

AFRICAN HORSE SICKNESS – THE DILEMMA

We are still in the danger zone concerning the potential for horses to become infected with African Horse Sickness (AHS). This viral disease is transmitted by biting midges of muggies (*Culicoides* spp.) that are very small blood sucking insects - similar to a mosquito. In horses they can transmit African Horse Sickness while in sheep they can transmit another viral disease - Blue Tongue. Interestingly, in both disease conditions, the vaccines that are available in the market are composed of multiple strains of the virus in an attempt to ensure a satisfactory immune response. *Culicoides* midges predominantly feed at night and the high risk periods are from dawn to dusk.

It has already been reported that a common response following bites by these midges is an allergic skin reaction known as “summer itch” so if your horses show summer itch you should know they are being bitten. The dilemma is how to protect our horses from being bitten by *Culicoides* midges.

Most of the currently registered external parasite treatments for horses are based on insecticides or these actives combined with synergists and plant oils/volatile oils. Research work has been conducted in many parts of the world to try to ensure that horses can be protected by the application of a treatment which would either kill or repel the biting midge before it can transmit the disease. Of all the insecticides, the pyrethroids are the most effective as a repellent and yet they are not sufficiently repellent to prevent *Culicoides* biting horses. Most products that have been developed for treating horses have been formulated in a manner whereby they will produce efficacy against both nuisance and biting flies as well as ticks. Typical examples of nuisance flies are house flies and of the larger biting flies are the horse fly or stable flies. The larger flies – house flies and stable flies can be artificially bred in laboratories and thus they lend themselves to efficacy testing under laboratory conditions. Due to the serious threat of malaria in man, laboratory strains of mosquitoes have been established so, they too can be used for testing products for either insecticidal or repellency properties, BUT THERE ARE NO SIMILAR LABORATORY TESTS FOR CULICOIDES MIDGES.

In the late 1990's, the Israeli Government tasked two veterinary researchers to investigate the repellency properties of a variety of active ingredients to determine how they would provide insect repellency when screened against field strains of *Culicoides* – using a light trap method. At that current time, the standard recommendation for treatment of horses or sheep to prevent AHS or Blue Tongue was to use a permethrin-based insecticide. The results of this trial showed that permethrin had a repellency for approximately 1hour, certain plant extracts had repellency properties for about two hours and one of the best known insect repellents DEET, was effective for up to four hours. A combination product which included a pyrethroid and several other active ingredients proved an effective repellent for about nine hours.

In man, the use of Citronella Oil is extensively used particularly in candles, but also topically. Citronella Oil is a volatile plant oil which evaporates at skin temperature. The protection against mosquitoes when applied to skin is approximately 20 minutes.

THE DILEMMA – HOW TO PROTECT OUR HORSES

In the quest to prevent AHS transmission to horses, one has to consider the life cycle and typical habits of the midges. They are bloodsuckers and are drawn to their host – the horse, by the warmth emitted by that animal, the CO₂ expired in its breath and the horse's smell which is always present in equine environments. The midges are not insects which land on surfaces like walls or structures like roofing etc., in which horses are stabled. The large variety of breeding sites for Culicoides makes it extremely difficult to apply any form of treatment to the breeding sites which will be effective. Light traps have been used in many parts of the world and have proved very effective in capturing huge numbers of midges, but these do not seem to reduce the population.

Protection of horses has to be focussed on preventing the midges from entering stables (to be able to bite the horses) or by confusing them so that the midges cannot find the horses. A stable which has effective mosquito-proof mesh applied to all apertures should prove successful. If overhead fans are erected in stables – and these are operated throughout the time when horses are placed in stables, this will break up and distribute the typical 'odour plume' from horses, which results in the midges having difficulty finding their prospective blood meal.

The last standard protection is to apply a **registered** product on the horses which may kill the midges that bite (and depending on its ingredients), have a repellency effect for a certain period of time. Based on the currently available registered products, the best protection for horses is if they are treated every night before they are placed in stables and in particular if it is not possible to stable them.

It is also imperative that the vaccines that are available, are used strictly according to recommendations as they are the best option of stimulating the horse's immunity to protect itself.

It should always be recognised that there are massive numbers of midges and that they are very hungry for a blood meal. If alternative hosts are available, then the midges will preferably feed on the easiest blood meal. If cattle are in close proximity to horses, they will provide an alternate blood meal and will not allow the virus to multiply in them. If however Zebra are near where horses are held, they will be a source of infection for midges biting them, and which may later bite horses and transmit the disease. AHS is a disease of horses and other equidae. Not all midges are infected, but it is a numbers game in that there are such large numbers of them –should there be a source of infection, then the incidence of infected midges will increase rapidly and then the opportunity for a horse to become infected with Horse Sickness rises dramatically.

Insect control measures which will serve little purpose in trying to control midges are fly baits, products for application to walls, doors, rafters or applications for manure heaps, fly traps, sticky tapes or localised protection measures like tick greases, ear greases etc. The Culicoides midges predominantly bite on the topline of horses and therefore physical barriers like blankets or face masks etc. will prevent midges biting.

“SUMMER ITCH”



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