

MOSQUITO CONTROL HANDBOOK

PUTTING OVER 50 YEARS OF EXPERTISE INTO YOUR HANDS



MOSQUITO BASICS:

Mosquitoes are masters of two habitats, aquatic and terrestrial, making them especially challenging to control.

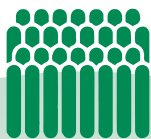
Effective control requires understanding their biology, identifying breeding sites, and applying the right control strategy at the right stage of the mosquito life cycle. This handbook is designed as a practical field guide to support reliable mosquito control.

For over 50 years, Zoëcon Professional Products has been a leader in mosquito control. Offering larvicide and adulticide products for commercial applicators and government control programs alike. With this guide, you'll find quick-reference information on common mosquitoes, breeding sites, treatment strategies, and product solutions to help interrupt mosquito development and reduce nuisance populations.

UNDERSTANDING

7-10 DAY LIFE CYCLE:

The length of each stage depends on temperature and species. Successful mosquito management requires interrupting the mosquito life cycle as part of an integrated pest management (IPM) program.



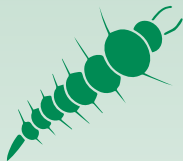
1

EGG

Laid on or near standing water, eggs from female mosquitoes can number up to 300. They can also remain viable long-term when dry.

Eggs usually hatch within 48 hours but are affected by warmth and moisture.

2



LARVAL

Larvae live in the water and must come to the surface to breathe. They feed on organic matter during this growth phase, which is the easiest phase for control.

Larvae remain in this stage for up to two weeks and are often referred to as "wigglers" from their swimming pattern.

3



PUPAL

The pupal stage is the most active stage of development, when the mosquito transforms into an adult. No feeding occurs in this stage making bacterial larvicides ineffective during this transition.

Often called "tumblers," the pupae remain in this phase for about two days, before the adult mosquito emerges.

4



ADULT

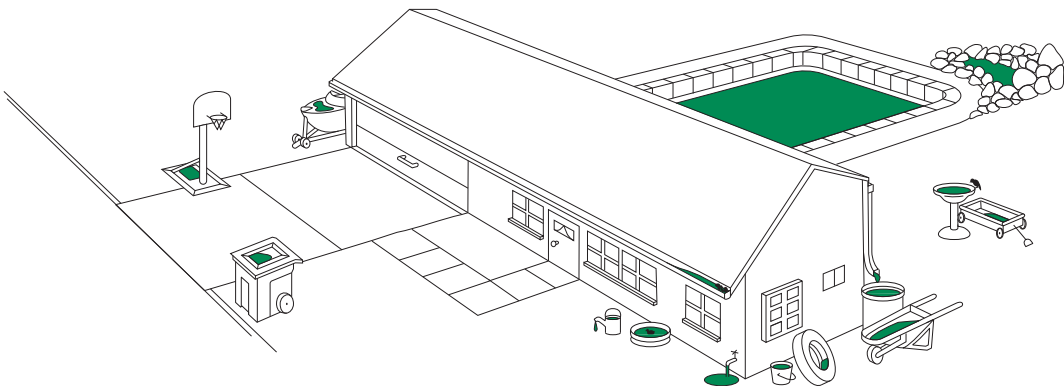
Newly emerged adults rest on the water surface to dry. Females will then seek blood meals for egg development.

With short life cycles and expansive breeding sites, adults are difficult to control, thus making source reduction and larviciding necessary to any successful control program.

BREEDING SITES

COMMON MOSQUITO AREAS:

Mosquitoes lay eggs in standing water, which makes water management and source reduction critical parts of control programs.



Mosquito Larvae Commonly Develop In:

- Storm Drains
- Abandoned Pools
- Clogged Rain Gutters
- Artificial Containers
- Catch Basins
- Birdbaths
- Septic Seepage Areas
- Any Location
Holding Stagnant Water

Adult Mosquitoes Typically Rest In:

- Tall Grass
- Hedges
- Weeds
- Areas Close To Human Activity
- Dense Brush

DID YOU KNOW?

Eggs can hatch in as little as 0.5 oz of water or about a bottlecap's worth.



MOSQUITO

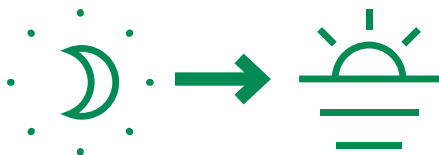
BEHAVIOR & ACTIVITY:

Mosquito Activity Depends on Species:



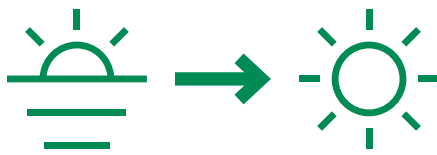
CULEX

Most Active From
Dusk To Dawn



AEDES

Often Active From
Morning To Afternoon



SEE MOSQUITO GENERA SECTION

Mosquitoes may also seek shelter in enclosed spaces that provide protection from extreme temperatures such as:

- Garages
- Sheds
- Under Homes
- Crawlspace
- Bathrooms
- Basements

THE DANGERS MOSQUITOES POSE:



DID YOU KNOW?

Dog heartworm can be transmitted by over 70 species of mosquito

Mosquitoes are widely known for transmitting malaria, but they are also vectors of several other diseases.

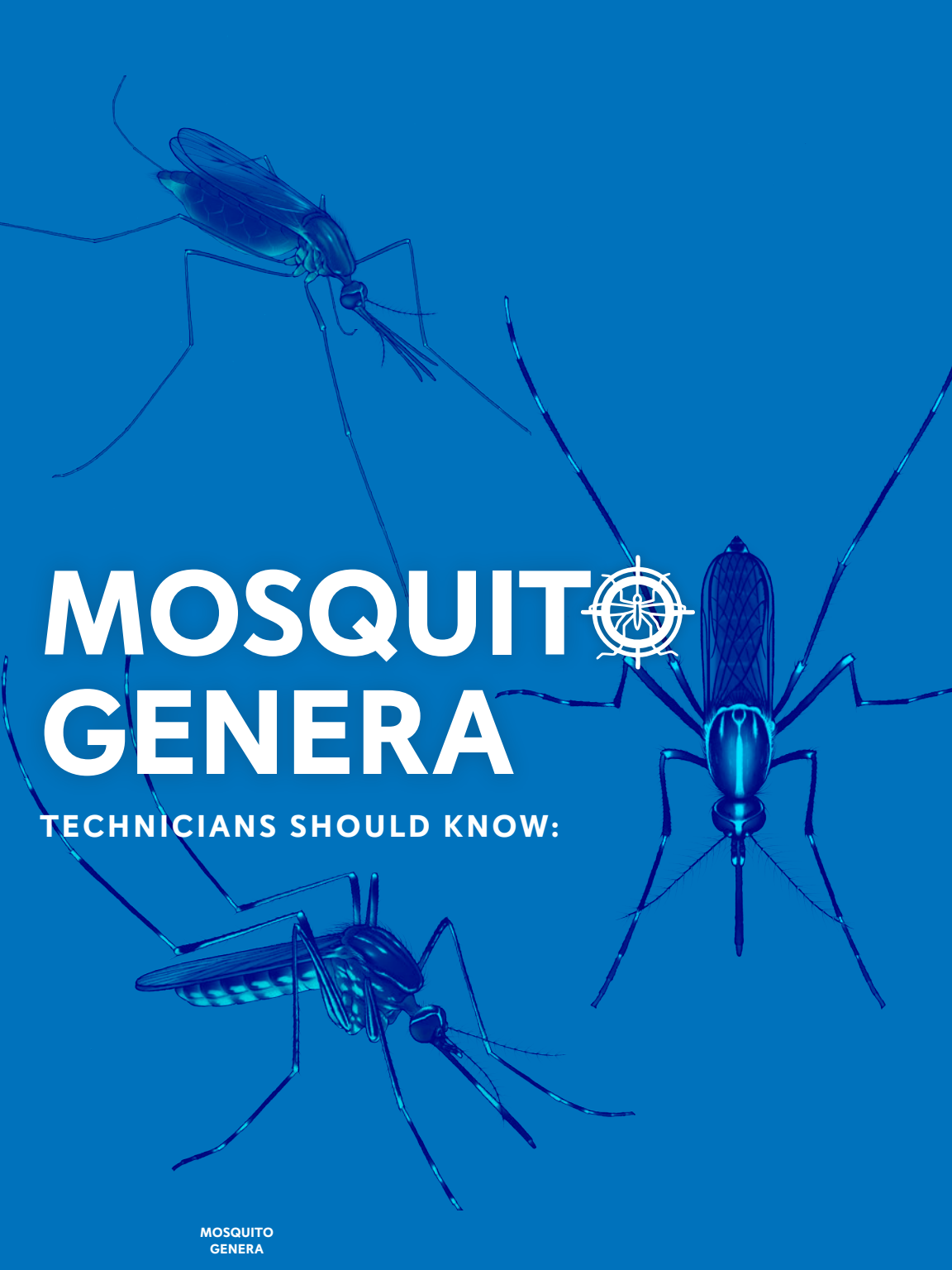
Mosquitoes Transmit Diseases Including:

- **MALARIA**
- **DENGUE FEVER**
- **YELLOW FEVER**
- **CHIKUNGUNYA**
- **WEST NILE VIRUS**
- **ZIKA VIRUS**



Culex quinquefasciatus mosquitoes can transmit:

- St. Louis Encephalitis
- Western Equine Encephalitis
- West Nile Virus
- Dog Heartworm



MOSQUITO GENERA

TECHNICIANS SHOULD KNOW:

MOSQUITO GENERA

TECHNICIANS SHOULD KNOW:

TECH TIP:

Adult *Culex* rest with a raised, slightly hunched body parallel to the surface

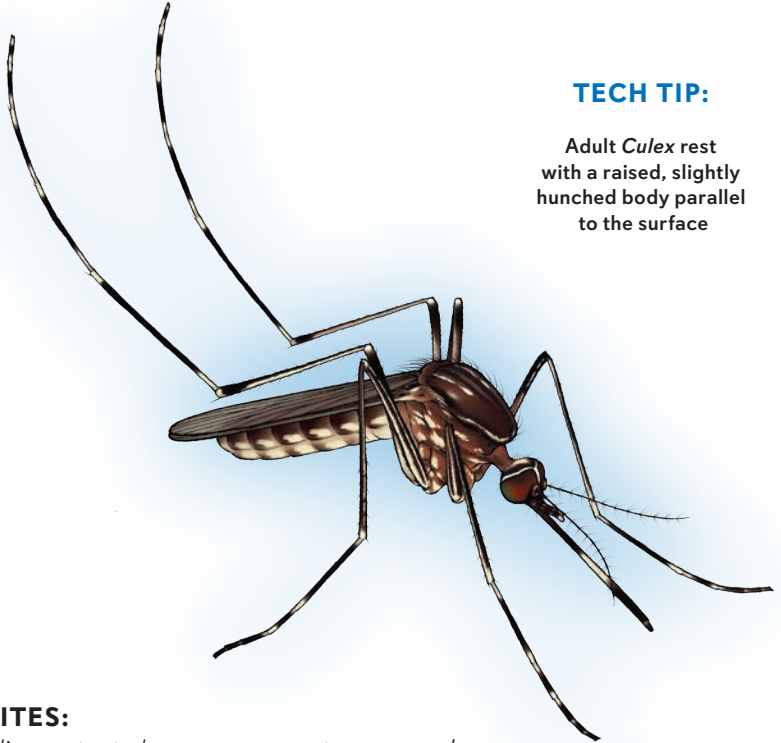
CULEX

LARVAL BREEDING SITES:

Females will wait for standing water to lay eggs - no water, no eggs!

ADULT RESTING SITES:

Dense brush, vegetation, hedgerows



MOSQUITO GENERA

TECHNICIANS SHOULD KNOW:

TECH TIP:

Adult *Aedes* also rest parallel to the surface, but flatter

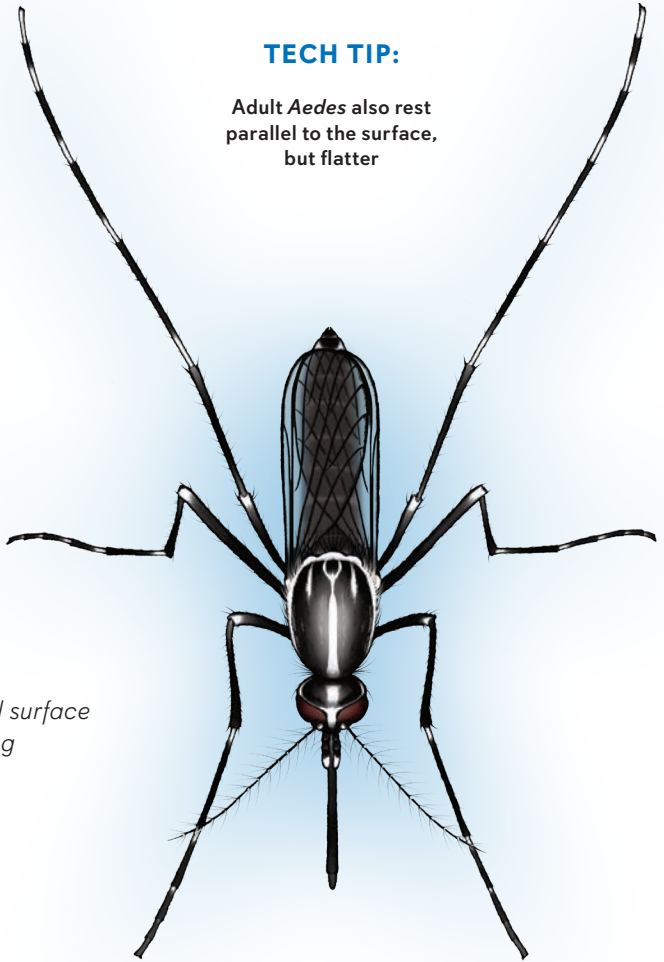
AEDES

LARVAL BREEDING SITES:

Tree holes, artificial containers or soil surface
- water is not necessary for egg laying

ADULT RESTING SITES:

Irrigated landscape areas
- can tolerate being indoors



MOSQUITO GENERA

TECHNICIANS SHOULD KNOW:

TECH TIP:

Adult *Anopheles*
rest upright at a 45
degree angle.

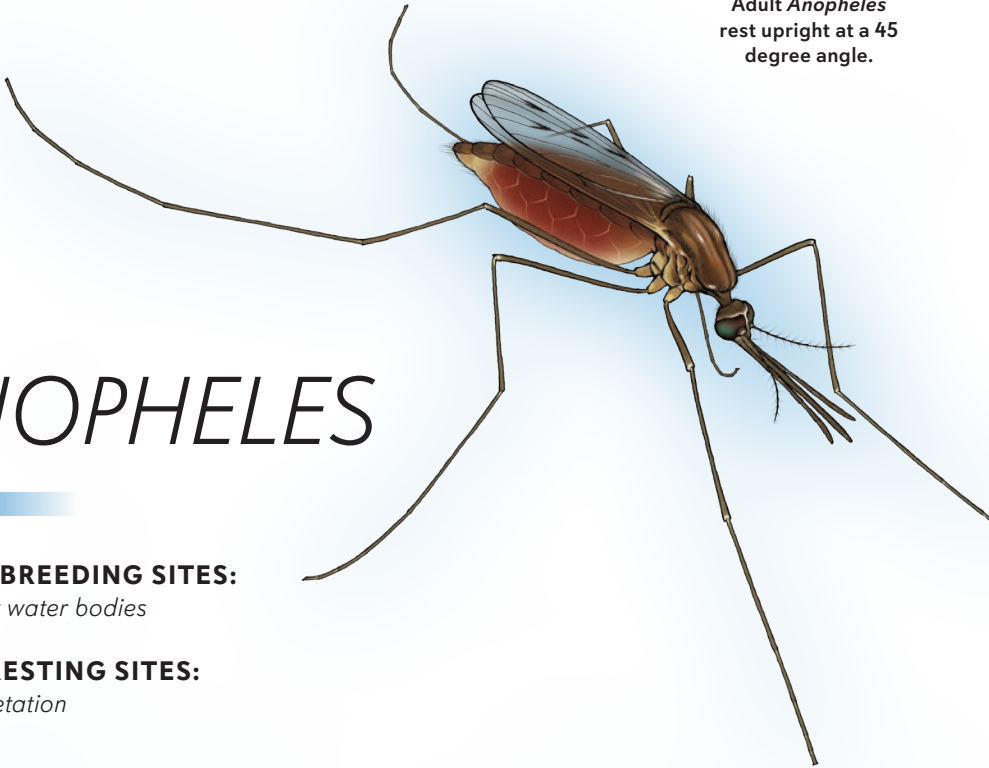
ANOPHELES

LARVAL BREEDING SITES:

Permanent water bodies

ADULT RESTING SITES:

Moist vegetation





LARVAL CONTROL



DID YOU KNOW

Altosid® IGR was the original insect growth regulator and the product that launched the biorational category.



Larval control focuses on treating standing water where mosquitoes develop. Besides source reduction, larviciding is considered one of the most effective, proactive, and cost-efficient methods of mosquito control. Products designed for larval control include insect growth regulators (IGRs) that interrupt mosquito development.

For over 50 years, Altosid® products have been trusted by mosquito abatement districts, military programs, and pest control operators alike. Altosid® products contain our pioneering active ingredient (S)-methoprene, which prevents mosquitoes from developing into adults, suspends mosquito development at the pupal stage, and causes death due to age or predation.

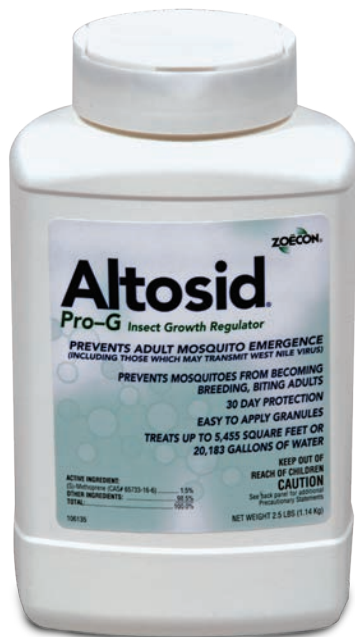
LARVAL CONTROL

PRODUCT OPTIONS:

ALTOSID® PRO-G INSECT GROWTH REGULATOR

A granular mosquito larvicide designed to prevent adult mosquito emergence:

- Contains the insect growth regulator (S)-methoprene
- Breaks the mosquito life cycle
- Provides up to 30 days of protection in standing water



AMOUNT OF PRODUCT	TREATMENT AREA*	TREATMENT VOLUME
1 cup	2,400 ft ²	9,600 gallons
¼ cup	600 ft ²	2,400 gallons
1 tbls	150 ft ²	600 gallons
½ tbls	75 ft ²	300 gallons
1 tsp	50 ft ²	200 gallons
½ tsp	25 ft ²	100 gallons
¼ tsp	13 ft ²	50 gallons

Do not use food utensils such as tablespoons or measuring cups for food purposes after use with insecticides.

* Surface area less than 2 ft deep of water

LEARN MORE



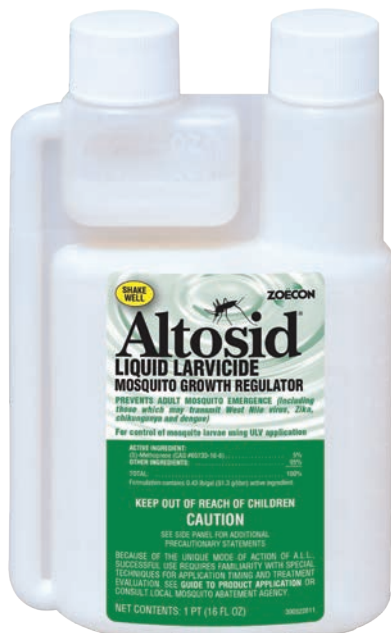
LARVAL CONTROL

PRODUCT OPTIONS:

ALTOSID® LIQUID LARVICIDE MOSQUITO GROWTH REGULATOR

**A flexible larvicide formulation designed
for mosquito control professionals:**

- Prevents larvae from becoming biting adult mosquitoes
- Provides extended residual control
- Can be applied by aerial or ground equipment



SPRAY VOLUME	AREA TREATED	LOW LABEL RATE	HIGH LABEL RATE
1 gallon	1,500 ft ²	3 ml	4 ml
3 gallons	3,000 ft ²	6 ml	8 ml
5 gallons	7,500 ft ²	15 ml	20.4 ml

LEARN MORE



LARVAL CONTROL

PRODUCT OPTIONS:

ALTOSID® BRIQUETS



**Provides up to 30 days of control in standing water,
an ideal solution for backyard mosquito control:**

- *No adverse effect on fish, waterfowl, mammals or beneficial insects*
- *Contains a sustained release, offering residual control*
- *(S)-Methoprene prevents adult mosquito emergence*

LEARN MORE



% A.I. IN FORMULATION	APPLICATION RATE	END USE % A.I.
8.62% (S)-Methoprene	1 briquet per 100 ft ²	8.62%

BARRIER & PERIMETER CONTROL



While larvicides are an important part of any IPM strategy, some water sources may not need or allow it.

Larvicides only kill immature mosquitoes when most customer calls come from established biting, nuisance adults. Adulticides provide a quick, targeted control option to kill adult flying mosquitoes and reduce vector transmission.

BARRIER & PERIMETER CONTROL

PRODUCT OPTIONS:

PRECOR[®] OUTDOOR F-T-M



Micro-encapsulated formulation that combines the adulticidal power of tau-fluvalinate with the long-lasting control of (S)-methoprene:

- *Kills fleas, ticks, mosquitoes, and a broad spectrum of labeled pests outdoors*
- *Labeled for use in residential, multi-family, and commercial lawns, as well as playgrounds, parks, and other labeled outdoor areas*

LEARN MORE



% A.I. IN FORMULATION	DILUTION APPLICATION	APPLICATION RATE
10.3% (S)-Methoprene 2.5% Tau-Fluvalinate	1.9 fl oz / 10 gallons water	10 gallons per 1,000 ft ²

BARRIER & PERIMETER CONTROL

PRODUCT OPTIONS:

MAVRIK® PERIMETER

Tau-Fluvalinate perimeter treatment to help customers reclaim their green spaces:

- Provides immediate knockdown of mosquitoes, ticks, and other labeled pests
- Dried residues are non-toxic to honey bees
- Used on building perimeters and outside surfaces



LEARN MORE



% A.I. IN FORMULATION	APPLICATION RATE	END USE % A.I.
22.3% Tau-Fluvalinate	low rate: 6 ml / 5 gallons high rate: 15 ml / 5 gallons	low: 0.007% in dilution high: 0.017% in dilution



DID YOU KNOW

AAPCO stands for Association of American Pesticide Control Officials meaning Essentria's claims are backed by scientific data.

BOTANICAL CONTROL

Our botanical insecticides provide an AAPCO reviewed option for customers seeking environmentally friendly yet effective solutions.

The Essentria® product line from Zoëcon Professional Products uses plant-based active ingredients, including rosemary oil, peppermint oil, geraniol, clove oil and thyme oil. These botanically based insecticides are 25(b) exempt (designated minimum-risk pesticides by the EPA), meaning they may be used with little to no risk to humans or the environment.

BOTANICAL CONTROL

PRODUCT OPTIONS:

ESSENTRIA® MOSQUITO & TICK CONCENTRATE

Professional-grade botanical insect control that kills and repels:

- *Kills mosquitoes and ticks*
- *Repels mosquitoes for up to 14 days*
- *Water-based formula for use on ground cover, boat docks, patios, and more*
- *Formulated with geraniol, cinnamon oil, sodium lauryl sulfate, cornmint oil*



	LISTED PESTS	FL OZ PER GAL OF WATER	DILUTION APPLICATION
Direct Spray	Mosquitoes	1-4	2 gal / 1,000 ft ²
Fogging / Misting ULV and Thermal	Mosquitoes, house flies and lesser house flies	1-4	1-3 fl oz / 1,000 ft ³
Automatic Spraying / Misting Systems	Mosquitoes, house flies and lesser house flies	1-4	1 fl oz / min max 2,000 ft ³
Repellency	Mosquitoes	4-8	2 gal / 1,000 ft ²

LEARN MORE



BOTANICAL CONTROL

PRODUCT OPTIONS:

ESSENTRIA® IC PRO INSECTICIDE



From sensitive accounts to backyards, one botanical solution for indoors and outdoors:

- *Features a low fragrance and low phytotoxicity formula with no water setbacks*
- *Approved for indoor mosquito space treatments*
- *Water-based formula for use on boat docks and more*
- *Formulated with geraniol, clove oil, sodium lauryl sulfate, cornmint oil*

	SECTION	LISTED PESTS	FLOZ PER GAL OF WATER	DILUTION APPLICATION
INDOOR	Fogging / Misting ULV and Thermal	Crawling and flying insects and spiders	1-8	1-3 fl oz / 1,000 ft ³
	Mosquito Repellency	Mosquitoes	4-8	2 gal / 1,000 ft ²
OUTDOOR	Automatic Spraying / Misting Systems	Mosquitoes and other flying insects	1-8	1 fl oz / min

Low rate is for maintenance (1-4 fl oz). Higher rates (6-8 fl oz) are for active infestations

LEARN MORE



TREATMENT SITE

QUICK GUIDE TOOL:

CLOGGED RAIN GUTTERS

LARVICIDE



BIRD BATHS

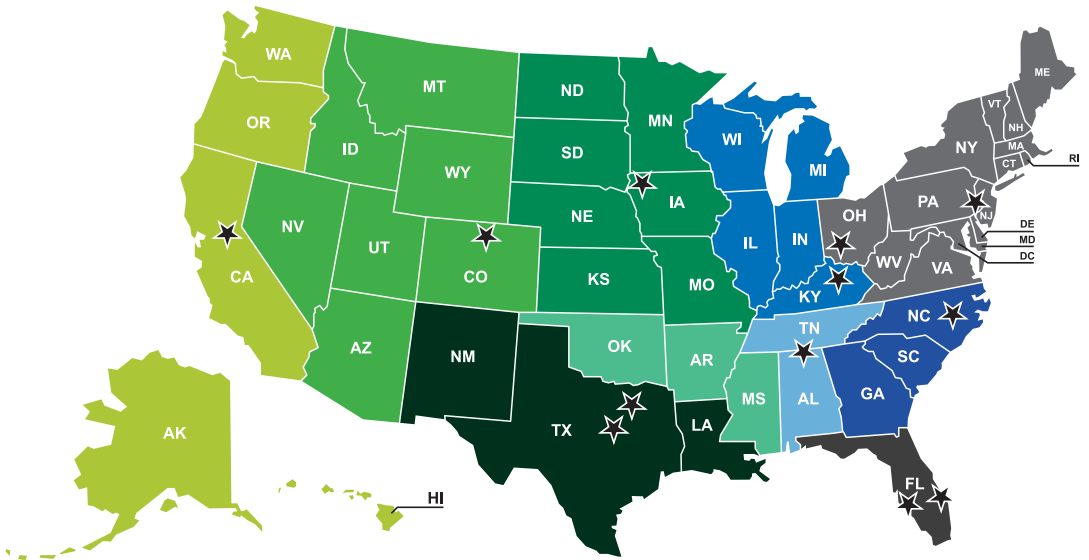
LARVICIDE

STORM DRAINS

BRIQUET

■ — BARRIER TREATMENT

CONTROL MOSQUITOES WITH CONFIDENCE:



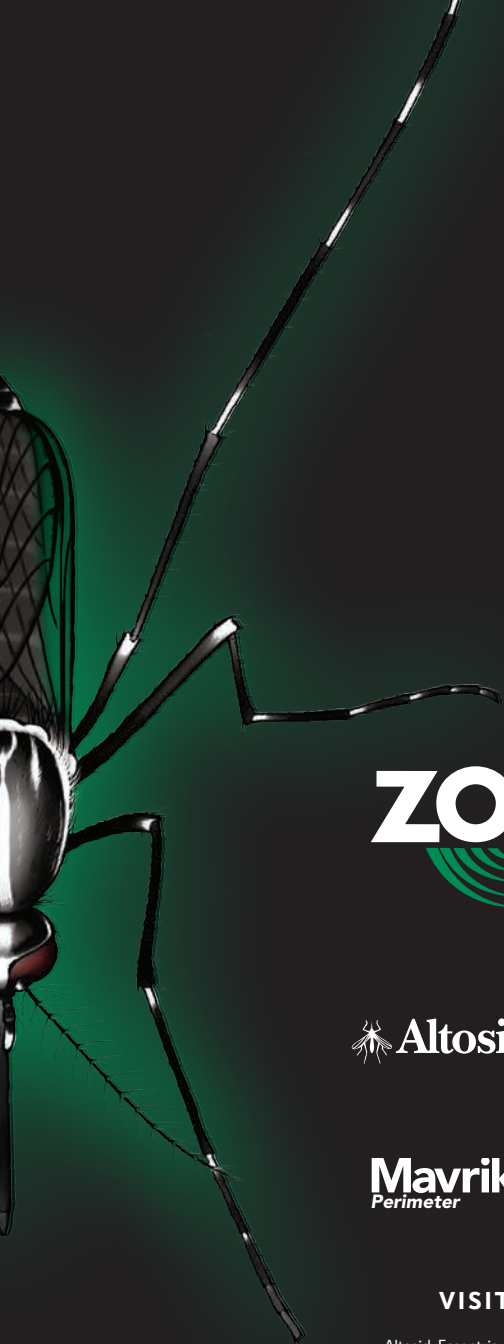
★ SALES REP LOCATION

NEED MORE INFO?

Scan the QR Code to Get In Touch

We're here to provide your team with the information needed to offer sound advice and treatment recommendations.





Precor

Mavrik
Perimeter



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