

LIVER FLUKES

This past year has been mild or wet and mild in many areas of the state and cattle may be on irrigated pastures earlier and longer than usual. Because of these factors, liver flukes may be more of a problem than in most years. Just the thought of these creatures makes you a little bit uneasy. The idea that a microscopic "egg" on a blade of grass can end up as a large parasite in the liver of your cattle sounds like something out of a science fiction novel. However, that is just what happens and very few beef cattle slaughtered in California are free of liver flukes. The common liver fluke of cattle, *Fasciola hepatica*, does have this bizarre life cycle. The cattle ingest grass with an encysted stage of the fluke present. After the cattle eat this contaminated grass, the juvenile flukes "burrow" through the lining of the intestine, escape into the peritoneal cavity (the inside of the abdomen) and migrate to the liver. The flukes bore their way into the liver and over the next 6 weeks or more make their way to the interior of the liver and finally arrive in the bile ducts where they begin to lay eggs. The fluke eggs are shed into the manure of the cattle. These eggs hatch and make their way to fresh water snails, which they infect and undergo additional development. They eventually emerge from the snail as young flukes and encyst (form a resistant coating) on blades of grass. When cattle ingest these cysts, the life cycle of the fluke can be completed.

What damage do flukes cause? This is a common question, since such a high percentage of our cattle in California have liver flukes. The young flukes cause quite a lot of damage as they migrate through the liver. If only a few flukes are migrating through the liver at one time, the damage to the cattle is minimal. However, if many flukes are migrating at the same time, the damage to the liver can be extensive. In these cases, diarrhea, weight loss, and jaundice (yellow mucous membranes) can be observed. In addition to the direct damage to the liver, there is another problem liver flukes can precipitate and that is Redwater.

Redwater (Bacillary Hemoglobinuria) can affect cattle at any time of the year; however, it is most common in the late spring, summer, and autumn. Redwater is caused by a bacterium called *Clostridium hemolyticum*, which colonizes in the liver of susceptible cattle and produces protein toxins that in turn destroy the body's red blood cells, damages other organ systems and rapidly causes death. The migrating flukes damage local areas in the liver causing low oxygen tension and the bacteria prefer these conditions and begin to grow rapidly in these damaged areas. The disease has a short incubation period and the vast majority of affected cattle are usually found dead and bloated. ***NOTE: If a mature cow or bull is found dead and bloated when it was normal the day before always suspect Redwater as the cause of death.***

Another problem liver flukes seem to be associated with is decreased fertility. Studies have shown decreased pregnancy rates in replacement heifers and increased age to puberty in heifers infected with liver flukes. Thus, flukes can cause losses in a number of ways: (1) direct damage to the liver, with weight loss and diarrhea, (2) death loss due to Redwater secondary to liver damage of migrating flukes, and (3) decreased reproductive performance.

Can we eliminate liver flukes? Because of our relatively mild winter conditions, the abundance of snails (the intermediate host), and wildlife reservoirs, it is doubtful we will be able to eliminate flukes on our ranches. We do not have liver flukes as a problem in our feedlots or dairies because of the absence of these sources of infection.

How can we minimize the losses due to flukes? Our best option is the use of drugs to kill the flukes during strategic times of the year. Unfortunately, the timing is dependent on the individual ranch operation. Killing the adult flukes that are residing in the liver of cattle ***before*** turning them onto clean pastures seems to be the most cost-effective strategy. This not only kills the flukes; but it prevents further shedding of eggs on the pastures. Maximum transmission of flukes occurs in spring and summer in warmer regions and late summer to fall in cooler regions. Depending on your pasture rotation schedule, the use of drugs to kill flukes in the fall or late winter/spring should be the minimum management strategy.

Which drugs are effective against liver flukes? Currently, there are only two drugs available that are effective against liver flukes in cattle. Both work best against the adult flukes, but there is some effect on the migrating juvenile flukes. Clorsulon is effective only against liver flukes and it is sold alone as Curatrem® or in combination with ivermectin as Ivomec® Plus. Thus, Curatrem® can be used to kill the flukes or Ivomec® Plus can be used to kill the flukes plus the internal parasites (worms) and external parasites (sucking lice). Additionally, albendazole (Valbazen®) has activity against flukes and internal parasites. All the drugs and combinations of drugs have advantages and disadvantages in terms of cost, ease of administration, withdrawal times, and effectiveness. Consult with your veterinarian to be certain which product will work best for your operation. Also, review with your veterinarian the time of year that will be most cost-effective for administration of drugs to kill flukes.

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