

Health Management for Reproduction



Lesson 1

Introduction

Health management for reproduction is an important topic for beef cattle producers. Without healthy cows, bulls, and ultimately calves, a producer can expect poor profits and even a loss in income. With today's economy, a producer cannot afford any losses in the beef cattle industry. The successful beef cattle producer of today should keep good records and have high expectations for his/her cattle. All beef herds should be in optimum health, have high pregnancy rates, quality bulls, and calves that will become either quality replacement heifers or high performance bulls and steers. The successful beef producer of today should also have a close relationship with his/her veterinarian to insure optimal health, production, and profit. Remember that a veterinarian's job is to help a producer make money.

This lesson of the Minnesota Beef Home Study Course will focus on how to maintain a healthy and successful beef herd with an emphasis on reproduction. Remember that beef cattle reproductive performance has a direct impact on the producer's ability to make a profit.

Beef Health Management Starts With The Cow

Healthy, well fed cows can be expected to have excellent reproductive performance. Nutrition has the greatest impact on reproduction, but this topic will be covered in a future lesson. Body condition score (BCS) in cattle, which usually reflects nutritional status, should be used as a predictor of future performance. Ideally, cows should have a BCS of 5-6 and first calf heifers should have a BCS of 6. A good BCS is important for two reasons. First, cows in good body condition will generally produce quality colostrum and consequently a healthy, vigorous calf. Second, cows in good condition will tend to cycle back within 60 days after calving. On the other hand, cows in poor body condition will usually have poor colostrum, weak calves, poor fertility rates, and cause a financial loss to the producer.

Two other important factors important to herd health is routine vaccination and a parasite prevention program. There are several very contagious diseases that can cause abortions and

even death in beef cattle. The most common diseases are bovine viral diarrhea (BVD), infectious bovine rhinotracheitis (IBR), leptospirosis (Lepto), campylobacteriosis (Vibrio), trichomoniasis (Trich), and neospora. Fortunately, most of these diseases can be prevented through vaccination. Infections due to trichomoniasis and campylobacteriosis, both which can cause poor conception rates, low calf crop, and long calving seasons, can also be prevented by using breeding bulls that do not carry these two organisms in their reproductive tract.

Currently, there are two philosophies on herd vaccination. One way is to vaccinate the herd on a yearly basis to prevent as many disease problems as possible. The other way is to vaccinate in response to a disease outbreak. This method is best suited for closed herds with little chance of exposure to cattle diseases from other farms. It is a more conservative approach, less expensive, but also carries more risk for an infectious disease outbreak. In either case, vaccinations should include: BVD, IBR, Parainfluenza 3 (PI3), Bovine Respiratory Syncytial Virus (BRSV), Clostridial species, Haemophilus somnus, Pasteurella haemolytica, and Lepto. The dose and route of administration should be followed according to the label for each vaccine given. At the end of this lesson is some information from the Minnesota Beef Council web site on administering injections properly.

The other important factor is keep your herd free of internal and external parasites. Parasites are related to a producer's financial picture by causing loss of body condition, internal organ damage, and inefficient utilization of feed. Fecal, hair, and skin analysis by your veterinarian is an easy method to find out if a parasite problem exists in the herd. Effective parasite control programs are available and should be an integral part of a herd health program.

Finally, it is recommended to have yearly pregnancy checks performed by your veterinarian. Pregnancy checks, performed by rectal palpation, are very cost effective. Not only is it important to know which cows are pregnant, but which cows are having fertility problems. If a large number of cows are found open, then further investigation into the problem must occur to prevent future economic loss. Most infertility problems are related to either poor nutrition or infertile bulls. Normally, cows that are found repeatedly open should be culled. Feeding open cows is expensive.

In summary, healthy beef cows are critical to maintaining optimum reproductive performance. Quality nutrition, yearly pregnancy checks, and disease prevention through vaccination and deworming are essential in preventing economic losses in beef cattle herds. Reproductive goals should be to maximize the herd's pregnancy rate, the number of cows bred early in the breeding season, and the number of calves born early in the calving season thus increasing the producer's ability to make a profit.

Calves Are A Producer's Future

Healthy calves, particularly heifers, are a beef herd's future. Healthy calves reflect good management. Calves that are born weak or exhibit poor growth generally reflect health problems in the herd. These health problems are usually related to either nutrition or an

infectious disease problem. As a successful producer, close monitoring of the calves is essential for the herd's future performance.

Control of infectious diseases in your herd is important not only for the cows but also the calves. At weaning, calves should be vaccinated for BVD, IBR, PI3, BRSV, Haemophilus somnus, Pasteurella haemolytica, and the Clostridial species. In addition, they should be dewormed, eartagged, and implanted (if feeders). Calves should be re-vaccinated in 3-4 weeks to gain good immunity against these diseases. Weaning time is a good time to get a close look at your calves and to measure their performance. These calves are a close representation of you, the producer, and the herd's health. Consult with your veterinarian on a vaccination protocol which would best suit your beef calves.

Calves that look poor or have a poor rate of gain reflect herd problems. Find out where these problems are and fix them before losses become too big. Also remember that nonvaccinated calves are at increased risk for developing diseases, many which can be fatal. One more tip to remember, if you begin to experience high death losses in your calves, the problem is unlikely to go away. Ask your veterinarian for a necropsy or post mortem to find out why your calves are dying.

Healthy calves will only make money for a producer. Ideally, many of the heifer calves will become replacements in the herd. This will decrease the chance of bringing a disease into the herd through heifers bought from an outside source. But it takes hard work, knowledge, good nutrition, and disease prevention through deworming and vaccination to produce a quality calf which will represent the herd's future.

Bull Management to Maximize Reproductive Efficiency

What can you expect from a pasture-breeding beef bull? Healthy, physically normal bulls at least two years old that have passed the Society for Theriogenology's Breeding Soundness Exam (BSE) have achieved estrus detection rates of >95% with conception rates of 65 to 70% at a bull:female ratio of at least 1:40, and up to 1:60 for some bulls, in large (120 to 960 acres) single- or multiple-sire pastures.

What is the Society for Theriogenology's Breeding Soundness Exam? The purpose is to predict which bulls are likely to achieve expected breeding performance as described above. The test is best used on bulls that are at least 12 months old, and it is best done within 30 to 60 days before the start of each breeding season. In addition, both sellers and buyers of breeding bulls can be more comfortable when making a sales transaction if the bull has recently passed the BSE test.

The BSE test includes:

1. An evaluation of the bull's physical characteristics, especially general health, feet and legs, and body condition score.
2. Rectal palpation of the bull's internal reproductive organs
3. Palpation of the testicles and determination of their size by measurement of the scrotal circumference (SC)
4. Electroejaculation to observe the penis and obtain a semen sample for microscopic evaluation of at least 100 sperm for normal vigor and shape.

Three results are possible:

1. Satisfactory potential breeder
2. Unsatisfactory potential breeder
3. No decision possible without further examination at a later date

Scrotal Circumference (SC) is Important Because:

1. SC measures the size of the testicles
2. Size of the testicles is an indicator of how many sperm the bull can produce
3. Number of sperm produced determines the number of cows the bull can breed

SC is also Important in Young Bulls Because:

1. SC rapidly increase as the bull becomes able to breed cows
2. Age at puberty is a moderately to high heritable trait
3. Bulls that reach puberty early have daughters that reach puberty early
4. Early puberty heifers have a better chance to breed as yearlings and calve as 2 year olds

Bulls with a larger SC at weaning (200 days old) will have a large SC at 12 months of age. SC at weaning should be at least 20 cm for the bull to have a chance to breed as a yearling, but to make genetic progress for this trait select bulls with SC greater than or equal to 25cm at weaning and greater than or equal to 34 cm at 12 months of age.

Fertile bulls may still have low mating behavior (libido) and should be watched closely during the early breeding season to determine adequate serving capacity. General recommendations are to run 25 to 30 cows per mature bull and 15 to 20 cows per yearling bull. These ratios will vary depending on the pasture, terrain, and the bull's sexual aggressiveness. Yearling bulls may require special management to improve performance and prevent loss of weight by rotation between pastures, extra feed, and a shorter breeding season.

Other Considerations/Preparations for Good Breeding Bull Performance

Purchased bulls of any age should be quarantined from other cattle for 4 weeks. Only buy bulls that have a positive blood titer for BVD, and do not buy bulls that test positive for Johne's disease. New bulls should be vaccinated for diseases they are likely to be exposed to. These may include IBR, BVD, BRSV, PI3, Pasteurella haemolytica, Haemophilus somnus, Clostridial diseases, Leptospirosis, and Campylobacteriosis.

If bulls with prior breeding experience are added to your herd, they should test negative for the two reproductive diseases of cattle that are passed from bulls to cows by the breeding act. These are Campylobacteriosis (Vibrio) and Trichomoniasis. The test is done by taking a sample of fluid or mucous from the surface of the penis or from the preputial cavity. One positive result proves the bull (and the herd) is infected but it takes 6 negatives at weekly intervals to prove the bull is clean.

Breeding bulls should have their feet trimmed and checked for foot rot, sole abscesses, hairy warts, and interdigital fibromas (corns). They should also be observed closely for any locomotion problems several weeks before the breeding season. Deworming bulls at the time of the BSE is also recommended.

In summary, the BSE is a vital part of reproductive management in a beef cattle herd. Bulls that have structural problems, are infertile, or are carrying an infectious disease can greatly reduce a producer's profit potential. Quality breeding bulls are an essential component of the herd and should be BSE tested yearly.

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Additional Resources and Reading

Animal Health Information – Animal Disease
www.ianr.unl.edu/pubs/animaldisease

Breeding Soundness Examination of Beef Bulls
www.ianr.unl.edu/pubs/beef/g666.htm

Administering Injections Properly

Source Minnesota Beef Council Web site



Select the right product

When giving vaccinations, select the correct product for your need. This product should prevent future infections or aid in stopping the current infection. Once a product is selected, follow the label instructions.

Read the label

The label of all health products will include 1) the dosage to be given, 2) the timing of administration, and 3) the route of administration. The most common routes of administration are intramuscular (IM), subcutaneous (SC), intravenous (IV), intranasal (IN), and topical. Other less common methods are intramammary (IM), intrauterine (IA), intraruminal (IR), and oral. The label will list warnings, indications for use, and withdrawal times if any. The label will also include proper methods of storage and disposal and expiration date.

Don't combine vaccines

Mixing unlike vaccines could destroy the effectiveness and value of the individual products. Use only approved combinations.

Use transfer needles

Use transfer needles if a product needs to be reconstituted. The use of transfer needles should make the process easier and more sanitary. To use a transfer needle, place one end of the needle into the sterile liquid or dilutant; the other end goes into the freeze-dried cake of vaccine or bacterin. There should be a vacuum in the freeze-dried portion that immediately pulls the dilutant down.

Don't mix too much of a product at once

Modified live vaccines (MLV) begin to degrade, or lose effectiveness, after about an hour. Mixing too much product at one time may decrease effectiveness. For maximum effectiveness, mix enough vaccine for only one hour or less. Direct sunlight and extreme temperatures will also degrade the product, so it is best to keep it in a dark cool place, like a cooler. Don't save leftover vaccine for later use. It won't be effective and could be contaminated. Dispose of all vaccine bottles and equipment properly.

Keep shaking

When using large, multi-dose sizes of vaccine, such as a 200-dose bottle, mix thoroughly at first, then stop from time to time and shake the bottle again. If you don't keep mixing, the vaccine may settle, giving an inconsistent amount of antigen in each injection.

Mark and separate syringes

Use and mark different syringes for bacterins or killed products. Mark the MLV syringes and keep them separate from the others. If traces of bacterin are left in a syringe that is later used for a modified live product, the bacterin could destroy the modified live vaccine, making it ineffective.

Don't use disinfectants with MLV

Don't clean syringes used for MLV with disinfectants. Use hot water to clean these syringes. Disinfectants can destroy MLV that you later put in the same syringe. A mild disinfectant can be used for cleaning bacterin syringes, but be sure to rinse thoroughly.

Get air out of syringes

To help get the right dose of vaccine in the animal, remove any air that may be trapped in the syringe by pumping the grip slightly before filling. After filling, pump it enough to move the vaccine up to the needle tip so there is no trapped air that might be injected with the vaccine.

Restrain animals properly

Restraining animals properly reduces the potential of hurting the animal or yourself. Proper restraint can reduce the level of bruising to the animal. Bruising alone costs the cattle industry \$22 million per year.

Select the best route of administration

Selecting the best route of administration is crucial to effective vaccination. The two most common routes of administration are intramuscular (IM), which means injecting into the muscle, and subcutaneous (SC), which means injecting under the skin. Some products offer a choice, while others must be given in a specific way. The label will state the best method of administration. Generally, bacterins or killed products can be given SC. Modified live virus products are usually given intramuscularly, because this allows the virus to reproduce and reach the lymphatic system more easily. Whenever possible, use the subcutaneous route if allowed on the label.

Choose the best site of administration

Injection site lesions cost the industry about \$7 per animal slaughtered. The best injection site is not necessarily the one that's the fastest or the easiest to get to. It is the site where the

product will be the most effective, with the least possible risk of damage to valuable cuts of meat. Give all injections in the neck. Never inject into the top butt or top of the rump.

Use the correct needle

Choosing the correct needle may also lessen injection site lesions. When administering SC injections, use a 16 or 18-gauge needle, ½ to ¾ inch long. For IM injections, use a 16 or 18-gauge needle 1 to 1½ inch long, as shown in the table below. A 14-gauge needle isn't recommended - it is twice the diameter of a 16-gauge, which increases the risk of leakback and tissue damage. If a needle is bent or broken, discard and replace with a new needle. Bent and broken needles increase the number of injection site lesions and increase the risk of broken needles entering the food supply.

Use proper injection technique

When giving SubQ injections, tent the skin to get the product just under the skin and not into the muscle. Pull the skin away from the animal's body and insert the needle into the fold of skin. When giving multiple injections, keep injection sites several inches apart. Don't administer more than 10 cc of product into any one site. If a product must be given several times over a period of a few days, vary the injection site.

Proper sanitation is essential

Good sanitation practices reduce the risk of spreading infection from one animal to another, the chance of contaminating the vaccine, and injection site reactions. Some basic steps to good sanitation include not going back into the vaccine bottle with the same needle you use to vaccinate. Change needles frequently, at least every 10 to 15 animals, or every syringe of vaccine. When using killed vaccines, keep a saucer or sponge of alcohol or disinfectant nearby and wipe off the needle after each use. Do not disinfect needles between injections when using a modified live vaccine, as the disinfectant can destroy the vaccine. Injecting into a wet or muddy site can increase both the spread of disease and the incidence of injection site lesions. Make sure the injection site is clean. Clean transfer needles regularly to avoid contamination.

Correct Needle Size

Injection Viscosity	Subcutaneous ½ to ¾ inch needle			Intramuscular 1 to 1 ½ inch needle		
	Cattle Weight			Cattle weight		
	<300	300-700	>700	<300	300-700	>700
Thin (needle gauge) Ex: Saline	18	18-16	16	20-18	18-16	18-16
Thick (needle gauge) Ex: Oxytetracycline	18-16	18-16	16	18	16	16

Lesson 1 Quiz

Health Management for Reproduction

1. Cows with a BCS of 5-6 will usually cycle back in how many days after calving?
2. What is the ideal BCS of a cow?
3. Name 2 infectious diseases that can cause abortions in cows?
4. True or False Cows in poor body condition will most likely produce quality colostrum and vigorous calves.
5. Name the two most common causes of infertility problems in beef herds.
6. The breeding soundness exam on a mature bull should be performed how many days before the start of breeding season?
7. Name the two reproductive diseases that bulls can carry and transmit to cows during the breeding act.
8. The breeding soundness exam should be performed on bulls that are at least how old?
9. What one factor has the greatest impact on reproduction?
10. List the four factors considered in a Breeding Soundness Examination?