KENTUCKY COOPERATIVE EXTENSION

Clark County Ag and Natural Resources Newsletter

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A Word from the Agent . . .

Fall has always been one of my favorite times of the year, and one of my favorite days of the year is almost upon us, the opening day of deer rifle season! Since I started hunting as a kid, I have only ever missed two opening days, and I don't plan on missing another one anytime soon. That one day brings back the memories of previous hunts, time spent with friends and family, and time to admire the beauty of the woods. My happy place will always be outside which is why I start getting restless if I'm in front of my computer for too long. This newsletter has some good information for those also excited for the opening day of gun season and looking forward to filling their freezers with venison or those looking to learn the basics of hunting through a Squirrel Field to Fork. Also in this newsletter, you will find forage timely tips, forest seasonal changes, winter poultry care, leptospirosis in cattle, and much more. For those looking to hunt, always be sure of your target and always remember safe firearm handling.

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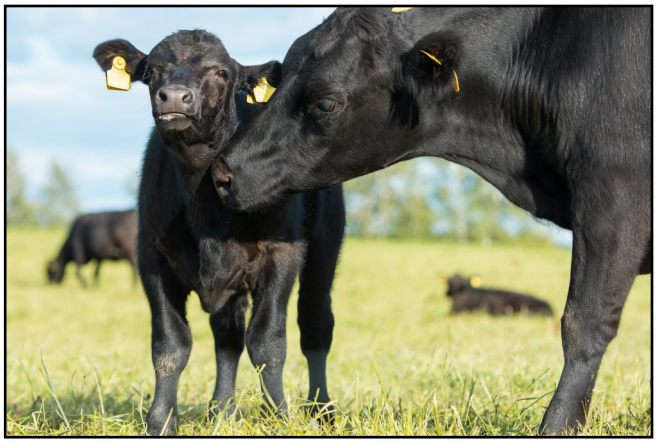
FYI

Forage Management Tips for November

- Apply 30-40 lb N/A to strengthen cool-season grass sods.
- Using a plate meter or grazing stick, estimate stockpile available for winter grazing.
- Adjust animal numbers or purchase additional hay to balance forage-feed supply to livestock needs.
- Graze crop residues and cover crops that will not overwinter. Be careful to avoid fields that contain johnsongrass.
- Graze winter annuals that will not overwinter such as brassics and oats.
- Graze other winter annuals once they are 6-8 inches tall and are well anchored. Do NOT graze closer to 4 inches.
- Sugar content will rise in tall fescue with the cool temperatures and short days of fall.
- Alkaloid content of tall fescue can also be high in come years, but will begin decline after a hard freeze.
- Talk with local conservationist about developing a grazing plan and cost-share opportunities.

Reproductive Failure in Cattle-Frequently Asked Questions about Leptospirosis



Dr. Michelle Arnold, UK Veterinary Diagnostic Laboratory

"Reproductive failure" is an all-encompassing term if a cow loses a calf during pregnancy or if she fails to get pregnant. Causes of reproductive failure are often divided into infectious and non-infectious categories. Examples of "non-infectious" include poor cow nutrition (lack of energy and micronutrients such as selenium/Vitamin E); bull infertility, disease, and injury; breeding season management (shortened breeding season, insufficient bull-to-cow ratios); genetic and some congenital abnormalities that result in fetal death; and toxic agents such as nitrates, phytoestrogens, and drugs including steroids and prostaglandins. "Infectious" causes are bacteria, viruses, protozoal and fungal agents that directly or indirectly damage the placenta and/or the fetus. Examples include the BVD virus, IBR virus, the protozoan *Neospora caninum* and many species of the bacterium *Leptospira*, among many others. This series of articles will explore the most common infectious causes of abortion and reproductive failure in cattle and available options for control and prevention.

What is Leptospirosis or "Lepto"? Leptospirosis is a complicated bacterial disease commonly associated with abortions, stillbirths, premature births, and infertility in cattle. However, this bacterium also causes sickness and death in cattle, dogs, sheep, and horses worldwide and is an important zoonotic disease affecting an estimated 1 million humans annually. Farmers, veterinarians, and those working in meat processing facilities are at highest risk to contract the disease.

What causes leptospirosis? The disease is caused by a unique, highly coiled, Gram-negative bacterium known as a "spirochete" belonging to the genus *Leptospira*. These "leptospires" are highly motile due to their spiral shape and, once inside a host animal, they enter the bloodstream and replicate in many different organs including the liver, kidney, spleen, reproductive tract, eyes and central nervous system. The immune system will produce antibodies that usually clear the organism from the blood and tissues rather quickly except from the kidney. Leptospires take up residence primarily in the kidney and are excreted in the urine for months to even years after infection, depending on the species of *Leptospira* and the animal infected. Less frequently, leptospires persist in the male and female genital tract and mammary gland of females and may be excreted in semen, uterine discharges, and milk.

How do cattle become infected with leptospires? Transmission of the organism is most often through direct contact with infected urine, placental fluids, semen, or milk. However, transmission may also occur by coming in contact with areas contaminated with infected urine, such as stagnant ponds or swampy areas with standing water. The leptospires survive in the environment for long periods of time (approximately 6 months in the right conditions) in stagnant water as well as in warm and moist soils but die quickly when dry or in cold temperatures. Entry into the animal may be through penetration of *intact* mucous membranes such as through the mouth and the conjunctiva of the eye, or through damaged or water-softened skin. The organism may also be transferred during breeding and also during pregnancy from dam to fetus.

Which animals carry ("host") this organism and are responsible for spread of disease? This is where the complicated life cycle of this organism must be explained to understand the wide range of disease symptoms that may be observed in cattle. To begin, it is important to distinguish two different types of "hosts": 1) maintenance or reservoir hosts and 2) incidental or accidental hosts. A "maintenance host" is an animal that can carry and spread the leptospirosis organism but not experience any obvious sickness from it. These are also known as "reservoir hosts" because this animal's immune system allows the leptospires to survive and duplicate themselves then be excreted in urine and spread to other animals. Maintenance hosts for leptospires are often wildlife species including skunks, rats, raccoons, and opossums but can be domestic animals (dogs) or livestock (pigs, cattle), depending on which type of leptospire (known as a "serovar") is involved (Table 1). For example, cattle serve as the maintenance host for the *Leptospira* serovar called "Hardjo type hardjo-bovis", often abbreviated as "Hardjo". Transmission from one infected cow to another healthy cow with serovar Hardjo is efficient, and the infection rate can be very high in an unvaccinated herd. When a cow is initially infected with serovar Hardjo, she may exhibit a few mild signs such as low fever but there will be very little antibody production by the immune system and the leptospires will stay primarily in the kidney and be persistently shed in her urine for a prolonged period of time (months to years). In addition, the organism can also localize in male and female reproductive tracts and be shed in semen and uterine discharges.

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An “incidental host” or “accidental host” is an animal that gets infected with a *Leptospira* serovar not normally found in that animal (infected “by accident”) which results in clinical disease that may be severe. Incidental hosts are not reservoirs of infection and transmission of the organism is uncommon within a herd. Infection of an incidental host usually occurs in areas contaminated with urine from maintenance hosts. For example, cattle are incidental hosts for the *Leptospira* serovar “Pomona” which is carried by feral swine, opossums, skunks, and raccoons (the maintenance hosts) and transmitted to cattle from water or feed contaminated with their urine. Once infected, cattle (especially calves) with Pomona often show significant signs of disease, the immune system rapidly produces antibodies and there is a short carrier state in the kidney when cattle shed the organism in urine.

Table 1: Common Leptospira Isolates in Ruminants

Species	Serovar	Maintenance Host	Incidental Hosts
L. borgpetersenii	Hardjo (type hardjo-bovis)	Cattle (repro failure)	Sheep, goats
L. kirschneri	Grippotyphosa	Raccoons, muskrats, squirrels	Cattle, sheep, horses, dogs
L. interrogans	Pomona	Swine, opossums, skunks, raccoons	Horses, cattle, sheep, goats, dogs
L. interrogans	Canicola	Dogs	Cattle
L. interrogans	Icterohaemorrhagiae	Rats	Dogs, cattle, swine
L. interrogans	Bratislava	Pigs, mice, horses	Dogs, cattle, horses
L. interrogans	Hardjo (type hardjoprajitno)	Cattle-Europe only (milk drop)	Sheep, goats

What are the symptoms of leptospirosis? Clinical signs or symptoms of disease in cattle depend on which *Leptospira* serovar is involved and if cattle serve as a maintenance host or incidental host for this specific type. There are over 250 serovars of *Leptospira* but the two most important serovars affecting cattle in North America are Hardjo and Pomona, with Grippotyphosa, Canicola and Icterohaemorrhagiae much less frequently diagnosed. Most bovine leptospirosis is caused by the serovar Hardjo, which causes infertility and reproductive failure. Cows with Hardjo are twice as likely to fail to conceive and experience a significantly longer time interval from calving to conception.

Infection in pregnant cows with non-Hardjo strains, mostly Pomona and Grippotyphosa, results in abortion (usually late term), stillbirth, or birth of premature and weak infected calves. Retention of fetal membranes may follow abortion. Lactating dairy cows may exhibit “milk drop syndrome”, characterized as a drop in milk production for 2-10 days where the milk has the consistency of colostrum, thick clots, yellowish color, and high somatic cell count, but the udder remains soft. In calves, a severe, rapidly progressing disease may occur when infected with incidental serovars, especially Pomona. Symptoms of high fever, extreme weakness, red urine, rapid breathing due to anemia and death are all possible. Cows may experience a loss of milk production with very prolonged recovery.

How is leptospirosis diagnosed and treated? Diagnosis of this disease is not necessarily a simple task. Traditionally, two blood samples (in red top blood tubes) drawn at least 1 week apart after an abortion are submitted to measure antibodies against the most common serovars. Incidental infections (for example, Pomona) will show a rapid rise in antibody numbers (called “titers”) over time that are diagnostic. However, since cattle are the maintenance host of serovar Hardjo, the antibody numbers may remain low if reproductive failure is due to Hardjo. Vaccination also confuses the interpretation of results because blood tests do not differentiate antibodies due to infection or antibodies due to vaccine. Therefore, multiple types of tests may be required to rule this disease in or out. Currently, urine is the preferred sample as it can be tested for leptospires through a variety of assays, especially PCR, to identify the organism. Animals diagnosed with leptospirosis can be treated with injectable long-acting oxytetracycline to remove the organism from the kidney. Research is ongoing if additional treatment is needed to clear infections within the genital tract. Consult your veterinarian for detailed advice regarding diagnosis and treatment options.

What methods are used to control and prevent leptospirosis in cattle? New infections are best prevented through early vaccination with products containing the most common serovars affecting cattle. The leptospirosis fraction of most reproductive vaccines is often denoted as “L 5” in the vaccine name, representing Hardjo, Pomona, Grippotyphosa, Canicola and Icterohaemorrhagiae. In addition, several vaccine manufacturers have added extra protection against serovar Hardjo type hardjo-bovis and this is denoted with “HB” in the vaccine name. Spirovac® (Zoetis) is a vaccine for Leptospirosis only, specifically for the prevention of infection by *Leptospira borgpetersenii* serovar Hardjo type hardjo-bovis, including reproductive and renal tract colonization, and urinary shedding for up to 12 months. It is worth mentioning that cattle already infected with leptospirosis must be treated with antibiotics first to remove the organism before vaccination is effective.

Control is accomplished by prevention of exposure, annual vaccination and treatment if needed. Reduction of cattle exposure to infected urine, especially fencing off stagnant ponds and swampy areas, and preventing urine contamination of feedstuffs will significantly reduce transmission of the organism. Personal protective equipment should be used when working with cattle suspected to be infected to prevent human disease.

Source: *Billy Thomas, UK Extension Forester*

If you've been waiting all year to see beautiful fall colors in Kentucky, it is almost time. Mid-October is usually the beginning of the state's brilliant fall tree color show. Actually, these brilliant colors have been there all along; they've been masked by a cloak of chlorophylls, green pigments vital to a tree's food-making process.

Trees use and replenish chlorophylls during the growing season. High replacement maintains green leaf color. As fall approaches, the green pigments are replaced at a slower rate due to complex environmental factors and the trees' genetic makeup. The dwindling supply of green pigments unmasks other pigments that were present all along, revealing the spectacular show of fall color.

We can enjoy a variety of fall colors because Kentucky's diverse climate and soil composition enable many diverse trees to grow here.

Black gum, pear, sumac, dogwood, maple, oak and sassafras trees produce various shades of red. Other trees give us a range of orange and yellow hues such as yellow-poplar, birch, hickory and beech.

Since black gum and sumac trees shut down chlorophyll production early, they are the first to reveal fall color. Both change from green to red, leaf by leaf. No leaf seems to be all green or red at the same time, giving a spotty appearance throughout the trees.

You might be surprised to know that what makes leaves change color has less to do with "Jack Frost" and more to do with shorter days activating a "chemical clock" that tells the trees to shut down chlorophyll production and prepare for winter.

When the tree completely shuts down chlorophyll production, a layer at the base of the leaf forms. This abscission layer causes the leaf to fall off the branch, leaving only the bud with next year's leaves and flowers to wait for the signal in the spring to bloom and grow.

For more information on fall tree color or other forestry topics, contact the Clark Cooperative Extension Service Office at 859-744-4682.

Safe Handling Practices for Wild Game Meat

Information was obtained from Laure Dei, University of Wisconsin-Madison

As we head into the gun-deer season, it is a good time to remember safe handling practices for wild game meat. Families depend on game meat to supplement their food budget, and safe animal and food-handling practices can help ensure that harvested meat is safe and high quality.

Venison is a nutritious game meat that can be served in a variety of ways. It can be prepared as roasts or steaks, or ground and prepared as burgers or used as a substitute for ground beef in familiar dishes. Ground venison is also used as an ingredient in sausages.

Start the hunt preparing for a safe, high quality harvest by remembering a few key points for handling a downed deer: 1) keep it clean; 2) keep it dry; and 3) keep it cold. You do not need to further 'bleed' a harvested deer. As you prepare the carcass, remember that leaving the hide on the deer keeps the meat surface clean and prevents the outside of the carcass from drying out.

Do remove the viscera from the body cavity as soon as possible, especially if the deer was hit in the gut area. This will help cool the carcass more quickly and limit bacterial spreading and growth. Work efficiently to gut the deer, while taking the time needed to do a careful job. Be careful not to cut into the intestines, stomach or bladder – these commonly contain high levels of bacteria that can contaminate the muscle tissue. Do cut around the entrance and exit holes to remove any dirty or potentially contaminated material. If available, use a clean cloth or towel to help control spill of blood or organ contents onto the carcass.

Once internal organs are removed, rinse the cavity with clean, cold water if at all possible. Rinsing the cavity can help remove contaminants and protect the quality of the meat. For extra protection, use a 50/50 solution of water and vinegar to rinse the cavity. Rinsing the carcass with cold water will also help cool the carcass.

The cooling process should begin within a couple hours of harvesting the deer. Propping open the body cavity, keeping the carcass in the shade, and exposing it to air movement are all ways to improve cooling. By suspending the deer from an overhead object, you can greatly speed up the cooling process since the air reaching the carcass will carry away any heat and provide a cooling effect. While cooling is important, protect the carcass from freezing; if the carcass freezes within the first six hours after harvest, the meat can become tough.

Many hunters age deer carcasses before cutting into chops or roasts. Aging refers to holding carcasses at 35 to 45°F to allow natural enzymes to tenderize the meat. It can take from 7 to 10 days of aging to result in a noticeable eating difference in your venison steaks. If you choose to age your venison, you must weigh the benefits of aging against the drying out of exposed surfaces (dehydration) and possible bacterial spoilage. Temperature is important, tenderizing will not occur if the carcass is frozen, and if the temperature is too warm bacteria can grow quickly and spoil the meat.

Poultry Care During Winter

Information was obtained from Wisconsin Poultry Cooperative Extension publication "Preparing for Winter".

Winter is almost here, and the temperature has dropped. This time of the year, I will usually receive a few questions about poultry care during freezing temperatures. During winter months, don't worry about how cold it is because poultry are designed to with stand the cold. Their feathers offer plenty of heat and insulation to keep them warm, but things you should worry about are; clean thawed water, plenty of feed, good ventilation, lighting, and flock safety.

In my eyes, the largest threat to poultry during the winter is fresh, thawed water. Without water, the birds have zero chance of surviving. Just remember, poultry will generally drink about 2 pounds of water for every pound of feed they eat. Without water, the birds cannot properly digest their feed, regulate temperature, and will decrease egg production, so keep clean, thawed water for your birds at all time.

Also during winter, the energy requirement to stay warm and produce eggs increases with the cold temperatures. The best tactic is to keep plenty of a commercial balanced complete feed in front of the birds. These feeds will provide all of the vitamins, minerals, and protein the birds need. If temperatures drop extremely low, high energy grains such as corn or sunflower seeds can be used as a supplement. However, supplementation could cause a nutrient imbalance, and if an imbalance occurs, only feed a balance complete feed.

Most individuals don't think about ventilation for poultry, and during winter, will keep birds in air tight coups. This is the wrong thing to do. Poultry need plenty of air flow because poor air flow increases chances of respiratory diseases. Respiratory diseases are usually caused by high amounts of dust and ammonium buildup. In your building, make sure there is at least a window that can be left open to provide plenty of airflow.

Lighting can be tricky because hens normally only lay eggs when the days are long in the spring and early summer, but through selective breeding, hens will now lay year round. However, during the winter, naturally lighting can be short, and the birds can decrease egg production. The best egg production happens when the birds have around 14 hours of lights. Artificial lights will work fine to keep production high. Without the lights, the birds will naturally slow egg production or completely stop during winter, but the lights will promote winter egg production.

Finally, flock health. During winter, predators will be hungry and looking for food. Poultry that are running free or kept up in a coup are at risk of becoming dinner. Make sure, windows and opening are secured with chicken wire to prevent predators from coming in the coups. If your chickens run free, keep a close eye on your birds during the day, and make sure to put them up in a lockable coup at night.

Winter can be difficult for your poultry, but remember fresh water, plenty of feed, plenty of ventilation, and plenty of care will be your birds' best friends.

Roast Venison

Cook Wild KENTUCKY

Ingredients:

- 4 pounds venison roast
- 1 teaspoon salt
- 2 tablespoons flour
- 2 tablespoons oil
- ¼ teaspoon garlic powder
- 1 onion, sliced
- 2 tablespoons brown sugar
- ¼ cup lemon juice
- 4 cups low-sodium canned tomatoes
- ¼ teaspoon browning sauce, if desired

Directions:

Season roast with salt and roll in flour. Brown on all sides in hot oil in a heavy skillet. Place in a slow cooker and add remaining ingredients. Cook on low for 10 hours or on high for 6 hours.

Tips:

Leftovers ideas: cold sandwiches, heated in barbecue sauce for hot sandwiches, or diced into soup or stew.

Nutrition facts per serving: 250 calories; 6g total fat; 2g saturated fat; 0g trans fat; 130mg cholesterol; 330mg sodium; 10g carbohydrate; 2g fiber; 0g sugars; 21g protein; 0% Daily Value of Vitamin D; 0% Daily Value of Calcium; 5% Daily Value of Iron; 10%

EFNEP Expanded Food and Nutrition Education Program

SNAP Putting Healthy Food Within Reach — USDA Supplemental Nutrition Assistance Program

University of Kentucky College of Agriculture, Food and Environment Cooperative Extension Service

Source: Adapted from Venison Recipe Collection, Compiled by Becky Nash, Extension Agent for Family and Consumer Sciences

Find this Cook Wild Kentucky recipe and others for Fish, Venison, Rabbit, Dove, Frog Legs, and more at: https://planeatmove.com/recipes/, then browse by Category, and choose Cook Wild Kentucky.