Beef Herd Health Management

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In recent years there has been a growing awareness within the veterinary profession of the need for increased involvement of food animal veterinarians with the livestock industry. Many veterinarians feel they can make more significant contributions to the industry through increased cooperation in management and planning of preventive medicine programs.

Herd health management is a planned program of preventive medicine, nutrition and management coordinated to promote efficiency of production while improving quality and profit potential. It is not one specific program, but a program designed to fit the resources of a particular situation and can be as simple or as complex as the situation warrants. Preventive medicine, nutrition and management are highly interdependent and coordination of these areas must be accomplished by veterinarian, ranch manager and other professionals. The following outline presents areas to be considered in formulation of a herd health program for beef cattle.

I. Preventive Medicine
  A. General Herd Health
    1. Herd Examinations: Routine herd examination should be done at predetermined intervals to detect disease conditions or management deficiencies and should include examination of pastures and nutritional supplements.
    2. Individual Examinations: When disease does occur, an accurate diagnosis is essential before effective prophylactic measures can be employed. Serology should be used when indicated but results should be considered in the light of the clinical situation. Paired serum samples, drawn two weeks apart, greatly increase the reliability of results. Bacterial and viral isolation are often more meaningful than serological tests, although they require more time to obtain results. Toxicological tests are also very helpful and veterinarians should always be aware of possible plant and chemical toxins. A thorough post-mortem examination is indicated in every unexplained death. When gross lesions are not diagnostic, tissue specimens should be secured and referred to a laboratory for further examination.
    3. Vaccination Programs: Variations in vaccination programs are dictated by prevalence of disease, morbidity and mortality rates, market destination, working patterns and owner preference.

Vaccination for blackleg-malignant edema should be part of every program. This should be done when calves are three to five months old. In some herds calves may have to be vaccinated as early as one month of age because of the high prevalence of the disease, but should be revaccinated after three months of age for prolonged immunity. Consideration might be given to other available clostridial antigens (i.e., novyi, sordelli and perfringens types C & D). These have been known to cause severe problems in certain areas and the use of multivalent clostridial bacterins can be a worthwhile investment. Bacillary hemoglobinuria caused by Clostridium hemolyticum is more limited in geographic distribution but can cause death losses as high as 25% in endemic areas. Anthrax is perhaps the most dreaded livestock disease in this country. Occasional outbreaks do occur and annual vaccination in endemic areas is a must. Anaplasmosis vaccination is effective in eliminating clinical signs of the disease but does not prevent the carrier state. However, neonatal isoerythrolysis (N.I.) or yellow calf syndrome, an autoimmune reaction in newborn calves, has been identified as a side effect to vaccination in some herds. For this reason care should be used when prescribing vaccination..

Leptospirosis is especially important in cow herds because of its potential to cause abortion. With the increased isolation of the newer strains, consideration should be given to the multivalent products. Brucellosis is still a major cause of abortion in some states despite the eradication program. Vaccination is definitely recommended in these areas, but it should be accomplished before heifers reach puberty in order to avoid possible vaccine-induced infertility and undesirable brucella titers in cattle of testing age. In herds with a seemingly endless brucellosis problem, consideration should be given to blood-testing heifers prior to vaccination.

There are many single entity and multivalent vaccines available which are effective in controlling the respiratory virus group. The intranasal IBR-PI_3 product shows promise in preventing outbreaks in young stock and may be safely used in pregnant animals. Many intramuscular combinations are also available for BVD, IBR and PI_3 but are contraindicated in pregnant stock because of the potential for vaccine-induced abortion. Pasteurella and corynebacterium bacterins may help reduce the incidences of pneumonia in feeder calves.

    4. Parasite Control: Parasitism is a year-round problem and a herd health program would not be

complete without recommendations on control of both internal and external parasites.

Gastrointestinal parasites, lungworms, grubs, flies, ticks and mange mites cause reduced performance and often are vectors of disease. Grubs should no longer be a problem with many effective systemic grubcides on the market. Dust bags utilizing some of the organic-phosphate powders can be very effective in controlling flies, ticks and lice as can the more conventional sprays and backrubs. Healthy cattle and a high nutritional plane combined with good pasture management is the best and most economical method of controlling gastrointestinal worms. When chemical control is indicated, there are several effective drugs. Cattle can be treated by drench, bolus, feed supplement and injection. Don't use an organic phosphate wormer at the same time an organic phosphate grubcide is used. The effect will be cumulative with possible toxic results.

5. New Cattle Quarantine: Introduction of new animals into a herd should be done cautiously, especially if they have been purchased through sales or auction barns. Apparently healthy animals incubating disease can expose the entire herd if mixed immediately after purchase. A thirty-day period of isolation will pay dividends in disease control. This offers an excellent time to vaccinate, dehorn, worm and de-grub cattle. It is strongly recommended that cattle be tested for brucellosis at the end of the quarantine period, before being added to the herd, even though they were tested prior to purchase.

6. Preconditioning Program: A preconditioning program for feeder calves is highly desirable from a preventive medicine point of view and greatly enhances the opportunity for maximum economic returns by allowing the rancher to exercise his market options to the fullest extent. Market options include sale at weaning, sale as yearlings, custom feeding and sale as fat cattle or sale as bred two-year-olds (allowing capital gains treatment).

7. State-Federal Animal Health Programs: These should be administered as necessary, in the best interest of the ranch and the program. Consideration of "Brucellosis Free" herd status should be given for herds selling breeding stock.

B. Reproductive Herd Health

1. Breeding Programs: A limited breeding season is the most important management tool available. It promotes the most advantageous use of other management tools and breeding programs such as pregnancy diagnosis, production records and artificial insemination. It groups the calf crop so that all reach market weights at approximately the same time allowing preconditioning and direct sales to feedlots or custom feeding by the rancher. It also coordinates the herd nutritional plan, as all breeding cattle will have similar nutritional needs simultaneously.

Breeding heifers to calve as two-year-olds is an economically sound program. Increased nutritional demands and possibilities of dystocia require heifers be maintained separately where nutritional needs can be met from weaning to breeding and they can be closely observed during the calving season. Future reproductive performance can be improved by breeding more heifers than necessary for replacement, breeding earlier than the cow herd and selecting heifers bred early for addition to the herd.

2. Fertility Examinations: Pregnancy diagnosis in brood cows and breeding soundness examinations of herd bulls are of necessity the basis of a sound reproductive program. Pregnancy examinations as well as examination for bad udders, actinomycosis, cancer eye and bad teeth should be accomplished annually to cull the liabilities out of the herd. This is one of the most profitable management practices available, and should be accomplished 45 to 60 days after the bulls are pulled when pregnancy diagnosis by palpation can be done with a high degree of accuracy. Strict culling practices will keep health-related losses in the herd to a minimum.

Herd bulls should be examined annually for fertility and soundness 60 days prior to the breeding season. A five to ten percent infertility is not uncommon and testing early will allow time to replace any that must be culled. Fertility testing bulls should include examination of internal and external sex organs, measurement of scrotal circumference and microscopic examination of semen for concentration, motility and morphology. Occasionally, examination of a group of bulls will reveal a high percentage of sterile or marginally fertile bulls. In these cases the herd must be examined closely to find the reason. Overly fat bulls often have poor quality semen and groups of bulls fed for sale sometimes fall into this category. If maintained in a fat condition over a long period of time, permanent damage can be done to the testicles. Bulls in negative protein balance because of nutritional deficiency or heavy parasite infestation may produce poor quality semen. Mineral deficiencies, especially phosphorus and Vitamin A deficiency can also be a problem. It should be recognized that semen quality will naturally deteriorate when environmental temperature exceeds 90° F.

3. Breeding Ratio: The bull/cow ratio is dependent on several factors. Among these are the inherent fertility and age of the bull. The breeding potential of mature, potent bulls is often underestimated while that of young bulls is often exceeded. Two-year-old bulls have not reached their potential in sperm production and should not be overexposed their first season. Overly fat bulls often lack vigor and libido as well as semen quality. Bulls with structural defects of the feet and legs

should be culled as many of these bulls will not be active breeders. Length of breeding season and pasture terrain must also be taken into consideration when determining ratios. Quality bulls, performance-tested when possible, are a valuable addition to the herd and will be permanently reflected by their daughters and granddaughters kept as replacements.

4. Laboratory Testing for Reproductive Diseases: Serology can be performed on a representative sample of cows to monitor presence of reproductive diseases and should be performed on cows found open upon pregnancy check, cows that have aborted, or cows with retained placenta. Serology may include tests for brucellosis, vibriosis, leptospirosis, IBR, BVD and PI_3. It is also a good idea to routinely culture herd bull additions for vibrio and trich.

If abortion occurs, diagnosis of the cause is very important to herd health and is often a difficult task. Portions of the placenta and the aborted fetus should be submitted to a diagnostic laboratory for histopathology, culture and virus isolation. These along with a serum sample from the dam are the best diagnostic aids.

5. Pre-Breeding Examination: Records should be kept on all cows experiencing abnormal discharge, retained placenta or dystocia and these cows should be rectally and vaginally examined prior to the breeding season. Chronic infections of the reproductive tract are more apt to occur in cows experiencing these problems and will prevent conception.

II. Nutrition

Most veterinarians will agree that nutrition is the most deficient area in cow-calf operations. It is also the area which presents the greatest challenge to satisfy economically. World markets are overwhelming competition for grain and protein supplements, thus, forage must be the major ingredient of the ruminant diet.

A. Nutrition of the Cow Herd: There are two important factors that must be considered when formulating a nutritional program for a breeding herd. First, cows on energy- and protein-deficient diets prior to calving will not show estrus and conceive early in the breeding season. Second, the onset of lactation nearly doubles nutritional requirements. Keeping these facts in mind one must coordinate the high requirements of the lactating cow with the nutritional peak of the forage cycle. Cows should gain one-half to one pound per day in the last trimester of pregnancy and one-fourth to one-half pound per day after calving to reproduce efficiently.

B. Nutrition of the Replacement Heifer: All nutritional management and health criteria are especially significant to the success of the breeding program in replacement heifers. If they are to calve as two-year-olds, they must reach puberty at an early age. To do this heifers should gain from 1 to 1¼ pounds per day from weaning to breeding.

C. Improvement of the Nutritional Plane: The methods of improving forage quality are numerous. Improved grass species, weed and brush control, fertilization, irrigation, drainage, cross fencing, pasture rotation, intensive grazing and temporary winter pasture are just a few. Supplemental feeding of protein, energy minerals and vitamins should be based on forage analysis and needs of the herd. Weighing a representative sample of the herd on a periodic basis will indicate if requirements are being met. Consultation with industry representatives, extension personnel and nutritionists will provide valuable information on specific problems and is recommended.

III. Management

A. Coordination of Total Program: A plan must be developed between veterinarian and rancher to delineate responsibilities, acknowledge goals and outline the steps to achievement. Regular, periodic visits should be made by the veterinarian for the purpose of herd surveillance, evaluation of progress, scrutiny of records and replanning when necessary.

B. Animal Identification and Records: Individual identification by brand, ear tag or neck chain is necessary for accurate records on which sound management decisions can be made. Records should be maintained by ranch management and closely supervised by the consulting veterinarian.

C. Herd Performance Indices: Ranch records should provide basic information which the veterinarian can utilize to judge the effectiveness of his program and give indications of potential problems.

1. Reproduction: Percent calf crop especially when related to the stage of the calving season (i.e., 60% calf crop at end of first 20 days of calving season, etc.) and average time from birth to conception will provide a basis for judging reproductive performance.

2. Growth: Weaning weights and yearling weights reflect the health and nutritional status of the herd as well as genetic capabilities.

3. Health: Morbidity and mortality rates and culling percentages indicate the presence of disease and the effectiveness of preventive medicine programs.

4. Efficiency: The ultimate criteria for judging efficiency is the cost per pound of calf marketed. This information is also necessary for a sound marketing program as it establishes a "break-even point" and provides the rancher a basis for marketing decisions.

All herd performance indices become more meaningful with each year that passes. Improvement or regression can be traced to specific health, nutritional or management practices allowing the necessary adjustments for the next production year. In this manner herd health programs are kept current and meaningful and the value of a continuing program is demonstrated to the client.