

FEATURES

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CONTROL OF FLY-BORNE DISEASES

Apart from the irritation that flies cause to animals, some species also serve as a source of infectious diseases. Some flies are biological transmitters allowing the multiplication of micro-organisms in their tissues, while others are mechanical transmitters, picking up the micro-organisms in the process of blood-sucking, feeding on wounds or discharges. The control of some fly-borne diseases may require control of the flies themselves while others require prevention of disease by vaccination.

Midge-transmitted diseases

Culicoides midges are an important group of flies. They are small flies about 1-3mm long which occur in large numbers in late summer and autumn when water is abundant. They breed along water courses and especially low lying vlei areas. Some also breed in fresh dung pads. Animals grazing in these areas are at risk especially from sundown to sunrise which is their most active time. The midges themselves cannot be eradicated but they can be avoided by using pyrethroids (Clout Pour-on, Triatix Plus),

and vaccination can be used to prevent the disease they transmit.

Three-day stiffness

This is a viral disease of cattle transmitted by midges. The disease is prevalent during summer and autumn, when the *Culicoides* midges are numerous. Five days after animals are infected by the virus, the animals develop fever, depression and stiffness. The disease usually clears up within three days, as the name indicates. More serious cases have been seen in which the cattle show severe stiffness, nasal discharge and watering eyes. Muscle tremors may be seen. In very severe cases the animals may lay down and be unable to rise at all. They develop bloat and salivate due to the loss of the swallowing reflex. Later the animals slide into a coma and die. Beef cattle are usually not badly affected with the exception of the very heavy animals like bulls. The main problem with this disease is the effect on dairy animals: there is a huge drop in milk production and abor-

tions can occur. Dairies which are situated near dams or vleis are at high risk. Affected animals need intensive veterinary care.

Although there is a vaccine available it gives only partial immunity and total reliance must not be placed on the vaccine. Animals at risk should be treated regularly by the application of pyre-

Photo1. Stable flies cause loss of production and transmit diseases



throid containing dips, sprays or pour-ons (Decaspot 0,5% Pour-on, Triatix Plus Pour-on, Decatix 3, Wipe Out, ECObash). Midge breeding sites should be avoided if possible.

Blue tongue

Although *Culicoides* midges prefer feeding on cattle, they do attack sheep and they transmit the blue tongue virus

Lumpy skin disease can be catastrophic in dairies as milk production can fall dramatically and cows can develop mastitis due to lesions occurring on the udders.

in the process. Sheep grazed in low-lying vleis are especially at risk and particularly at the time of their greatest activity, from sundown to sunrise. Blue tongue is an exceptionally important disease of sheep because of the damage it can do to the flock; up to 30% of lambs may die and those that survive may have lasting muscle damage, suffer a break in the wool, and lose weight. Although there is a variation in susceptibility among sheep breeds and even individuals, the typical symptoms of blue tongue are high fever, inflammation of nose and lips, which later progresses to erosions. The head and tongue may show severe swelling. In more severe cases the feet will be affected causing lameness and animals may walk on their knees due to the severity of the pain.

Vaccination is the only practical method of control although it is labour intensive, because the vaccine contains 21 different strains divided into 3 separate vaccines. These three have to be given separately at three week intervals. Sufficient time must be allowed for this vaccination programme before the peak blue tongue season in late summer. It must also be borne in mind that pregnant ewes cannot be vaccinated in the first half of pregnancy so vaccination must be carefully planned to fit in with management issues. Midge attacks on sheep can be reduced by avoiding vleis

and also by grazing cattle with sheep.

Mosquitoes

Certain mosquito species have a preference for livestock and these breed in their millions during very heavy summer rain seasons. These conditions are ideal for the transmission of Rift Valley Fever virus (RVF). RVF is a disease of cattle, sheep and goats which causes abortion storms of 40-100 %, and acute deaths of lambs and kids (30%). Calves may also be affected but to a lesser extent. The last outbreaks were seen in SA during the 1970s although the virus is known to be present. It would appear that outbreaks have been prevented due to summer rain falling later in the season, preventing the multiplication of the specific mosquito species. However, vaccination is easy and economical and should be done before the summer season.

Stable flies

Stable flies (*Stomoxys calcitrans*) are biting, blood-sucking flies which cause problems in intensive systems such as dairies, pig units and poultry houses. They breed in compost heaps and manure. The flies transmit important diseases but also cause severe irritation and lead to significantly lowered production of milk and meat. Lumpy Skin Disease is a viral disease transmitted by stable flies, chiefly in the summer months. Before the development of the characteristic lumps, the animals develop a fever and are depressed. The skin lesions appear 14 days after the original infection and these can be limited to focal areas or can be widespread all over the body. Initially the lesions are slight lumps under the skin but later the skin may fall out and leave deep open wounds. More severe and often fatal cases are often seen in young animals, affecting the internal organs such as the trachea.

In dairies the disease can be catastrophic as milk production falls dramatically and cows

Photo 2. Blue tongue is a serious disease which can be prevented with proper vaccination programs



develop mastitis due to lesions occurring on the udders. The control of LSD is simply vaccination of animals at weaning and thereafter annual vaccination of all animals. Usually calves are protected by colostrum immunity but there is a small percentage of animals that are genetically unable to develop antibodies although they themselves are immune to the disease. Such a cow may not be able to protect her calf, and in herds where this is a problem calves should be vaccinated earlier than the recommended 3-6 months, repeating vaccination again some months later. Note that LSD can be spread from one area to another by the transport of infected animals. LSD can be confused with Allerton virus infection which is also transmitted by stable flies, but this is a mild condition which clears up uneventfully.

Anaplasmosis

Anaplasmosis is chiefly a tick-borne disease but the organism can also be transmitted by stable flies especially in dairies and feedlots. An outbreak of anaplasmosis begins by tick infestation but can spread rapidly by stable flies. Fly control is therefore very important.

Besnoitia or elephant skin disease

Photo 4. Elephant skin disease occurs in Limpopo province and is easily prevented using pyrethroid applications. (Onderstepoort Veterinary Institute)



Photo 3. Lumpy skin is a serious virus disease which is transmitted by stable flies. It is easily prevented with annual vaccination. (Onderstepoort Veterinary Institute)



Elephant skin disease is a protozoal disease transmitted by stable flies. The disease is confined to Limpopo Province where the origin of the parasite was in wildebeest. The parasite causes a thickening of the skin, which leads to fold formation. The disease can cause sterility in bulls if the scrotum is affected. The condition can be prevented by the control of

stable flies. Stable fly control under extensive conditions is achieved by the application of pyrethroid dips/ pour-ons (Decaspot 0,5% Pour-on, Triatix Plus Pour-on, Decatix 3, Wipe Out, ECO-bash).

House flies and their relatives

House flies (*Musca domestica*) are non-biting flies which breed in manure and other organic material like kitchen waste. They occur in large numbers around houses and farmyards because they usually have suitable breeding sites. House flies cause annoyance which leads to milk reduction and weight loss. They are mechanical transmitters of bacteria and play a role in the spread of mastitis and eye infections.

Face flies are small flies which follow cattle on the veld. The adult flies feed on wounds and eye discharges.

Eye infections

A variety of micro-organisms cause eye infections in sheep and cattle for example *Moraxella*, *Chlamydia* and *Mycoplasma* species. Infection occurs in summer months and is predisposed by high inten-

sity UV radiation and low levels of vitamin A. Infection is spread rapidly by flies when animals are kraaled together. Infected animals must be separated and treated with the administration of tetracyclines. The control of flies will limit the spread of these infections.

“False bruising”

The condition of cattle referred to as “false bruising” is actually an infestation with the roundworm *Parafilaria bovicola*. It is spread by the face flies *Musca lusoria* and *M. xanthomelas*. The flies lay their eggs in the manure of

cattle and feed on wounds and the area around the eyes. The *Parafilaria* worms develop in the body of the face flies and burst out of their mouthparts when the flies are feeding. The tiny worms enter the eyes of cattle and migrate until they enter the bloodstream of the cow. The females settle under the skin, laying eggs and causing small wounds or “bleeding points”. This attracts the face flies which pick up the worm eggs and thus complete the worm’s life cycle.

“False bruising” reduces the value of the carcass after slaughter because the affected areas have to be trimmed away. Infestations are easily treated with macrocyclic

lactones (EComectin 1% injectable, EComectin Cattle Pour-on). Prevention using pyrethroid-containing dips and sprays is very effective (Decaspot 0,5% Pour-on, Triatix Plus Pour-on, Decatix 3, Wipe Out, ECObash).

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Photo 5. The typical “bleeding spots” caused by infestation with the worm *Parafilaria bovicola*. The worm is transmitted by face flies and causes the “false bruising” syndrome.

