BACKYARD FOGGING FOR MOSQUITO CONTROL

B&G

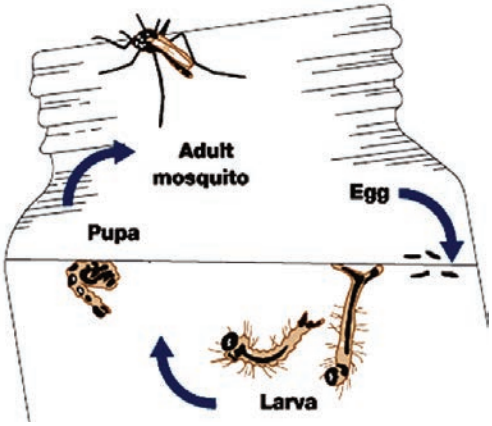
INTRODUCTION

There is a critical need for professional pest control to provide backyard mosquito control for urban and suburban areas across the country. Area-wide mosquito control programs provided by local government agencies have been greatly reduced or eliminated in many states. In many regions the non-public streets, gated housing communities, and the athletic fields of schools and parks are not being treated. In some communities backyard control programs provide by professional pest control is the only protection against mosquitoes.

Mosquitoes that occur in backyards can transmit disease to people and pets. Standing water provides a breeding site for species that carry Zika virus, West Nile virus, dengue, and dog heartworm. Professional pest control companies can provide a degree of protection from these diseases. Regular inspection and removal of larvae breeding sites and treatment for adult mosquitoes can reduce the annoyance and threat of disease.

MOSQUITO LIFE CYCLE

Mosquitoes breed in standing or still water in natural sites, and in containers around urban and suburban houses. The larval stages live in water and feed on algae and other microorganisms. Females lay eggs on the surface of water or on mud along the edge. Pupae are formed in the water, and the adults emerge at the surface and fly off.



Females fly from their breeding site to get a blood meal. They require a blood meal to produce each batch of eggs. They usually remain near the breeding site but can be carried along by a 4 mph breeze. They do not fly when wind speed is more than 6 mph. Male mosquitoes do not bite; they feed on nectar in flowers.

The feeding habit of mosquitoes depends on the species. Some feed during the day and generally bite below the waist, and other feed at dusk and dark and bit above the waist.

Culex. House mosquitoes begin feeding at dusk and continue to search for a host into the night. During the day they are inactive and rest on leaves in dense vegetation, away from the sun and protected from wind. These mosquitoes carry heartworm and are a threat to indoor and outdoor dogs and cats.

Aedes. These species feed only during the day. This group includes the Asian tiger mosquito *(Aedes albopictus)* that spreads dengue, and the malaria mosquito *(Aedes aegypti)* that spreads the Zika virus. These mosquitoes rest between flights in vegetation. Landscape shrubs and bushes around houses and backyard borders provide harborage for them.

MOSQUITOES AND DISEASE

- Common mosquitoes *(Culex species)* that occur around houses and in backyards can transmit West Nile virus (WNV), Eastern (EEE) and Western (WEE) equine encephalitis, and St. Louis and La Crosse encephalitis.
- West Nile virus remains an important disease in the U.S. In 2014 there were 36,500 cases, and 1,500 were fatal. The *Culex* mosquitoes that carry this disease commonly breed around houses and other buildings.
- Dengue fever is now spreading in the U.S. It is transmitted by the Asian tiger mosquito, *Aedes albopictus.* This species breeds in backyards across the country and represents a serious public health threat.
- Zika virus is a growing threat in the U.S. It is carried by *Aedes aegypti* mosquitoes, and the range of this mosquito is along the coast and into some central states.

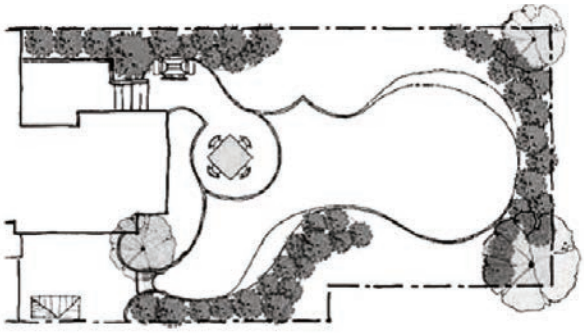
Distribution of Aedes aegypti

BACKYARD FOGGING FOR MOSQUITO CONTROL

Treating vegetation with mosquito control insecticides will kill adults on contact, and leave a residue for long-term control and repellency. Backpack foggers allow a service technician to direct small droplets of insecticide to day-time harborage in the interior of non-flowering shrubs and bushes. Controlling the droplet size and the coverage areas increases efficacy and reduces excess application.

Before You Start. There are several things to consider before making a backyard fogging application.

- ***Walk the entire site*** to determine what will be treated and how it can be done. Locate all the shrubs and bushes that will be treated. Locate the boundary lines between neighboring property, and the specific shrubs or fences that separate adjacent backyards.



- ***Establish a start / finish line*** and walk in one direction when spraying. This will provide a continuous treatment and prevent over-application. Determine the gaps that will not be treated, such as a row of flowering plants, lawn furniture, or bird bath.
- ***Consider wind direction*** to determine how it will influence the movement of spray droplets. A breeze as low as 4 mph can carry small droplets to non-target surfaces.

- ***Locate the flowering plants*** in the backyard and in adjacent yards. These should be kept out of the spray pattern. Anticipate whether the wind or slight breeze will carry droplets to flowers.
- ***Locate non-target sites and surfaces*** such as ponds, pools, pet dishes and pens, bird baths and feeders. These should not be contacted with insecticide. Do not treat benches, chairs, and play equipment. Pets should remain indoors and away from treated surfaces for 2 hours.
- ***Notify neighbors*** that a backyard treatment is scheduled so they are aware and can adjust their outdoor activity.

Application. The objective of fogging is to deliver droplets to the interior space and leaves of plants to kill adult mosquitoes.

Barrier spraying use large droplets to wet the surface of leaves for contact and residual control.

ULV fogging uses small droplets to treat the interior of trees and shrubs to kill adult mosquitoes on contact.

- Direct the spray to the middle and lower portion of the shrubs and trees. These areas are preferred by mosquitoes because they provide high humidity and protection from the sun and wind.

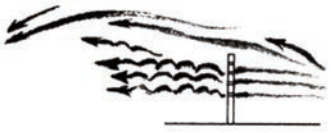
- Begin treating at the middle of the plant and work towards the bottom. This allows droplets to fall through the foliage. Do not treat shrubs or bushes that are above or near flowering plants.
- When ULV fogging, walk about 3 feet away from the plants to allow the spray droplets to penetrate the foliage.
- When barrier spraying, walk close to the trees and shrubs to allow the spray to wet the interior leaf surfaces.

FENCES, SHRUBS, AND AIR CURRENTS

Air currents, even a light breeze, can carry droplets when spraying or fogging.

Air flows like water, and it will flow over obstacles and break into small currents that turn back in direction. Fences, shrubs, and small bushes will change the air-stream form a fogger, and this can influence the movement of droplets.

Open fence. Fogger spray entering a line of trees or shrubs is slowed as it passes through the branches. It can also be deflected over the top of this obstacle. The decrease in speed may be keep spray droplets out of adjacent yards.



- Avoid treating the tops of shrubs that form a barrier between adjacent backyards. Mosquitoes rarely use this portion of the shrub as a resting place, and the droplets will be carried away.

Closed fence. Droplets from a spray applied behind a sold fence or dense vegetation will be deflected over the top. The air will usually curl back toward the fence. This pattern of air-flow may spread droplets to the opposite side of the fence, and into an adjacent backyard.

- Consider what is on the other side of a fence, such as flowering plants on a neighboring property, before fogging rather than after.

VERSA-FOGGER

The Versa-Fogger is a backpack fogger and barrier sprayer designed specifically for the control of mosquitoes and other small flies. The rugged stainless but lightweight steel and aluminum frame, and 4-stroke engine (no mixing gas and oil) combine to make this fogger easy to carry and easy to use.

Flow rate. The flow rate for the Versa-Fogger is 4 ounces per minute at the 1/2 open position of the nozzle.

ULV FOGGING

The Versa-Fogger delivers ULV droplets for effective mosquito control when the nozzle is set at the 1/2 open position.

- **65% of the droplets are 25 microns (ULV)**
- **10% of the droplets are 10 microns**

This is an effective mixture of ULV droplets for controlling various pest mosquitoes, including the *Culex* and *Aedes* species that occur in backyards.

The small droplets in the fog remain in the air long enough to contact mosquitoes or to settle on leaves at the center of the shrub or bush. There is little threat to bees because less than 2% of the droplets in the fog are less than 10 microns.

BARRIER SPRAYING

The Versa-Fogger delivers droplets for effective barrier treatments for mosquito control when the nozzle is set for 1/2 to full open position.

- **90% of the droplets are 50 microns (Mist)**
- **10% of the droplets are 16 microns**

This is an effective mixture of mist droplets and small droplets for covering the surface leaves of trees and shrubs. The insecticide residue would provide control of *Culex* and *Aedes* species that rest on the leaves. The small droplets in the spray would contact and kill adults of these mosquitoes.