

## **WQL18 - Animal Enhancement Activity – Non-Chemical Livestock Pest Control**

The major **external parasites** of beef cattle in Louisiana are the horn fly, the stable fly, horse flies and deer flies. Mosquitoes and black flies can be serious pests during epidemics. It is important to correctly identify the species. This paper will describe the parasite and address basic management considerations. For assistance in identifying the parasite, consult your local extension agent.

### **Horn Flies**

This annual pest infests cattle statewide. The horn fly was introduced into the United States more than a century ago. Since then, it has become one of the most important fly pests of pasture and range cattle. Although most cattle can tolerate up to 200 horn flies without showing economic losses, larger numbers of these flies decrease cattle weight gain and milk output.

Male and female horn flies feed on blood by using rigid mouthparts underneath their heads. This feeding activity is painful and annoying to cattle. Horn flies congregate on the backs of cattle, often clustering on the midline and spreading down the sides. Sometimes, horn flies settle around the bases of horns, and when the weather is hot, they may move onto the belly.

After the flies feed and mate, the female is ready to deposit eggs. She moves to the rear of the cattle host, flies to the ground as the animal defecates, and becomes covered by dung. This activity occurs frequently during early morning.

Horn fly eggs are small, reddish-brown and generally laid in clumps on grass and other vegetation covered by the cow pat. After a time, which varies depending on temperature, the eggs hatch, and maggots develop in the dung. When mature, the maggots pupate in or below the pat, and later, emerging adults disperse to seek cattle hosts. Life cycle development from egg to adult fly requires about two weeks.

### **Stable Flies**

Stable flies are biting flies that are normally a problem in Louisiana during the cooler months. Stable flies normally feed below the knees and hocks of cattle, but they can move onto the sides and backs if populations are heavy. Cattle will often bunch together in an effort to defend themselves from heavy stable fly infestations. They will also stand in water to protect their lower extremities.

The larva or maggot of this fly develops in decaying vegetation or organic matter. Manure mixed with stall litter, spilled feed or hay makes an ideal medium for stable flies to lay their eggs. For this reason, stable flies have traditionally been a bigger problem around barns and feed lots. This pest has become a more important pasture pest because of feeding large, round hay bales during the cool season. Hay spillage and manure in feeding areas make an ideal breeding medium for stable flies.

Sanitation is an effective management practice that reduces stable flies by eliminating their breeding habitat. These practices include proper disposal or handling of manure, feed and hay residues. Spreading or disking helps to dry out residues around feeding areas. The use of hay racks reduces spillage and spoilage of hay.

### **Horse Flies and Deer Flies**

There are many species of horse flies and deer flies that belong to a broad group of flies referred to as tabanids. In Louisiana, more than 100 species of tabanids are pests of livestock. These flies have certain common characteristics, but they vary in appearance and size, ranging from ¼ inch to 1 ¾ inches in length. Tabanids are blood-sucking flies that have broad, flat, blade-like mouthparts that inflict a deep and painful wound.

Adult female flies require a blood meal to support egg development, but the remainder of the life cycle is independent of livestock. Male flies do not bite or suck blood. **Female flies lay their eggs on vegetation that usually borders some source of water.** The larval state develops in the water, but they pupate in drier soil. The entire life cycle requires from two months to two years, but most species have only one generation per year. Adult flies are normally present for about a month, but the tabanid season can be longer if multiple species are present. Tabanids are vectors of numerous diseases such as anaplasmosis and equine infectious anemia.

Horse flies and deer flies are the most difficult livestock pest to control, primarily because of their life cycles. The entire life cycle, except for the female fly, is independent of livestock. The female flies spend only a few minutes feeding on cattle to generate eggs for the next generation.

Locating cattle away from tabanid breeding habitats and wooded areas will help avoid attacks from these flies.

### **Mosquitoes**

Mosquitoes are blood-sucking insects that irritate and stress cattle, thus reducing feed intake. In extreme cases, heavy infestations can result in death through suffocation or heavy blood loss. All mosquitoes require some source of water for the immature stages to develop. Females lay their eggs in water or in places that will eventually be flooded. Once eggs are in contact with water, the life cycle from egg to adult requires about one to two weeks. Only the adult females of most species suck blood.

Massive numbers of mosquitoes can build quickly in south Louisiana under certain environmental conditions. Several species of floodwater mosquitoes can develop huge populations when heavy rainfall follows an extended drought. Large numbers of eggs are laid in dry areas, but they remain dormant until activated by rain and rising water. Solitary cattle such as bulls are always the most susceptible to massive mosquito attack. Cattle herds can partially defend themselves by bunching together and lying in mud.

### **Black Flies or Buffalo Gnats**

Black flies or buffalo gnats are tiny (1/25 to 1/5 inch in length), robust flies that range in color from orange to black. The females are biting flies that require a blood meal to produce and lay eggs. Black flies and buffalo gnats are sporadic, localized pests in Louisiana, but they can be quite damaging when massive outbreaks occur.

Eggs are laid in or on the edge of flowing water and the larvae feed on small aquatic life. Adult flies emerge from the water and mate shortly afterward. These flies are vicious biters and can transmit certain diseases. They are most dangerous when explosive outbreaks occur along river basins and streams. Heavy, relentless infestations can kill livestock in a matter of hours. Death is the result of acute toxemia, shock, heavy blood loss or suffocation from inhaling large number of flies.

Management practices include the use of smoky fires to repel flies and moving cattle away from the aquatic sources of infestations.

The major **internal parasites** of beef cattle in Louisiana are the roundworms (nematodes), and flukes (trematodes).

### **Roundworms**

In the host animal, **roundworms** produce eggs. The egg is expelled from the host with the feces, contaminating the pasture. A first-stage larva hatches from the egg. The larva will molt two times before it becomes a third-stage larva. Once the larva is in its third stage, it is capable of migrating from dung pats and soil onto moist grass. Larvae can survive up to a year on pasture. Infection occurs when the third-stage larva is consumed with the grass. The larva completes its life cycle in the gastrointestinal tract of its host. Once the adult stage is reached, copulation occurs and the life cycle starts over.

### **Flukes**

The fluke's life cycle requires two hosts – cattle and snails. The adult flukes are found in the bile ducts of cattle. The eggs are laid in the ducts and expelled with the feces. A larval stage hatches from the egg and infects the snail, where it reproduces asexually. Specific stages of the juvenile fluke leave the snail and encyst on aquatic vegetation. Cattle eat the vegetation and become infected. The fluke migrates to the liver, infects the bile duct and matures into an adult.

### **Pasture practices for reducing parasitism**

The amount of parasite pressure in a pasture varies with season and management. Parasite burden peaks during the spring and is lowest during the hot, dry summer months. Cattle in drylot systems typically have fewer worms and less seasonal variation. Parasite pressure will be less under good management conditions as well.

Part of the roundworm life cycle is on pasture. Pasture management methods designed to reduce third-stage larva populations include the following:

- Move more susceptible younger cattle to a safe pasture. Safe pastures include pastures that were not grazed during the last 12 months as well as small grain pastures developed from a prepared seedbed.
- Place less susceptible, mature cattle on the more contaminated pastures. Mature cows under a good nutrition program develop some acquired immunity to parasites and are affected less by their presence than young cattle and calves
- Do not overgraze pastures. Animals on overgrazed pastures graze closer to the ground and pick up more larvae.
- If flukes are a problem, identify ways to increase pasture drainage and fence off problem areas such as ponds
- Miscellaneous practices include dragging manure piles in dry weather. Roundworm eggs can hibernate in manure piles out of sunlight.
- Have pastures that you make hay off of and then stockpile for grazing. Making hay will expose parasites in a field on short grass to sunlight and force them to retreat or hibernate below ground. Cattle will benefit grazing the field later when the grass is taller.