

 SUMITOMO BIORATIONAL



TECHNICAL USE BROCHURE

Bactimos[®]

Biological Larvicide

Targeted Innovative Control for Non-Biting Midges

Bactimos[®]
BIOLOGICAL LARVICIDE



Bactimos[®] is a high-potency formulation of *Bacillus thuringiensis* subsp. *israelensis* (Bti, strain AM65-52) designed specifically to target nuisance populations of non-biting midges. Bactimos is designed to assure accurate application of the product to the sites where larval populations develop.

What are Midges?

Midges, belonging to the family *Chironomidae*, are small insects that are closely related to mosquitoes and black flies. They are extremely common and are found in a wide range of freshwater environments, including ponds, lakes, rivers, and wetlands.

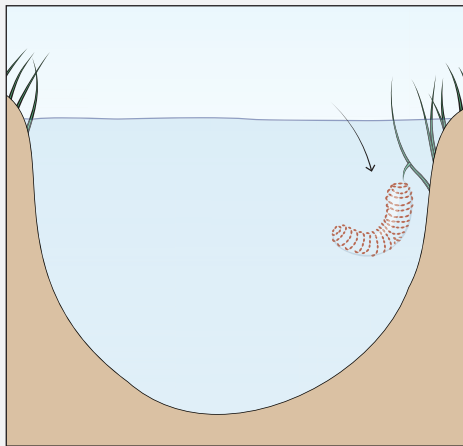


Adult Behavior and Characteristics

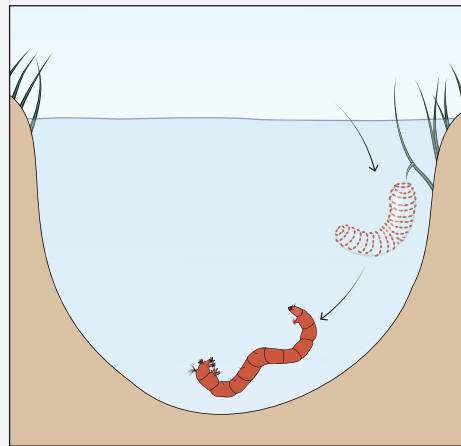
Adult midges typically live for about one week. Their primary purpose is reproduction and dispersal. Males form swarms to attract and mate with females. Most adult midges do not feed; some may take small sugar meals. They possess reduced mouthparts and a non-functional digestive system.

Females lay their eggs either in gelatinous masses or broadcast them across the water surface or onto emergent vegetation.

Life cycle and development

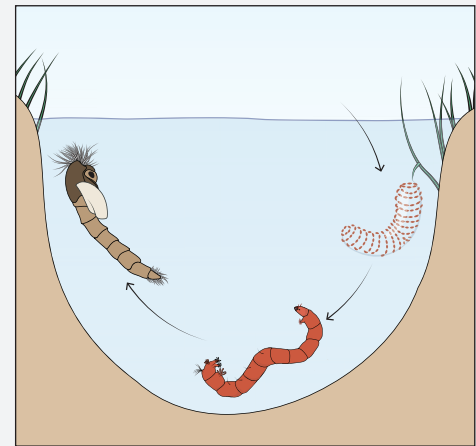


The life cycle of midges begins when females lay eggs on the surface of the water or attach them to solid objects along the water's edge.



Once hatched, the larvae settle into the organic material at the bottom of water bodies. There, they feed on a variety of materials such as algae, detritus, decaying plant matter, woody debris, macrophytes, and small invertebrates.

Larval development consists of four stages (instars) and may be completed in as little as two weeks or extend over several years, depending on the species and environmental conditions. In some areas, larval populations can reach densities of 3,000 to 5,000 individuals per square foot.



After completing the larval stages, midges enter a pupal phase.

Why Control May Be Necessary

Although midges do not bite or transmit disease, their high numbers can create significant nuisances, especially in areas near water or in industrial and residential zones. Common issues associated with large midge populations include:

Mass Emergence: Thousands of adults can emerge from a single square yard of water on a nightly basis.

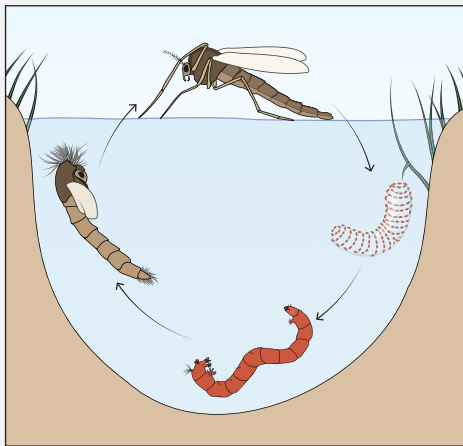
Facility Contamination: Adults may enter buildings, including manufacturing and processing facilities, potentially contaminating products and equipment.

Surface Staining: Egg masses can leave noticeable stains on outdoor surfaces and structures.

Pest Attraction: Midge swarms attract spiders, resulting in unsightly webbing and debris.

Unpleasant Odor: Large populations may produce an odor like rotting fish.

Health Concerns: In sensitive individuals, exposure to midge swarms can trigger allergic reactions.



Pupae rise to the water surface and emerge as flying adults.

Bactimos Features



Bti is the first bacterial larvicide to receive certification from the World Health Organization Pesticide Evaluation Scheme (WHOPES) and provides exceptional specificity, targeting only the intended organisms without posing risks to non-targets.

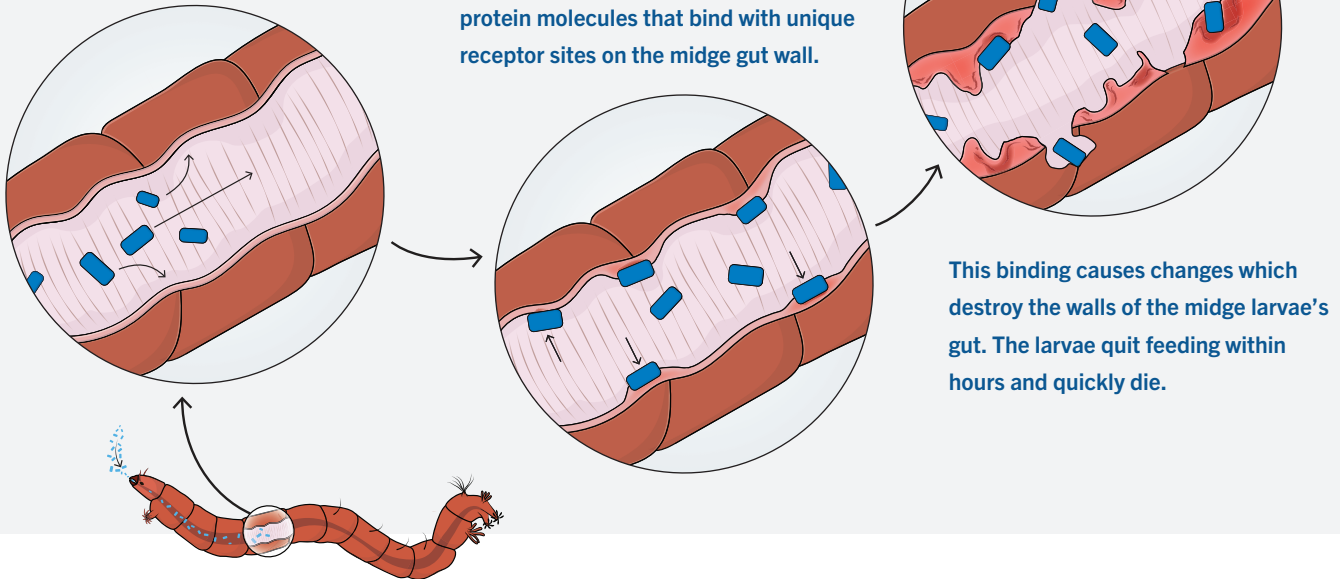


Additionally, Bactimos® WG is Organic Material Reviews Institute (OMRI) certified, making it suitable for use in organic farming and environmentally sensitive areas.

Mode of Action

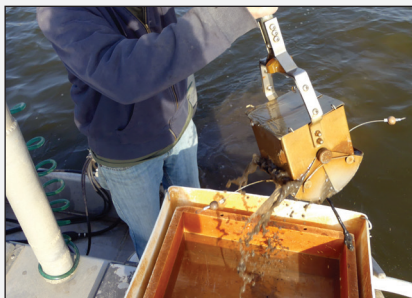
Bti produces a protein crystal during fermentation. These microscopic crystals are ingested by midge larvae as they feed.

Non-biting midges have an alkaline digestive system that allows for the crystals to dissolve and are then converted by specific enzymes into protein molecules that bind with unique receptor sites on the midge gut wall.

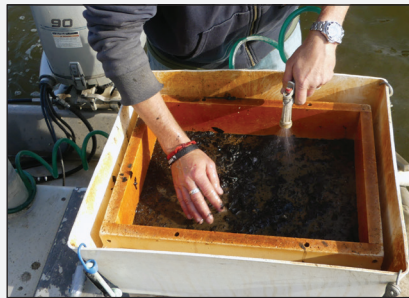


Larval Surveillance/Sampling

Monitoring non-biting midge populations is a critical step in understanding their breeding patterns and guiding effective control strategies. Larval surveillance and sampling are conducted systematically to assess the presence and density of midge larvae in aquatic habitats. The process typically follows these key steps:



1. Scoop and measure specific amount of sediment.



2. Rinse and sift out mud and debris. Place sifted material/larvae on a white tray—include water in tray.



3. Count and record number of midge larvae.

This structured approach enables timely and data-driven responses to manage non-biting midge populations, particularly in environments where their presence may cause nuisance.

Art & Science of Public Health

At Sumitomo Biorational, we believe it is always better to work in harmony with nature rather than against it. As a global leader in public health, our goal is to help realize human potential by bringing together the art and science of sustainable insect control with the most comprehensive range of target-specific biorational solutions. In everything we do, you will find that idea expressed through artistic representations of our products and the adversaries that public health professionals around the world face every day.

COVER ARTWORK BY NARDA LEBO



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