



Vet Call

► by **Bob Larson**, professor of production medicine, Kansas State University

Liver Flukes

Liver flukes are parasites of cattle that are particularly problematic in some parts of the United States. The U.S. Department of Agriculture (USDA) estimates that approximately 5% of harvested cattle are infected with liver flukes. But in some parts of the country, a very high percentage of adult cows are found to have liver flukes at harvest.

Fluke infection

Liver flukes cause economic loss through liver condemnation at harvest and decreased growth and reproductive efficiency. Black disease and redwater disease are caused by clostridial bacteria that live in the soil and commonly infect cattle. These diseases can cause death if they get a foothold due to the liver damage caused by flukes.

Liver flukes have a complex life cycle. Cattle can only be infested with liver flukes by eating fluke larva from an infected water-living snail. The most common fluke infesting cattle is *Fasciola hepatica*. Another common liver fluke is the giant deer fluke, or *Fascioloides magna*.

Because of the specific intermediate host (lymnaeid snails), liver fluke infection can only occur in certain areas of the country. Cattle most likely to be affected with *F. hepatica* are those grazing in low-lying swampy areas, flood-irrigation areas, or anywhere that surface water or small, slowly moving streams favor the propagation of snails.

The snail that serves as the intermediate host of *F. hepatica* is found in the Gulf Coast states and in some western states. Years with high rainfall in these states correlate with years of heavy fluke infestation.

The giant deer fluke is a problem in Gulf Coast states, the Great Lakes region and the Pacific Northwest where it naturally infests deer, elk and moose.

Cattle can serve as a dead-end host for the giant deer fluke, meaning that cattle can become infested and can experience liver damage due to the fluke, but if the fluke is living in cattle, it cannot fully mature and lay eggs. In the Gulf Coast states, most fluke transmission occurs between February and June. Transmission stops with the death of eggs, snails and immature flukes in the first sustained drought of the summer. In the Pacific Northwest, cold winter conditions inhibit snail and fluke reproduction.

Young flukes cause extensive liver damage as they migrate, but they are difficult to kill at this stage. The amount of damage to the liver is related to the number of young flukes migrating through — with cattle showing few or no signs of problems to more severe problems such as diarrhea, weight loss, and a yellowing of the membranes around the eyes and vulva in heavily infested cattle.

Adult flukes cause very little damage but are relatively easy to kill with available treatments.

Even though cattle living in many states cannot become infected with flukes, cattle with flukes can be transported to any part of the country and be diagnosed far from their source. Most cattle infested with liver flukes appear healthy, and death is very rare.

Some mildly infested cattle have no reduction in performance, but cattle with a higher level of infestation will have decreased weight gain in growing animals, and poorer body condition and milk production in reproducing animals. The poorer body condition of cows infested with flukes may lead to decreased pregnancy rates.

Finding flukes

Diagnosis often occurs during a necropsy or at harvest. *F. hepatica* can sometimes be diagnosed from a fecal test, but because of the size of fluke eggs, the test differs from that used to diagnose other internal parasites of the stomach and intestinal tract. Fecal tests in infested cattle are not always positive because flukes less than 2-3 months of age are immature and unable to lay eggs. Therefore, cattle can be showing signs of diarrhea and weight loss due to migrating young flukes, but a fecal test would be negative.

Cattle most likely to be affected with *F. hepatica* are those grazing in low-lying swampy areas, flood-irrigation areas, or anywhere that surface water or small, slowly moving streams favor the propagation of snails.

Even in older infections, few flukes reach adulthood, and they pass a small number of eggs. Therefore, an animal with a heavy fluke population could have a negative fecal test. In addition, the eggs tend to stay in the gall bladder and are only occasionally released.

Because of this effect, an animal with only a few adult flukes could occasionally have a large number of eggs found on a fecal test.

Because the giant deer fluke does not complete its life cycle in cattle, no eggs are produced or passed in the feces, making diagnosis by fecal examination impossible.

Cattle can be treated for *F. hepatica* fluke infestation with one of two drenches, Valbazen® (albendazole from Pfizer Animal Health) or Curatrem® (clorsulon from Merial), or with an

injectable product, Ivomec-Plus® (clorsulon plus ivermectin from Merial). These treatments are only effective against adult *F. hepatica* flukes (greater than 11 weeks of age) and are almost totally ineffective against *F. magna*.

Timing of fluke treatment is very dependent on location and grazing pattern. Therefore, if you live in an area with a risk of liver fluke infection, you should work with your local veterinarian to devise an appropriate control plan. Removal of adult flukes will not decrease risk of liver condemnation, because the damage has already been done; however, it does enhance performance in severely fluke-infested cattle and may help decrease exposure of snails living in your pastures to the fluke eggs.

Prevention in areas of the United States that harbor lymnaeid snails involves draining shallow stagnant ponds, fencing cattle away from shallow bodies of water or treatment of snail-infested water with copper sulfate at 21-day intervals.

E-MAIL: rlarson@vet.ksu.edu

