

Mosquitos Livestock & Pets

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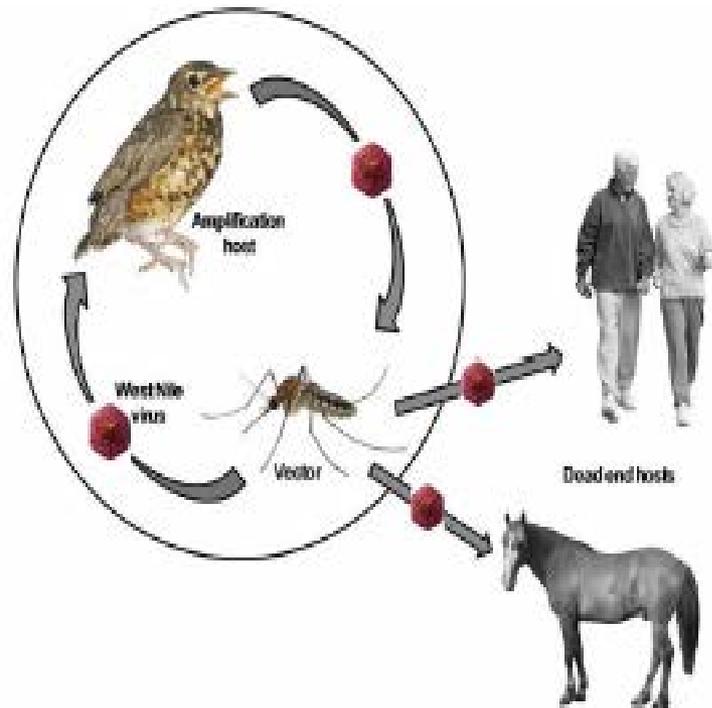
Animals Attacked

- All warm-blooded vertebrates including:
 - Birds- serve as host for most M-borne diseases
 - Humans- only recipients-dead end host
 - Horses
 - Pets
 - Cattle
 - Sheep
 - Goats
 - Pigs
 - Chickens

Life cycle

- The mosquito life cycle has four distinct stages: egg, larva, pupa, and adult
- Under favorable conditions, some mosquitoes can develop from egg to adult in 8 to 10 days. The amount of time to complete the life cycle varies according to the mosquito species, food availability, and weather conditions.

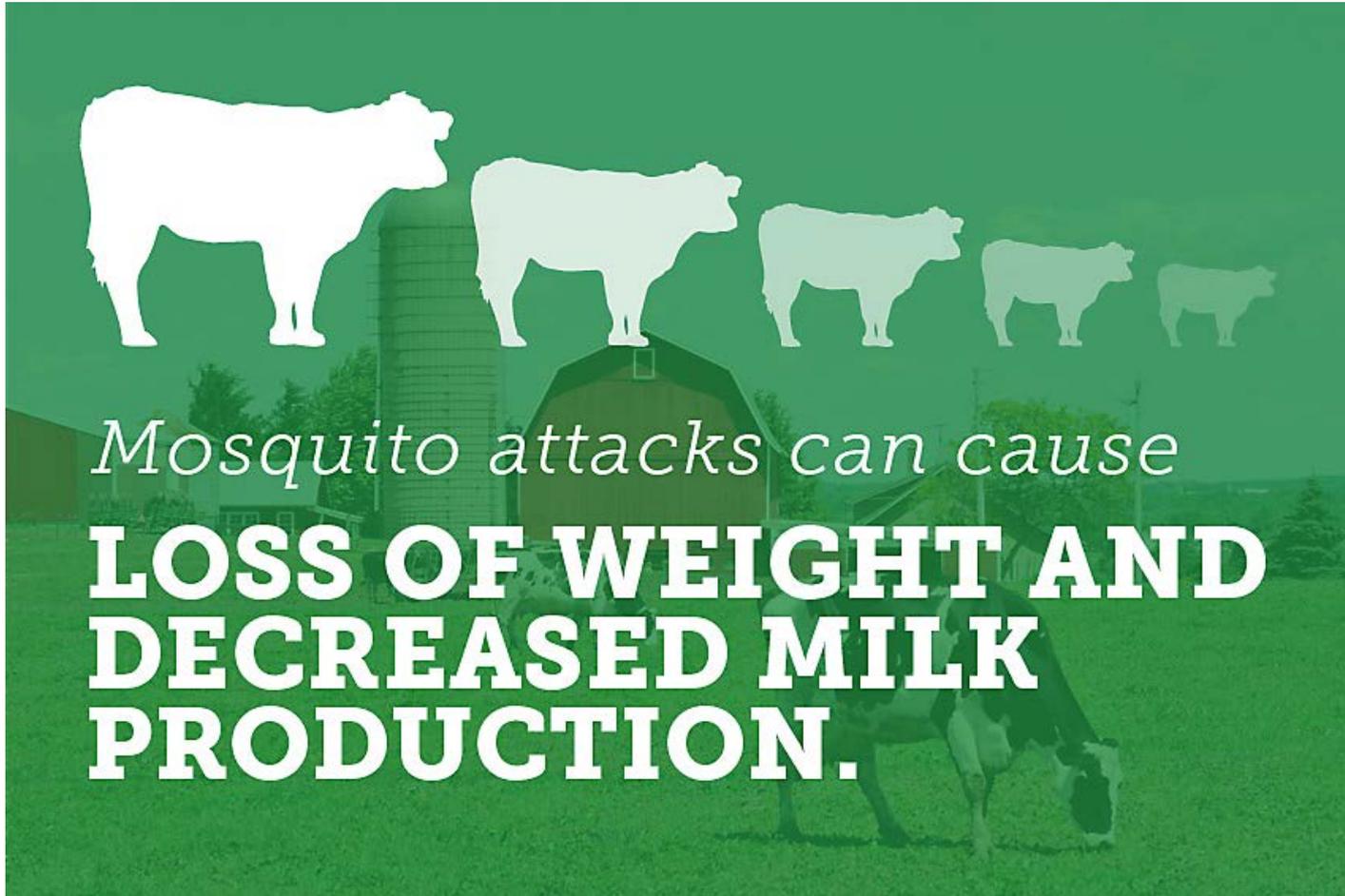
- Diagram showing how West Nile virus
- is transmitted among *Culex quinquefasciatus*, birds, and humans and horses.
- Humans & Horses are:
dead end hosts
- Birds are:
Amplification Hosts



Veterinary Impact

- Large populations of mosquitoes can cause irritation and extensive blood loss to livestock; this can result in reduced productivity and sometimes even death.
- Mosquitoes carry many different disease pathogens and viruses that infect vertebrates.

Mosquito Control for Livestock



Mosquito attacks can cause

**LOSS OF WEIGHT AND
DECREASED MILK
PRODUCTION.**

- While it is true that horses and wild birds are most at risk from mosquitoes, livestock such as cattle and chickens are also vulnerable.
- Diseases contracted from mosquitos is seldom seen or may go unnoticed in cattle, sheep, goats, pigs and chickens
- Preventive measures include insecticides in the form of pour-ons, ear tags and wormers which all help to repel the mosquito

Mosquito Control for Horses

Horses infected by West Nile virus have over a

30%

CHANCE

of dying or becoming disabled.



Four different mosquito-borne viruses that can devastate the horse brain:

- Eastern Equine Encephalomyelitis (EEE)
- Western Equine Encephalomyelitis (WEE)
- Venezuelan Equine Encephalomyelitis (VEE)
- West Nile Virus (WNV)
- EEE has a mortality rate of 75 to 95 percent, while the mortality rate for WEE is 20 to 50 percent. Both are referred to as “sleeping sickness” and are life-threatening viral diseases that attack the central nervous system. EEE and WEE are spread when infected mosquitoes bite horses after having picked up the virus, usually by feeding on an infected bird. There is no cure for either disease.

Vaccination Is Crucial

- The vaccines that are available are effective and inexpensive. The frequency that those vaccines should be used varies, depending upon region and mosquito presence throughout the year
- Make these vaccines a part of your core vaccination program for horses

Mosquito control for Pets

- Dog and Cat heartworm is caused by the transmission of the filarial nematode, by mosquitoes.
- The adult worm will live in the right ventricle of the heart and pulmonary arteries. An untreated dog or cat will likely die.
- The larva of the worm breaks out of the mosquito's mouthparts during feeding and drops to the dog's skin. The larva will then enter the skin through the hole made by the mosquito. In 70-90 days, the larva will reach the dog's heart where it will stay and develop into an adult.
- Preventative measures are the best way to control heartworm, drugs can be administered after infection but these are costly and very painful for the animal.

What is Integrated pest management (IPM)

- **Integrated pest management (IPM)** is an ecosystem-based strategy that focuses on long-term prevention of **pests** or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices.
- Pesticides are used only after monitoring indicates they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and nontarget organisms, and the environment.

Integrated pest management of larval and adult habitats

- Begin by altering water or eliminating it completely in order to reduce sources for larval development and egg laying.
- putting sewage lines underground, put land drainage through ditches or underground tile pipes, shred tires, dispose of unused containers that can hold water or put holes in the bottom, put lids on water-storage barrels
- alter pond vegetation to reduce suitable habitats

Biological Control

- can be accomplished with the assistance of mosquito fish and killfish, (Koi) which feed on mosquito larvae.
- Grass carp remove vegetation from areas where larvae harbor.
- Bats, birds and dragonflies all are known to feast on mosquitoes but they do not specialize on them and can have very little impact on the population.

Chemical Control of the Larvae

- Chemicals applied to the water ways as a larvicide. These can be light mineral oils, organophosphates or insect growth regulators (IGRs)
- Mineral oils spread over the water surface and prevent the larvae and pupae from getting their oxygen tubes out to get air and they suffocate.
- Organophosphates (such as temephos, Malathion, chlorpyrifos) function as a nerve poison.
- The IGR methoprene mimics juvenile hormone and interferes with metamorphosis and emergence.

Chemical Products

- Chemical products can be found in many formulations (dust, powder, water soluble liquid, emulsion, oil-soluble liquid, granule, pellet, briquette). Usage of a formulation depends on the biology of the target mosquito, the kind and size of habitat, the method of application, the chemical composition of the water and the presence of non-target organisms.

Chemical control of adults

- Adulticides have short term effects due to sunlight, wind and rain which cause degradation of the chemical.
- Typical application is done by aerial thermal fog or low- or ultra- low volume (ULV) sprays. These are applied by hand-carried equipment, motor vehicles or aircraft.
- Registered products for mosquitoes are organophosphates, carbamates, pyrethrins, and synthetic pyrethroids.
- Resistance is an issue of concern with all mosquitoes and surveillance is a must before spraying.

Know your product's active ingredients

- When choosing a pesticide to control mosquitoes, you first need to know the active ingredient. Look for the “Active Ingredient” statement on the front of the pesticide label, usually near the bottom of the label. This will allow you to compare to the list of active ingredients (Table 1) for outdoor mosquito control.

Vaccines and Drugs

- There are available and important tools in protecting animals susceptible to mosquito-borne diseases.
- Immunizations are available for equids for Eastern, Western and Venezuelan encephalitis and West Nile Virus.

Mosquito Control for the Farm

Three Basic Principles

- Ensure the prevention or elimination of wastewater that has been standing for more than four days.
- Keep the property irrigated so that there is no surface water standing for more than four days.
- Properly maintain the area around ponds, ditches and shallow wetlands.

Any standing body of water represents the perfect spawning ground for mosquitoes. They thrive in ponds, ditches, fields and containers.

Permanent natural bodies of water, such as ponds or wetlands, don't always represent good environments for mosquitoes because of the presence of predatory insects and fish.. Natural streams also tend to create stagnant pools as they weave their way through the property.

Are the chemicals being used harmful to people?

- In 2003 the Centers for Disease Control (CDC) issued a [report on acute health risks of several mosquito insecticides over a four year period](#) and found only 133 reports of human illness following mosquito spraying. These cases were from a population in the treated areas covering 118 million people (one illness per 887,000 people). They concluded that serious human health effects due to public health insecticide applications were uncommon and generally not severe, but recommended ways to reduce risks even further. Cities are advised to use integrated pest management strategies and inform the public when and where spraying will occur and how to reduce chances of exposure. Also, persons with exposure-related health concerns should consult their health-care providers prior to aerial spraying. Although risks of harm should be low, everyone is advised to stay indoors during evenings when spraying is scheduled.

How will aerial spraying affect bees?

- Insecticides used in mosquito control programs can be toxic to honey bees. Left unprotected, some bee colonies will suffer some mortality from aerial sprays, particularly those bees that cluster outside hives at night. For this reason it's important for beekeepers to take steps to protect their colonies on nights when aerial sprays are scheduled. Practical methods include moving hives out of the treated area or covering hives with loose fabric, like wetted burlap, to keep bees in the hive and protect from insecticide drift.

- Wild bees generally nest in protected locations and should be mostly protected because they are in the nest when sprays are applied at night. Although the full impact of aerial applications on honey bees and other wild bee pollinators is unknown, wild pollinator populations would not be expected to be harmed for long-term after sprays are discontinued.

For More information visit these websites

- <http://citybugs.tamu.edu>
- <http://livestockvetento.tamu.edu/insectspests/mosquito/>
- <https://agrilifeextension.tamu.edu/browse/mosquito-control/diseases/>
- <http://agrilifeextension.tamu.edu/wp-content/uploads/2016/09/ENTO-054-DIY-Backyard-Mosquito-Control.pdf>