pocket field book has been developed for beef cow/calf producers as part of the Idaho Total Beef Program. This book is designed so producers can easily record important health and management information about their herds during the year-long production cycle. Computer software programs are available to summarize part or all of the information entered in the books. The summary reports are used by the producer, veterinarian, feed and equipment suppliers and lending agencies to identify management changes that should be made to improve the production efficiency of the herd. All items discussed here involving calves can be included as part of the data base in the pocket field book. These pocket field books are available for a nominal charge from the Extension Agricultural Agent in your area.

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