

HERD HEALTH PROGRAMS FOR A BEEF CATTLE ENTERPRISE

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Often, we tend to think of a health program as simply a vaccination schedule. The reality is that vaccinations are important but other management factors will play a larger role in the health status of our herd and the financial success of your beef cattle enterprise. Reproductive management, nutrition, parasite control, and implant protocols are an integral part of our success and have a large impact on the health status of the herd. If we look at total production, we see that integrating management and health increase our financial success.

We should begin our discussion on cattle health with how best to reduce the amount of disease we bring onto our cattle operations when we purchase new cattle. Big, costly disease outbreaks on farm are usually traced back to the purchase of new cattle; we usually pay good money to bring disease problem into our operations. To prevent this introduction, we need to change the way we bring animals onto the farm. The concept of biosecurity is defined as, bio- a form denoting life and security – a condition of being protected or not exposed to danger. Biosecurity is; being protected from the dangers of exposure to a disease and/or preventing the introduction of new diseases. If our farms are bio-secure then we have procedures in place to prevent the introduction of a new disease into our herd. These procedures would include; 1) you should purchase cattle from a known source of healthy cattle. You should have a health certificate for each purchase. If you are unsure, call the veterinarian on the health certificate and ask questions. Has there been any disease problem on this farm in the last year? Have they ever had Johnes disease, BVD, a calf scours problem, or abortions? 2) You should isolate all new cattle away from our herd for 30 – 60 days. This will prevent the spread of disease while you test and vaccinate the new cattle. 3) Cattle should be tested for BVD PI with a BVD ELISA test, Johnes disease and Lepto when they arrive. 4) New cattle should be vaccinated for IBR, BVD, BRSV, PI3, 5- way Lepto, Vibrio and 7-way Blackleg at arrival. Biosecurity of incoming cattle is the most important procedure cow/calf producers can do to reduce the amount of disease on their operations.

The next area we should concern ourselves with is the health of our cow/calf herd. Health is a balance between the amount of resistance (immunity) our cattle have and the amount of challenge they are exposed to as represented in figure1. One example of this is a calf that has had colostrum and the colostrum contained immunity to E. coli bacteria. The cow is in a small confined area and is laying in manure. Each time a calf nurses it ingests an amount of manure off the teats of the cow. If there is more immunity from the colostrum

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(resistance) in the calf than there are numbers of E. coli (challenge) on the teats the calf will not get sick. Once the calf ingests more E. coli than it has resistance for it will get calf scours. Resistance is the immunity of the herd to disease and is affected by natural exposure, vaccination, nutrition, age, colostrum absorption, and stress. Challenge is the number of infective organisms the herd is exposed to and is affected by sanitation, weather, crowding, mixing with new cattle, dust, other carrier species of animals on the farm and diseases carried in the herd. As long as the herd resistance stays higher than the herd challenge (exposure), we have a healthy herd. To be effective at controlling herd health we need to know what diseases the herd is likely to be exposed to, management and nutrition of the herd, ages of cattle, length of the calving season, weather challenges, and how cattle are brought into the herd. Beef cattle herd health can be an extremely complicated issue.

The resistance of our herds to infectious disease is primarily controlled by proper management procedures. Nutrition plays a major role in resistance. The major feed constituents of proteins and carbohydrates are needed to build immunity in cattle. Micronutrients like copper, selenium, zinc, and vitamin E are necessary to produce an immune response. Worms contribute to poor nutrition and result in decrease immunity. When worms drain the nutrition from cattle, they are more susceptible to disease. Commingling or crowding of cattle at the wrong time may result in stresses that cause a release of hormones that decrease immunity. Introducing cattle or calves into the herd just before or during calving can bring new bacteria or viruses into the herd and result in calf scours. Heat stress is a major factor in resistance. Cattle vaccinated during extremely hot weather will not respond to vaccinations as well. Heat stress causes the release of cortisol in cattle that suppresses the ability of the immune system to respond to disease. Certain infections will result in a decrease in the resistance of cattle. Bovine Virus Diarrhea (BVD) is “immuno-suppressive” and makes cattle more likely to get other infections. We can enhance the natural resistance of our cattle through management procedures that minimize stress and crowding, proper nutrition and biosecurity.

Resistance is also developed through immunization of cattle. Through this process, cattle develop specific antibodies to specific bacteria or viruses. It is important to emphasize that cattle are protected by vaccination to only those viruses or bacteria that we have in our vaccination program.

When a calf is born it has no immunity. This situation is unique, in humans immunity flows across the placenta from the mother to the baby and humans and many other species are born with immunity. The only immunity a calf gets is from colostrum. That is why it is so vitally important that a calf nurses as soon after birth as possible. Over the first 24 hours of life, a calf can absorb the immunity (antibodies) in colostrum through its stomach. After 24 hours this process cannot occur. This immunity is called maternal immunity and will last about two to six months. This immunity protects the calf against only those diseases that the cow was exposed to, developed immunity against, passed the immunity through the colostrum, and the calf absorbed the immunity as it nursed. The system works very well except when we bring new diseases that our cows have not been exposed to into the herd during calving season. The down side of maternal

immunity is that it stops a calf from developing their own immunity. So, if we vaccinate a calf with a product like IBR vaccine before it's maternal antibodies are lost it will not develop a good resistance to the IBR from the vaccination. To further complicate the situation maternal antibody levels vary between calves and may last 1 day or several months. This is why we vaccinate calves for diseases after they are four months or older. By that time, the majority of calves have lost a significant amount of their maternal antibodies and can respond to a vaccination.

The other area of developing resistance in our cattle is active immunization. This is when cattle are exposed to a specific virus or bacteria and they develop their individual immune response (resistance) against that specific virus or bacteria. This immunization may be through a disease where they are exposed to the real bacteria or virus; getting enough exposure to get a little sick but recover and develop a good immune response. Natural exposure to disease generally produces a better, longer lasting immunity than vaccination, if the cattle live through the disease. The form of active immunity we are usually most concerned about is through vaccination with products containing a virus or bacteria. Immunity to a specific disease can be affected by a vaccination only if the total program is effective. In order for immunity to protect cattle, we must understand what viruses or bacteria we need to vaccinate against. I have included a suggested list and schedule of vaccinations as an attachment. Once the vaccines have been selected, they must be handled properly to be effective. Vaccines that have not been stored at the proper temperature become ineffective. If we leave a bottle of vaccine in the sun for a short period of time the sunlight will ruin the vaccine. Detergents and disinfectants used to wash the syringes will kill the modified live vaccines and reduce the effectiveness of the killed vaccines. Even small residual amounts of antibiotics or other vaccines left in a syringe will kill modified live vaccines and reduce the effectiveness of most killed vaccines. We need to use syringes that are clean but have no residual amounts of other vaccines, antibiotics, vitamins, detergents or disinfectants left in the syringe.

A herd vaccination program must use the correct products at the proper time to be effective at controlling herd disease. The specific diseases affecting cattle herds varies so you need to design a vaccination program that is cost effective for your region and your herd. It is usually not cost effective to vaccinate all of your cattle for every disease possibility that may affect cattle. Cows and bulls should be boosted for reproductive diseases when they will need the most immunity to a disease challenge. Generally, the best vaccination time for the cowherd is about two to four weeks before breeding season. Diseases most commonly involved in reproductive losses are IBR, BVD, Lepto and Vibrio. Calves should be protected from calf hood diseases before the time they usually become infected. Blackleg can affect calves from one month and older so we vaccinate the calf crop early. Diseases of weaned calves are generally respiratory diseases and they need to be immunized two to four weeks before weaning. These include IBR, BVD, PI3, BRSV, and a booster of 7-way Blackleg. Replacement heifers should have protection against Lepto in addition to the other vaccinations. The concept is to vaccinate or booster two to four weeks before an anticipated challenge so that the cattle will have maximum immunity to specific diseases at the time they need it most.

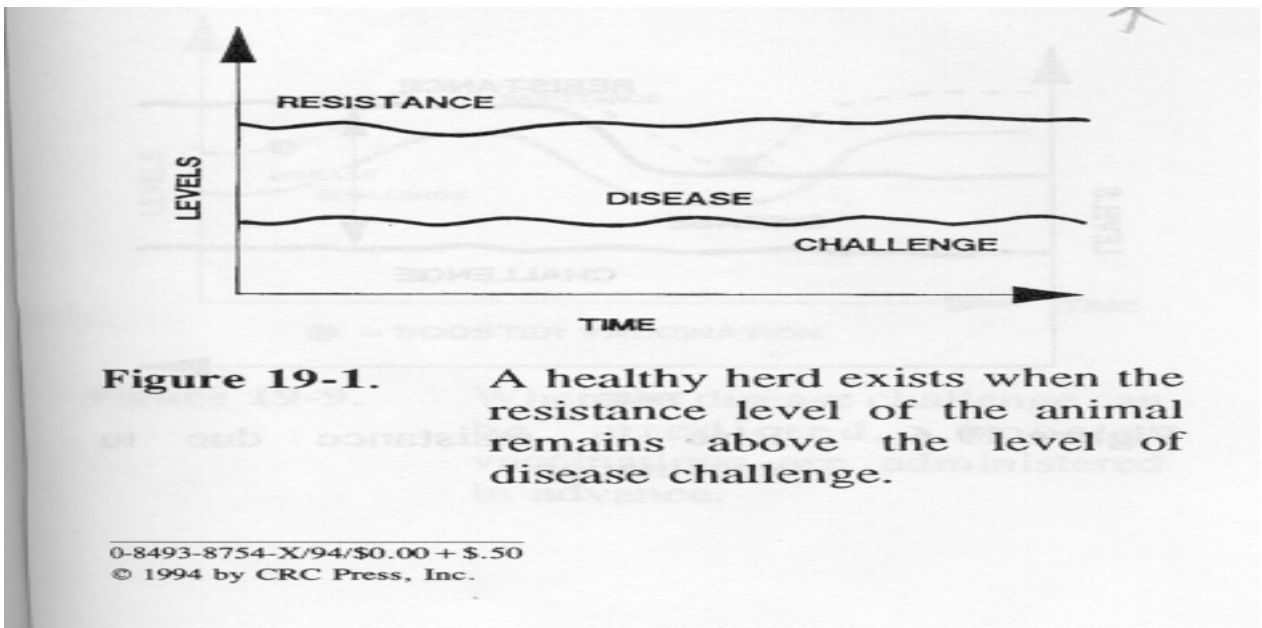


Figure 1, from Factors Affecting Calf Crop, Fields and Sand, CRC Press

Figure 2 represents a herd that has a disease problem because the herd resistance fell below the herd challenge. An example of this would be shipping and commingling calves before they were preconditioned by weaning, starting on feed and vaccination. This stress reduces resistance (immunity) and the result is the cattle get a disease like pneumonia.

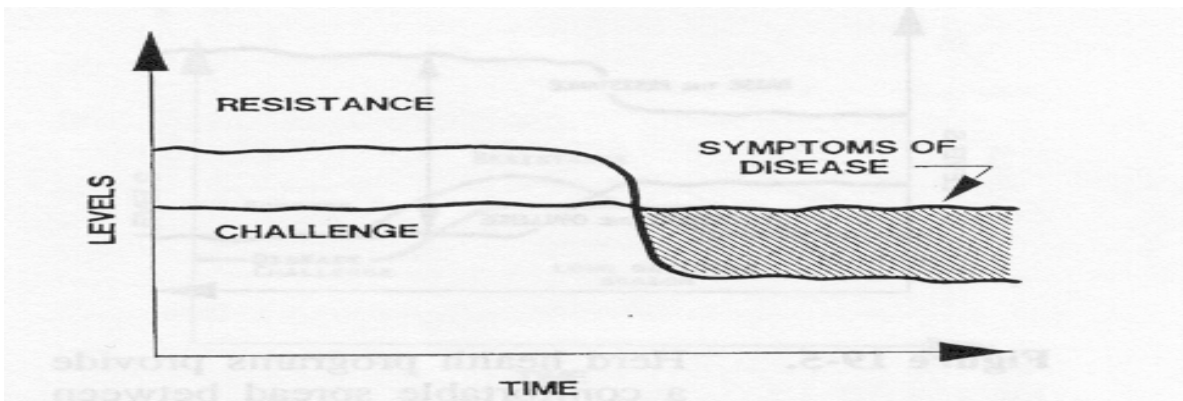


Figure 19-2. Disease symptoms occur when the resistance level of the herd is lowered.

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Figure 2 from Factors Affecting Calf Crop, Fields and Sand, CRP Press

Cattle disease outbreaks on a farm are often the result of bringing new cattle into the herd. We generally pay good money to buy diseases and expose our cattle to them. Figure

3 represents a situation when the herd immunity stayed the same but the herd challenge to a new disease was increased by bringing a new animal onto the farm with new diseases for which the herd had no previous exposure and had not developed immunity. It might also represent a herd concentration in a small area resulting in poor sanitation with a build up of bacteria causing a disease outbreak, like our previous example of a calf getting diarrhea from consuming too much manure from the cows teats. The exposure is greater than the resistance.

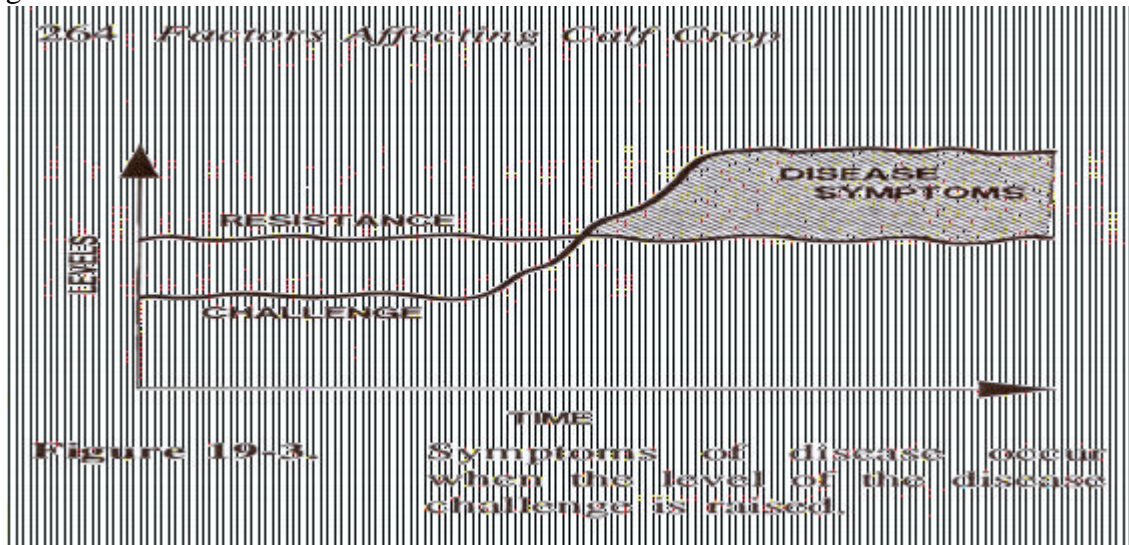


Figure 3 Factors Affecting Calf Crop, Fields and Sands, CRP Press

So how do we address “herd health” in our cattle operations? I think we must start with a plan to protect our herd against incoming threats. That is a biosecurity program of isolation, testing, deworming and vaccination of all incoming cattle. The next step is proper nutrition and management to increase natural resistance in our herds through the reduction of crowding, sanitation, balanced rations and supplementation to forage. Insure adequate levels of micronutrients like copper, selenium, zinc, and vitamins A, D, and E. The key is to properly integrate cost effective management and health to increase our financial success.

COW-CALF MANAGEMENT AND VACCINATION SCHEDULE

For Cow/Calf Enterprise

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These are suggested procedures. Your local veterinarian knows your herd and area and may be able to give more specific recommendations for your herd and area.

At Calving

Calves - ID, weigh, dehorn (paste or heat), castrate and implant bulls

Cows - Condition score (sort condition score 4 and below and young cows and put these on a higher plain of nutrition)

30 or more Days Before Breeding

Calves- finish castration and dehorning, vaccinate-7-way Clostridial, re-implant all steers if more than 30 days old, Implant only heifers you will not keep for replacements, fly tag calves?

Cows and Bulls- Vaccinate MLV IBR/BVD, 5-way Lepto, Vibrio

Bulls - Breeding Soundness Evaluation

De-worm cows and bulls 3 days prior to the beginning of spring grazing only if moving to new pasture that has not been grazed for months

Beginning of Breeding Season

Turn bulls in with cows

Sixty to Ninety Day After Bull Turn In

Take bulls out, check for fly control - may want to spray or pour for flies on cows and bulls, Fly tags?

If you only de-worm once yearly de-worm July 1 each year (non-strategic de-worming plan)

30 or More Days Before Weaning (calves 4+ months old)

Calves- Re-implant all except heifers to be saved for replacement, vaccinate for IBR, PI3, BVD, BRSV (best to use MLV per label), 7-way Clostridia, (Pasteurella?)

Prior to Winter Feeding

Test your winter hay and balance winter rations

Weaning Time (calves 5 – 7 months old)

Calves- revaccinate IBR, PI3, BVD, BRSV (best to use MLV per label), (Pasteurella?), pour for lice, de-worm, Re-implant all other calves you will keep for 45 days or more except replacement heifers. Vaccinate replacement heifers with 5-way Lepto.

Cows- preg check, pour for lice, weigh, re-tag as needed, condition score, (sort condition score 4 and below and young cows and put these on a higher plain of nutrition)

Bulls-pour for lice

About July 1

Cows, Bulls and Calves – De-worm

After Frost or Mid Winter (Jan)

Cows and Bulls- De-worm

30 or More Days Before Calving

Cows - revaccinate for E-coli (rota-corona virus?) re-pour for lice

Bulls - re-pour for lice

Biosecurity of newly purchased bulls or heifers

Isolate 30 – 60 DAYS 1. **Test** on arrival for BVD PI, Bangs, Lepto, Johne's disease and 2. **Vaccinate** on arrival (IBR, BVD, PI3, BRSV (best to use MLV per label), Lepto, Vibrio) 3. **Deworm on arrival.**

REPLACEMENT HEIFER MANAGEMENT AND VACCINATION SCHEDULE

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These are suggested procedures. Your local veterinarian knows your herd and area and may be able to give more specific recommendations for your herd and area.

FIRST Establish a genetic plan to match your marketing plan

At Birth

Individual ID - Dehorn

4 – 6 Month of age

Primary Vaccinations - Clostridials (7-way Black Leg), Virals (IBR, PI3, BVD, BRSV) Booster if label instruction require, Lepto (5-way Lepto/vibrio) Booster 3 weeks after primary vaccination per label

Bangs ??? Pasteurella ?? Pinkeye ??

Parasite control

Dehorn as needed

At Weaning

Select heifers based on (1. your long-term genetic plan, (2. born early in calving season, (3. sire had large yearling scrotal circumference, (4. uniform frame size, and (5. soundness

Feed to reach 65% of mature weight at breeding in condition score 5-6 all of the time (frame/mature wt 3-1030 lbs 4-1100 lbs 5-1175 lbs 6-1250 lbs 7-1320 lbs 8-1395 lbs)

Booster with 5-way Lepto/vibrio and hot MLV IBR/BVD, and deworm

At Yearly Age

Re-vaccinate 5-way Lepto, Vibrio, and hot MLV-IBR/BVD, deworm as needed

Condition Score, hip height/frame score and weigh replacement heifers (should weigh 65% of mature weight at breeding and be condition score 5 or 6)

30 – 60 days Before Heifer Breeding (breed heifers 30 days before start of breeding season for cows)

Pelvic measure and Reproductive Tract Score, Condition Score and weigh (should be on tract to reach target weight), cull heifers that do not gain well, have poor reproductive tract scores, or poor pelvic size

Re-vaccinate 5-way Lepto, Vibrio, and MLV-IBR, BVD, and deworm

Bull for replacement heifers – Breeding Soundness Evaluation, check EPDs for birth weight, vaccinate 5-way Lepto, Vibrio, MLV IBR/BVD, and deworm

Bull turned out with Heifers 30 days before cows are bred

45 - 60 days after Clean-up Bull Turn Out

Remove bull

60 – 90 Days After Bull Removal

Preg check,, deworm, pour, condition score, 1st scour vaccination E-coli (rota-corona virus?)

Market open heifers and maintain heifers separate from the cow herd until breeding for 2nd calf

30 Days Before Calving

Replacement heifers - revaccinate for E-coli (rota-corona virus?) pour for lice as needed

Heifer Synchronization (if desired)

1. MGA-Lutalyse Program

33 days Before Heifer Breeding - put on 0.5mg MGA in feed, per head, per day for 14 days. Then 19 days after stop feeding MGA give Lutalyse and AI 12 hours after standing heat. At 80 hours AI all remaining heifers not observed in heat and turn in with clean-up bulls.

2. CIDRs-Lutalyse Program

7 days before heifer breeding – insert CIDR. Six days after CIDR is inserted give Lutalyse. Seven days after CIDR is inserted remove CIDR and breed 12 hours after standing heat. At 80 hours turn in clean-up bull

Biosecurity of newly purchased bulls or heifers

Isolate 30 – 60 DAYS (Do not add to herd 30 days pre-calving to 30 days post calving)

1. Test on arrival for BVD PI, Bangs, Lepto **2. Vaccinate** on arrival (MLV - IBR/ BVD/ PI3/BRSV, Lepto, Vibrio) **3. Deworm** on arrival.