Chapter 10

Herd Health

Sound herd health is vital for competitive beef production. In order to create an effective herd health plan, the producer collaborates with a veterinarian to develop strategic vaccination and parasite control protocols. The veterinarian oversees the health of the herd via vaccinations, diagnostic tests, therapeutic treatments and necropsies. The veterinarian also trains the producer to properly perform procedures that do not require the services of a veterinarian.

Cattle producers should be equipped with the proper facilities to handle and restrain cattle for treatment. Proper working chutes and headgates can save a producer much time and labor as well as prevent injury to the cattle.

The Beginning Herd

Maintaining a closed herd is the best way to keep diseases at a minimum. Unfortunately, it is not feasible to start a beginning herd in this fashion. If possible, producers should purchase animals from a single source and obtain a history of the herd before purchasing including the vaccination program and past diseases.

Purchasing virgin breeding stock and bringing them to the farm at least one month prior to breeding time is the best practice. The new animals should be isolated from other cattle on the farm and routine tests conducted to identify any incubating disease. Breeding cattle should only be purchased after a thorough physical examination by a veterinarian including specific tests for brucellosis, tuberculosis, leptospirosis, neosporosis and any other diseases known to be prevalent in the area. Breeding bulls should also have a thorough breeding soundness exam.

Herd Health Program

An appropriate health program varies from herd to herd and from region to region in Arkansas. One single program will not fit all herds throughout the state. Some herds may have very few health problems and may only need a minimal program. Other herds may need a very extensive herd health plan. A disease may be prevalent in one herd or area and be absent in another. The herd health program should be tailored to fit the individual herd.

Suggested Herd Health Practices

Breeding Herd (Cows, Bulls, Replacement Heifers)

- Fertility test bulls prior to the breeding season.
- Vaccinate for IBR-BVD-PI_3, Leptospirosis and Campylobacter (Vibriosis) 30 days prior to breeding season and while females are open (not pregnant). Follow your veterinarian's recommendation.
- Treat for internal parasites on a routine basis. Timely administration of dewormers will result in better control of internal parasites.
- Practice good external parasite control procedures; treat for flies and lice by following the veterinarian's recommendation on effective products available. Manage pastures to keep external parasites to a minimum.
- Examine all females for pregnancy after the conclusion of the breeding season and cull open cows.
- Isolate all new additions to the herd.

Calving Time

- Observe cows closely at calving time.
- Remember, a clean pasture is probably the best calving area.
- Keep animals due to calve soon in an area where handling facilities are available.
- Have your veterinarian instruct you on how to handle maternity cases. Know what equipment and medication is needed and when you should seek professional help.

- First-calf heifers usually have more trouble calving than older animals and will need closer observation and assistance.

Calves

- Dip the navel cords on all newborn calves with a disinfectant such as iodine or chlorhexidine.
- Make sure calves nurse and get colostrum (cow's first milk) within one hour after birth. Keep frozen colostrum or commercial powdered colostrum on hand for emergencies. Have an esophageal tube available for use on weak calves.
- Identify calves with a uniquely numbered ear tag soon after birth.
- Castrate and dehorn calves at an early age. It is easier, causes less pain and allows fewer problems when done early.
- Vaccinate all calves with Blackleg 7-way and IBR BVD-PI_3 at 60-90 days of age.
- Have an accredited veterinarian vaccinate all replacement heifers between 4-12 months of age for brucellosis.
- Treat for internal parasites on a routine basis.
- For eye problems, after the veterinarian gives a diagnosis, follow the veterinarian's advice as to treatment and preventative measures. Provide good fly control and observe closely to reduce losses. Vaccines are also available to aid in the prevention of pinkeye.

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Other Herd Health Practices

- Provide good basic nutrition. Have forage tested for nutritional value.
- Provide adequate salt and a balanced mineral supplement.
- Supply vitamins A and D through the feed.
- Keep feet trimmed and corns removed from animals, especially bulls. Get this work done several weeks before breeding season.
- When administering injections, be sure to follow Arkansas Beef Quality Assurance guidelines. Give vaccines subcutaneously using the "tenting" method instead of intramuscularly whenever possible, and only give vaccines in the neck region in front of the shoulder.

FIGURE 10-1. A method of deworming.
Photo Credit: Sgt. Elisebet Freeburg, 143d Sustainment Command (Expeditionary), U.S. Army Reserve

Treatment of Stocker Calves

Death of livestock is the difference between profit and loss in a stocker or backgrounding operation. Respiratory infection is a major problem in newly purchased feeder calves. Isolate new calves from other cattle on the farm and follow these procedures to minimize loss.

For calves that have been purchased:

- Rest for 12 to 24 hours after arrival on the farm.
- Provide nutritious, easily digestible feed, adequate bedding, and clean, fresh water.
- Provide windbreaks to protect from cold, wet weather. Provide shade in hot weather. Avoid close confinement in poorly ventilated structures.
- After 12 to 24 hours, administer vaccines if the cattle appear to have recovered from the stress of shipping.
- Castrate bull calves at this time.

For calves that were not purchased but came from your own herd:

- Vaccinate for Blackleg 7-way and IBR-BVD-PI_3 at 60-90 days of age.
- Administer growth implants (e.g., Ralgro; Synovex-C, -S or -H; or Compudose).
- Give optional vaccines (on advice of veterinarian): BRSV, pinkeye, *E. coli, Haemophilus, Pasteurella*, etc.
- Treat for internal and external parasites as indicated. All calves should be treated for worms and some may need treatment for lice infestation.

- Closely observe cattle for the first month.
- Visibly sick cattle should be isolated and treated. Hospital pens should be maintained separately and at a distance from cattle on pasture.
- Provide (free choice) trace mineral salt and a balanced mineral.
- Provide easy access to clean water.

Common Diseases

Diseases that affect reproduction are prevalent throughout the state. The effects may be sterility, low pregnancy rates, abortion or weak calves. The most common reproductive diseases in Arkansas are brucellosis, leptospirosis, vibriosis and neosporosis.

Brucellosis, also known as Bang's Disease, is a disease caused by the bacteria *Brucella abortus*. It is a contagious disease of cattle and other ruminant animals that can also affect humans (zoonotic). Infection spreads rapidly by ingestion of the organism and causes many abortions in unvaccinated cattle. The bacteria may enter the body through mucous membranes, conjunctivae, wounds or intact skin in both people and animals. In an effort to control the spread of disease, federal and state programs have been implemented and require vaccinations, testing and strict quarantine. Producers should have all heifer calves between 4 and 12 months of age vaccinated by an accredited veterinarian in order to be compliant with federal regulations.

Leptospirosis is caused by the bacteria of the genus *Leptospira* and is also a zoonotic disease. The bacteria are known to exist in all parts of the state. It is spread from a carrier animal through infected urine which contaminates feed and water supplies. Abortion outbreaks can occur 10 to 14 days after exposure to the organism. Blood tests can identify carrier animals, but it is difficult to pinpoint the individual strain that causes leptospirosis. There are vaccines that are specific against five strains known to cause infections in cattle. An annual vaccination is highly recommended. Cattle may need vaccination every 6 months if they are in an endemic area.

Vibriosis is caused by the bacteria *Campylobacter fetus*. This venereal disease is transmitted between animals during natural breeding and is characterized by early embryonic death, infertility and a protracted calving season. Testing bulls prior to breeding is recommended as well as annual vaccination in known infected areas of the state.

Neosporosis is caused by the protozoal organism *Neospora caninum*. Cattle become infected by ingesting feed that has been contaminated by dog feces. This disease is more prevalent in herds being fed mixed rations. When ingested in large quantities by pregnant cows or heifers, the fetus may become compromised resulting in abortion. If the fetus does not abort, the calf will become a persistent carrier when born due to transmission of the organism through the placenta. The heifer calves are then susceptible to abortions as well. As a control measure, fencing should be in place to keep out stray dogs and coyotes. New breeding stock should be tested for Neospora in endemic areas and culled if found positive. There are currently no effective vaccines or treatments available.

Other diseases causing reproductive problems include Infectious Bovine Rhinotracheitis (IBR), anaplasmosis, nitrate toxicity, molds on grass or in feed and nutritional deficiencies.

Other general infectious diseases of importance in Arkansas are anaplasmosis, blackleg, bovine respiratory disease and pinkeye.

Anaplasmosis is caused by the rickettsial parasites *Anaplasma marginale* and *Anaplasma centrale*. These parasites infect red blood cells, which causes subsequent anemia and possibly death. The organism can be found in all areas of Arkansas but is most prevalent in the southern half and rice-producing areas. The disease is spread by blood-sucking insects (mainly ticks and biting flies) or contaminated instruments. There is no cure for the disease, but antibiotics in feed can suppress the organism. There is also a vaccine available that keeps the organism in a suppressed state. Persistently infected cattle, although not sick, serve as a source for the disease. Furthermore, pregnant vaccinated cattle may abort if additional parasites are introduced via an insect bite. The disease can be controlled by vaccination, sound husbandry practices and rigid external parasite control.

Blackleg is an acute and highly fatal disease of cattle caused by the bacteria *Clostridium chauvoei*. The disease produces a gas gangrene in the muscle tissues. Death losses can be prevented by proper vaccination. A vaccine containing Blackleg 7-way should be used on all calves at 60 to 90 days of age. Repeat the vaccination at 3 to 4 weeks after the first vaccine to provide adequate protection. In some areas of the state, vaccinating all adult cattle annually is necessary to prevent death due to blackleg.

Bovine respiratory disease can be caused by several viruses coupled with the bacteria *Pasteurella multocida, Mannheimia haemolytica, Histophilus somni* or *Mycoplasma bovis*. Viruses that have been implicated include Infectious Bovine Rhinotracheitis (IBR),

Bovine Viral Diarrhea (BVD), Bovine Parainfluenza-3 Virus (PI_3) and Bovine Respiratory Syncytial Virus (BRSV). These pathogens interact with one another and the animal's immune system to produce disease. The bacteria cause the acute syndrome by invading the bovine respiratory tract that has already been compromised by viral infections, environmental conditions and/or other stress factors. The disease can affect the upper respiratory tract (sinuses and trachea) or lower respiratory tract (lungs). Various combinations of vaccines may be used and should be given at least 3 weeks prior to stressful events such as breeding, weaning or transport.

Pinkeye is a contagious bacterial disease caused primarily by the bacteria *Moraxella bovis*. Calves are more likely to develop the disease than adult cattle. Pinkeye causes painful inflammation of the cornea (the clear outer layer) and conjunctiva (the pink membrane lining the eyelids) of the eye. The inflammation leads to ulceration of the cornea, which looks like a hole or depression. There are many factors that predispose and contribute to the progression of the disease. Eye irritation is necessary for the development of the disease. Face flies, dust, UV light and tall grass can all cause a mechanical irritation to the eye. Face flies in particular can spread the disease from one animal to another. Vaccines are available and should be used in endemic areas to aid in the prevention of pinkeye. Early detection and treatment along with stringent vector control are important to reduce losses. For prevention or treatment, follow the advice of a veterinarian.

Several **forage-related problems** plague Arkansas beef producers as well. Cattle are at risk for grass tetany, nitrate poisoning, fescue toxicosis, acorn poisoning and ergotism. The three most common toxic plants in Arkansas are perilla mint, water hemlock and johnsongrass. Producers should have forage tested and inspect the pasture for potential problems prior to turnout.

Miscellaneous disease conditions of importance are cancers of the eye, warts, ringworm, bloat and foot rot. Each condition must be diagnosed and treated by a veterinarian.

Internal parasites such as roundworms (nematodes), tapeworms (cestodes), flukes (trematodes) and coccidia affect Arkansas beef cattle. Producers should have a strategic surveillance and treatment program in place that has been developed in cooperation with a veterinarian. Scheduled deworming and pasture management will reduce loss.

External parasites such as horn flies, face flies, ticks, grubs, mosquitos and lice are all problems in Arkansas. Losses can be minimized by planning a treatment program with strategic timing. Pasture treatment and management is also important to keep external parasites at a minimum. Pastures should be dragged as much as possible to break up and dry out manure. Parasiticides should be rotated to decrease insect resistance. Consultation with a veterinarian is strongly recommended.

FIGURE 10-2. Dust bag for insect control.
(Photo courtesy of Bayer)

Cattle Vaccinations

- Vaccination programs will vary with the location of the farm and the type of production and should be planned with the guidance of a veterinarian.
- Vaccines are not a substitute for good management and prevention practices which include selective purchases, isolation and testing prior to the introduction of new animals into the herd.
- Try to give only subcutaneous vaccines and administer by the skin tent method.
- Store vaccines in accordance with labeling.
- Protect vaccines and filled syringes from sunlight and heat.
- Discard bent or broken needles. Change needles often (about every ten animals).
- Clean syringes with hot distilled water (at least 212°F). Do not use soap or disinfectant.

FIGURE 10-3. Vaccinating cattle using the "tenting" method.

TABLE 10-1. Vaccination Schedule: Heifers	
Vaccine	
Brucellosis	Calfhood (4-12 months)
IBR	Before Breeding
BVD-PI_3	Before Breeding
BRSV	Before Breeding
Vibriosis	Before Breeding
Leptospirosis	Before Breeding
Blackleg 7-Way	Before Breeding
Anthrax	Optional as Directed

TABLE 10-2. Vaccination Schedule: Cows and Bulls		
Vaccine		
IBR	Recommended	Annual (Killed or Intranasal)
BVD	Recommended	Annual
PI_3	Recommended	Annual
BRSV	Recommended	Annual
Leptospirosis (5-Way)	Recommended	Annual (every 3 to 6 months in some areas)
Vibriosis	Optional	Annual (30-60 days before breeding)
Trichomoniasis	Optional	Annual (30-60 days before breeding)
Pinkeye	Optional	As Needed
Anthrax	Optional	Annual
Blackleg 7-Way	Optional	Annual

TABLE 10-3. Vaccination Schedule: Calves*		
Vaccine		
Blackleg 7-Way	Recommended	Preweaning
IBR-BVD-PI_3	Recommended	Preweaning
Leptospirosis	Recommended	Preweaning
Brucellosis	Recommended	Heifers (4-12 months)
BRSV	Optional	As Needed
Pasteurella	Optional	Preweaning
Haemophilus somnus	Optional	Preweaning
Pinkeye	Optional	As Needed
E. coli	Optional	Vaccinate Cows (prior to breeding)
Anthrax	Optional	As Directed
*Do not use modified-live products on calves that are still nursing cows.		

Health Calendar and Cattle Vaccinations

For Spring-Calving Beef Herds

JANUARY

1. Vaccinate yearlings for IBR-BVD-PI_3.
    a. They will be free of maternal antibodies.
    b. They will have recovered from weaning stress.
    c. Conception will not be affected.
    d. Pregnant cows won't be exposed to shed virus.
    e. They will be mature enough for maximum response.
2. Vaccinate yearlings for leptospirosis (5-strain).
3. Weigh replacement heifers and adjust ration to reach target breeding weight.
4. Assess cow body condition and adjust ration to assure good condition at calving.
5. Feed magnesium oxide (MgO) to cows on cool-season grass pasture through mid-April to prevent grass tetany.

JANUARY THROUGH MARCH

1. Calving Season
    a. Heifers bred to calve January 2 to March 1.
    b. Cows bred to calve February 1 to April 1.
    c. Observe cattle due to calve often: know about when labor begins; be present when help is needed; know when to call for veterinary assistance.
    d. See that calves get colostrum within 6 hours (preferably within one hour) after birth.
    e. If calved in confinement, soak calf's navel in iodine preparation immediately.
    f. If delivery assisted, inject cow with antibiotic.
    g. Separate young and thin cows from mature and well-fleshed cows.
2. Evaluate bulls for breeding soundness.
    a. Complete physical examination.
    b. Rectal examination.
    c. Semen collection and evaluation.
    d. Mating behavior observed, if possible.
3. Vaccinate the breeding herd for *Campylobacter fetus* (vibriosis), leptospirosis, IBR and BVD.
    a. For cows and heifers, after calving and 30 days before breeding.
    b. For bulls, at least 30 days before breeding to allow sperm count to recover.

MARCH 26 THROUGH MAY 25

1. Breed heifers (have them to target weight).
2. Vaccinate calves with Blackleg 7-way.
3. Castrate and implant bull calves.
4. Remove horns from calves.

APRIL THROUGH OCTOBER

1. Constantly control flies.
    a. Sprays, backrubbers, dusters, ear tags or VetGun.
    b. Use approved products according to label instructions.
    c. Rotate class of parasiticide.
2. Minimize pinkeye.
    a. Clip pastures, provide shade and control flies.
    b. Treat clinical cases immediately.
    c. Vaccinate for *Moraxella bovis*.
3. Consider an anaplasmosis control program.
    a. Establish a relationship with a veterinarian.
    b. Give medicated feed to suppress illness.
    c. Vaccinate for anaplasmosis (experimental drug is only available).
    d. Control vectors.
    e. Avoid transmission with needles, palpation gloves.

APRIL 25 THROUGH JUNE 23

Breed all cows.

AUGUST

1. Pregnancy exam all heifers (near August 1).
    a. Estimate calving date by early examination.
    b. Cull open heifers.
    c. Sell surplus pregnant heifers.
2. Plan for brucellosis vaccination of heifer calves.
    a. Must be done by a veterinarian accredited by the USDA.
    b. Vaccinate at 4 to 12 months of age.
3. Castrate bull calves if not done earlier.
4. Implant steer calves with growth implants.
    a. First time at castration regardless of age.
    b. Every 90-120 days thereafter until sold.
5. Deworm all calves.
6. Plan to vaccinate calves for leptospirosis at 60-90 days of age.

SEPTEMBER

1. Examine cows for pregnancy (near September 1).
2. After examination, mark cows for culling.
3. Vaccinate cows for leptospirosis.
4. Treat all cattle for lice with a veterinarian-recommended product. Follow directions on label.
5. Vaccinate calves.
    a. IBR-PI_3 (intranasal vaccine)
    b. Blackleg 7-way

NOVEMBER

1. Wean and weigh calves.
2. Deworm and implant steer calves to be held over.
3. Select replacement heifers (50 to 75 percent extra).
    a. Calculate feeding program to reach breeding weight by March 26.
    b. Feed in groups to achieve projected gain.