

A New Option in Midge Control

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Midge Problems Continue.....

- Chironomid midges continue to cause nuisance problems throughout the world
- Do not transmit disease
- Limited research emphasis from a suppression standpoint
- Identification difficult
- Can be ecologically important



Diptera: Chironomidae

- Suborder: NematoceraBti susceptible
- Closely related to mosquitoes and black flies
- Very Common, found in most aquatic ecosystems
- Four life stages: egg, larva, pupa, and adult
- Larval stage, 4 instars, < 2 weeks to years
- Larvae live in substrates at the bottom of ponds
- Feed on great variety of organic substrates
- Estimated at ~3-5000 larvae/sq. yard or 2.2 – 4.0 million / acre





Adult Midges

- Short lived
- Do not feed may sugar feed a little
- Reduced mouthparts and atrophied gut
- Purpose reproduction and dispersal
- Females broadcast eggs or deposit gelatinous egg masses on the water's surface or on emergent vegetation

Not all midges created equal...

- Family Chironomidae
- Three primary subfamilies
- Fortunately Chironominae are susceptible to Bti ... *Glyptotendipes paripes* our primary pest
- Less susceptible Orthocladinae
- While Tanypodinae are generally unaffected
- Likely relates to feeding techniques/habits

The New Option Is.....Bactimos PT

- Bactimos PT
- Newly registered Bti formulation for midge suppression
- Bti = *Bacillus thuriengensis* subsp. *isrealensis*
- Effective and safe

Bactimos PT	
Biological Larvicide	
<p>Active Ingredient: <i>Bacillus thuriengensis</i> subsp. <i>israelensis</i> strain AM 65-52 fermentation solids, spores, and insecticidal toxins 12.3% Other Ingredients 87.7% Total 100.0%</p> <p>The percent active ingredient does not indicate product performance and potency measurements are not Federally standardized.</p>	
<p>KEEP OUT OF REACH OF CHILDREN CAUTION</p>	
<p>For MEDICAL and TRANSPORT Emergencies ONLY Call 24 Hours A Day 1-877-315-0819. For All Other Information Call 1-800-323-9597.</p>	
<p>FIRST AID</p>	
<p>If in Eyes:</p>	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
<p>If on Skin or Clothing:</p>	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
<p>HOT LINE NUMBER</p>	
<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-315-0819 (24 hours) for emergency medical treatment and/or transport emergency information. For all other information, call 1-800-323-9597.</p>	
<p>EPA Reg. No. 73049-452 EPA Est. No. 33762-1A-001 ©2008</p>	
<p>VALLEY BIOSCIENCES CORPORATION 870 Technology Way, Suite 100 Libertyville, IL 60048</p>	
<p>List No. 05733-04-01 04-5760/R1</p>	
<p>PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS CAUTION Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Mixers/loaders and applicators not in enclosed cabs or aircraft must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.</p>	
<p>ENVIRONMENTAL HAZARDS Do not apply directly to treated, finished drinking water reservoirs or drinking water receptacles when the water is intended for human consumption.</p>	
<p>DIRECTIONS FOR USE</p>	
<p>STORAGE AND DISPOSAL Do not contaminate water, food, or feed by storage or disposal. Storage: Store in cool, dry place. Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Container Disposal: Triple rinse (or equivalent). Then puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.</p>	
<p>It is a violation of Federal law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.</p>	
<p>APPLICATION DIRECTIONS Midge Habitat Suggested Rate Range* (such as the following examples): Man-made or natural lakes, ponds, lagoons, sewage oxidation ponds, channels, ditches used for industrial discharges 25-30 kg/ha(22.3-26.8 lbs/acre)</p>	
<p>* Use higher rate in deeper water >0.5 meters (20 inches) of water. Repeat applications as needed after 2-3 weeks. Control of midges may be gradual over a period of two weeks.</p>	
<p>Application Methods Apply Bactimos PT uniformly over the entire surface of the lake or pond. In large lakes/ponds where complete surface treatments are not possible, applications concentrated along the perimeter may be effective in reducing midge populations; most of the nuisance midge larvae of many species will occur within 2 meters of the pond perimeter in < 1 meter deep water.</p>	
<p>Apply Bactimos PT using conventional ground application equipment such as, hand or motorized spreaders or backpack blowers. A uniform application over the surface of the area to be treated is essential for optimum midge population reduction.</p>	
<p>Midges Controlled with Bactimos PT Only a small percentage of the thousands of pestiferous species of "non-biting midges" have been tested for susceptibility to Bactimos PT. Members of the subfamily Chironominae and Tabanidae are generally susceptible; members of the subfamily Tanyptodinae are not susceptible at the Bactimos PT labeled-use rate.</p>	
<p>When initially using Bactimos PT in a midge control program, it is recommended that only a small test area be treated if the species of midge(s) to be controlled has not been identified.</p>	
<p>NOTICE TO USER To the fullest extent permitted by law, seller makes no warranty, express or implied, of merchantability, fitness or otherwise concerning use of this product other than as indicated on the label. User assumes all risks of use, storage or handling not in strict accordance with accompanying directions.</p>	
<p>Net Content: Lot No: Date of Manufacture:</p>	

Bactimos™ PT

Biological Larvicide

Active Ingredient:	12.3%
Bacillus thuringiensis subsp. israelensis strain	87.7%
All 50-53 larvicide spores, spores, and	100.0%
biological toxins	

Other Ingredients

The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.

KEEP OUT OF REACH OF CHILDREN
CAUTION
For MEDICAL and TRANSPORT Emergencies ONLY
Call 24 Hours A Day 1-877-315-9819.
For All Other Information Call 1-800-323-9537.

FIRST AID	
If in Eyes:	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on Skin or Clothing:	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.

HOT LINE NUMBER

When the smallest container of label with you when calling a poison control center or doctor, or going for treatment, you may also contact 1-877-315-9819 (24 hours) for emergency medical treatment and/or nearest emergency information.

For all other information call 1-800-323-9537

EPA Reg. No. 7203-47-0
EPA Est. No. 3770-28-001

VALENT BIOSCIENCES
476 Montgomery Ave. Suite 100
Lynchburg, VA 24502

List No. 08733-04-01
04-0760391

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION
Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco products.
Manufacture and handling of Bt spores should be at least NIOSH, OSHA, or PPE. Repeated lifting and carrying may lead to low-back injury. Avoid breathing dusts or vapors. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

ENVIRONMENTAL HAZARDS
Do not apply directly to, treated, finished drinking water reservoirs or drinking water intake points.

STORAGE AND DISPOSAL
Do not contaminate water, food, or feed by storage or disposal.
Store in cool, dry place.

Spills: Spills resulting from the use of this product may be disposed of on land or in an approved water disposal facility (landfill).

Disposal: Empty containers (see instructions) may be disposed of by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

DIRECTIONS FOR USE
It is a violation of federal law to use this product in a manner inconsistent with its labeling for any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

APPLICATION DIRECTIONS
Midge Habitat
Mainly on natural areas, wetlands, swamps, marshes, bays, streams (no treated of water ponds, lagoons, sewage treatment plants, etc.).
Use higher rate in dense water and/or in areas of heavy mosquito production. Aerial application may be required in areas of heavy mosquito production. Control of midges may be gradual over a period of two weeks.

Application Methods
Apply Bactimos PT uniformly over the entire surface of the lake or pond in large bodies of water where mosquito larvae are present. Aerial application over the surface of the pond, along its perimeter, may be effective in reducing or eradicating breeding areas of the species. Aerial application of Bactimos PT may be required to reach all breeding areas of the species.

Apply Bactimos PT using conventional ground application equipment such as hand or backpack sprayers or tanks. Avoid spraying directly on the water surface. Do not apply Bactimos PT to the surface of the water if the water is less than 1.5 meters (5 feet) deep.

Midges Controlled with Bactimos PT
Only a small percentage of the thousands of pestiferous species of non-biting midges have been shown to be susceptible to Bactimos PT. Members of the subgenus Chironominae and some species of the subgenus Procladius are particularly susceptible. Members of the subgenus Chironominae are not controlled by Bactimos PT in average spring programs. It is recommended that only a small area be treated if the species of midges to be controlled has not been identified.

NOTICE TO USER
This product is not intended for use in the United States. If you are outside the United States, please contact your local distributor for use instructions. If you are in the United States, please refer to the label. User assumes all risks of use, storage or handling not in accordance with accompanying directions.

Net Content: 10 LB

Lot No. 158-296-PG
Date of Manufacture 08/2008

Efficacy Trials Conducted in 2006 & 2007

- Ponds treated with Maruyama backpack blower
- Bank and boat application
- Efficacy evaluated through larval sampling
- Samples collected in a band between 10 and 20 feet from the bank w/Eckman Dredge











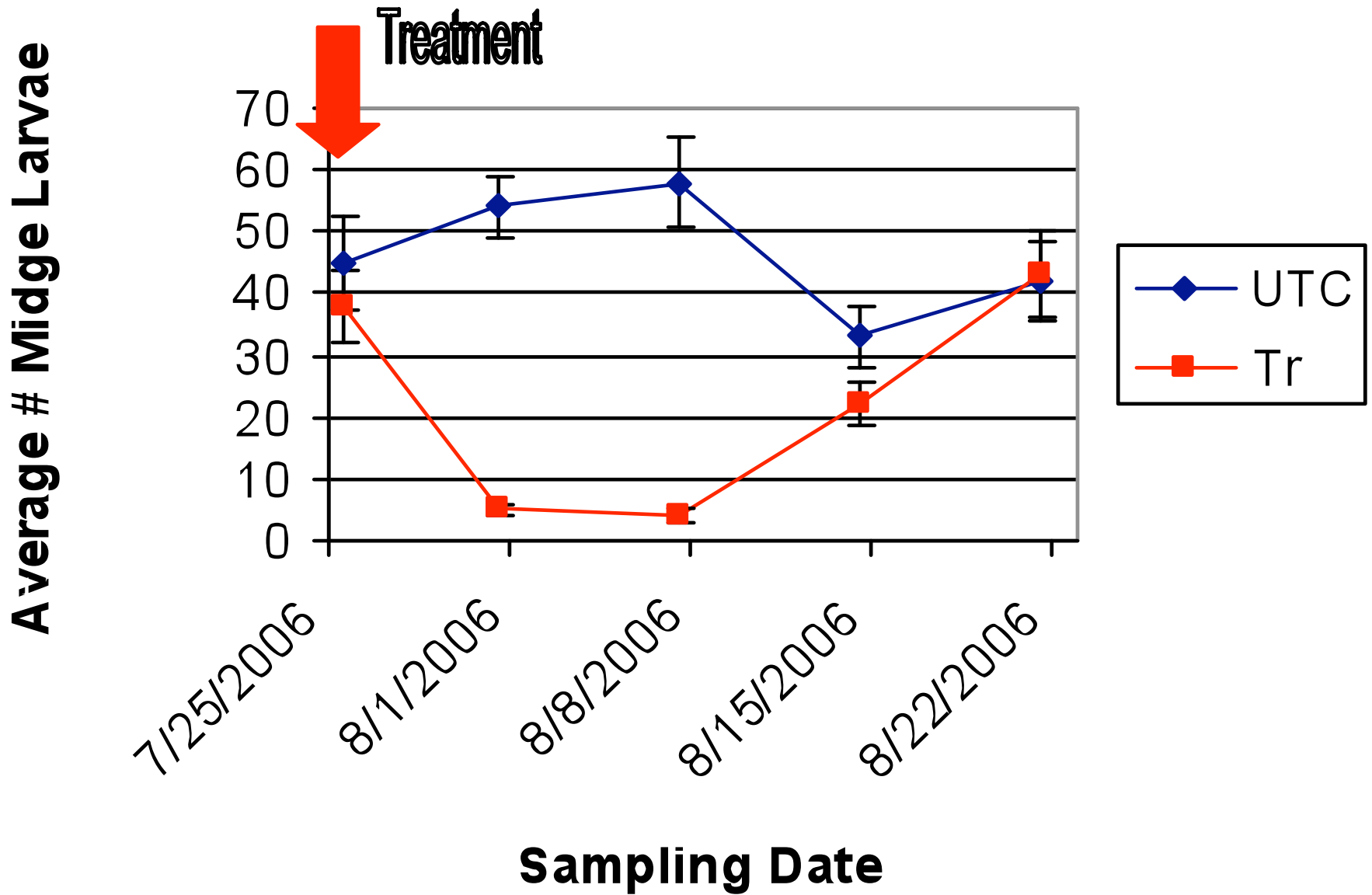




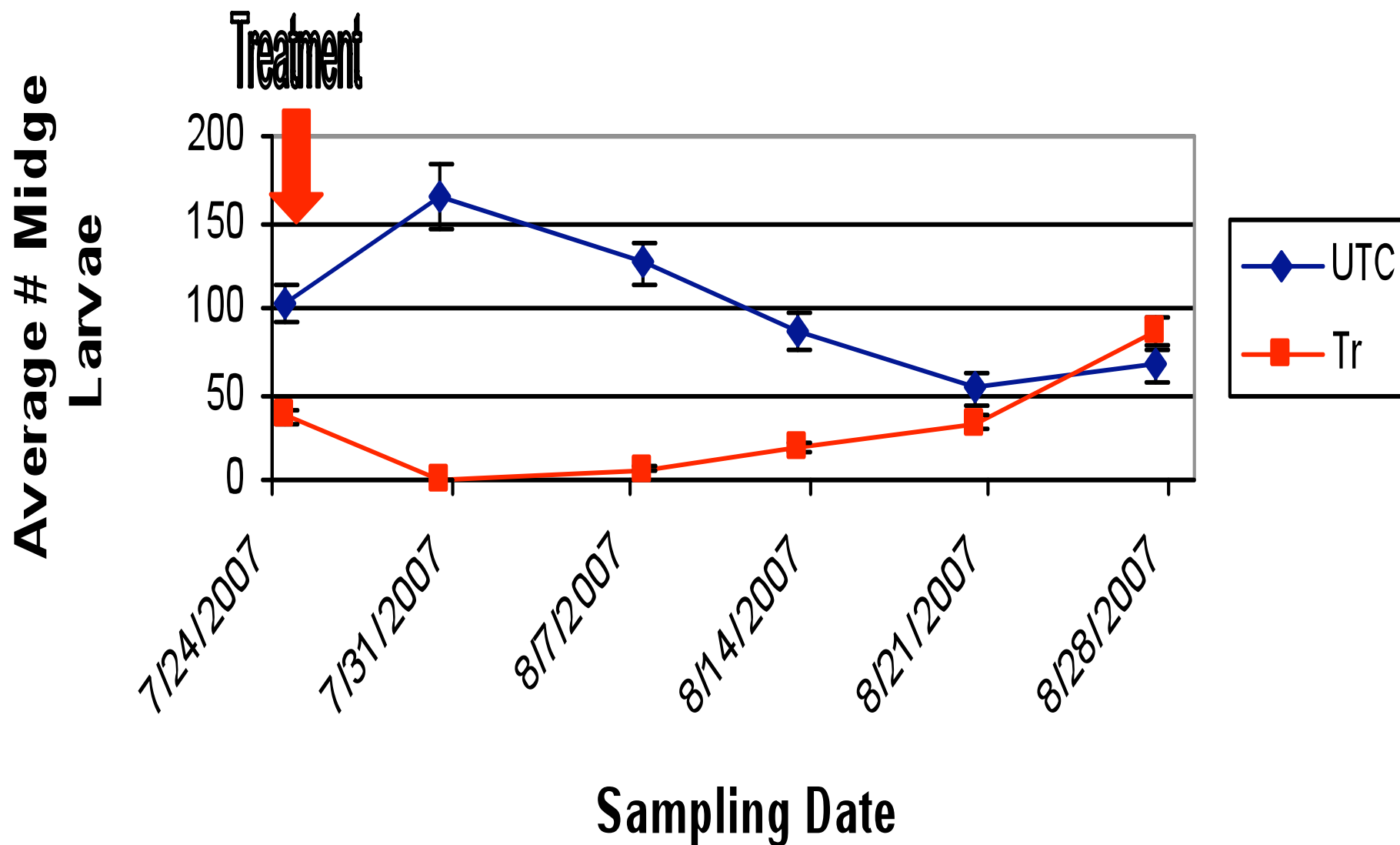




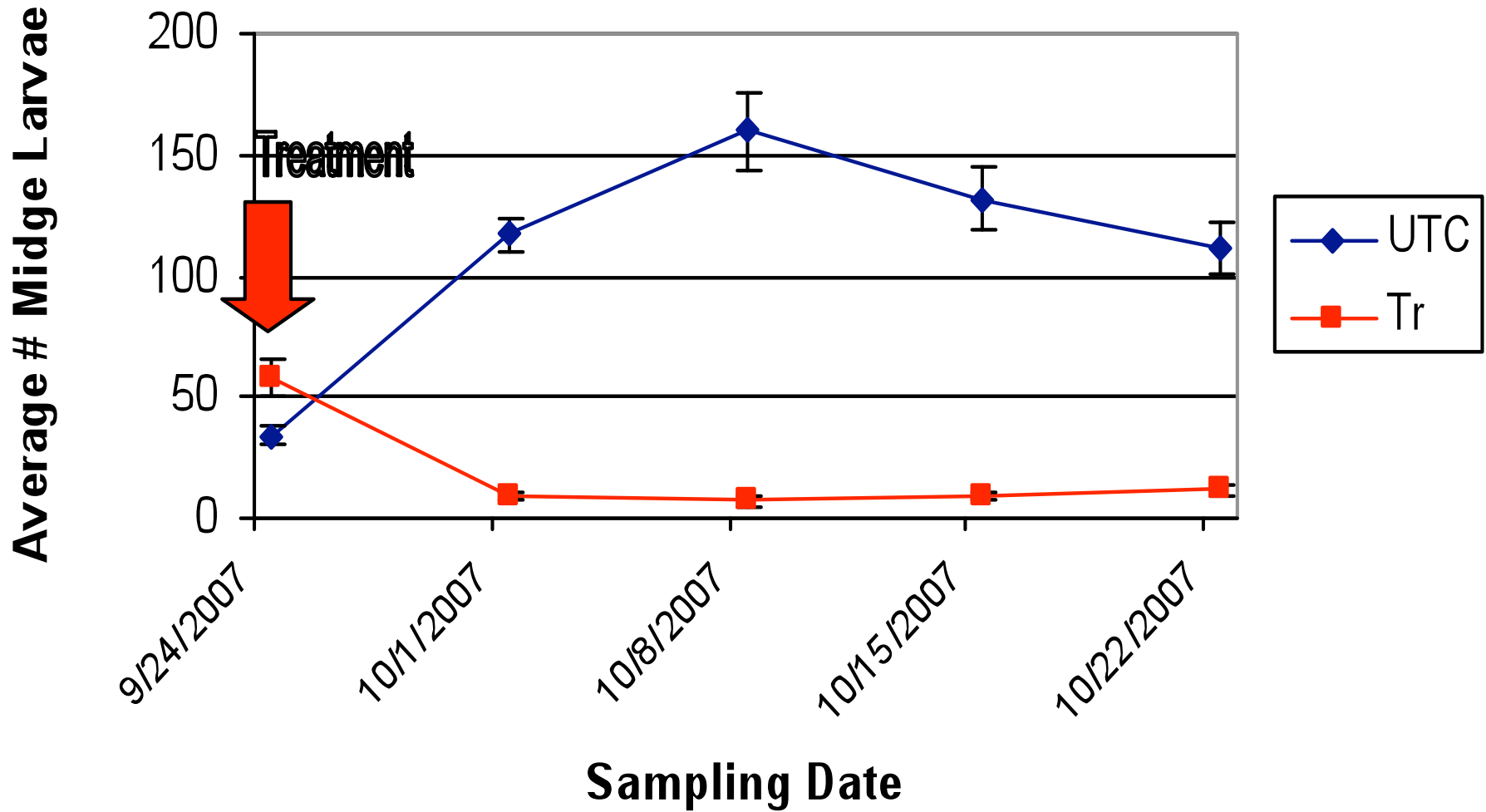
July 25, 2006 - VBC 60066 @ 27 lbs/ac



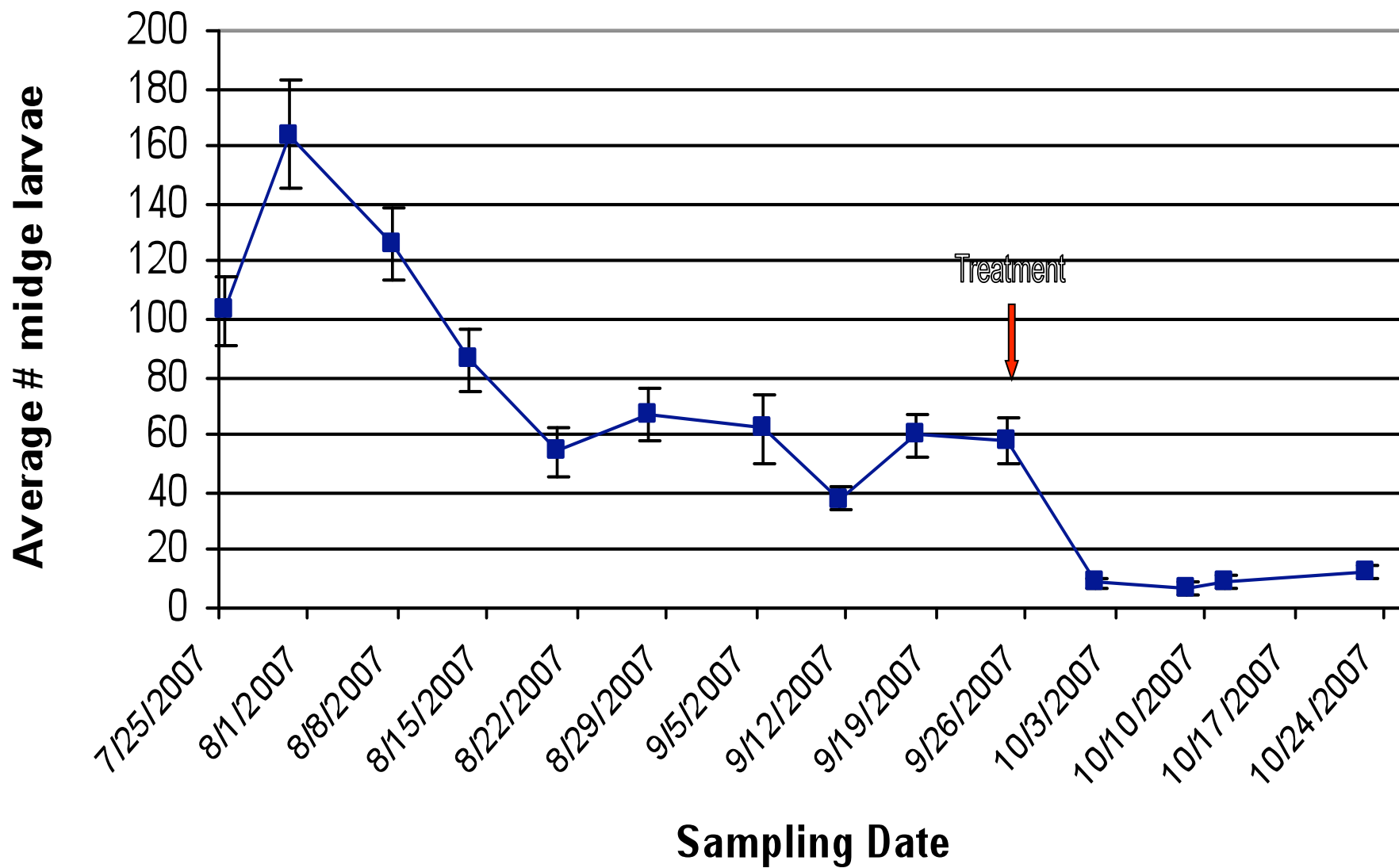
July 25, 2007 - VBC 60066 @ 27 lbs/ac



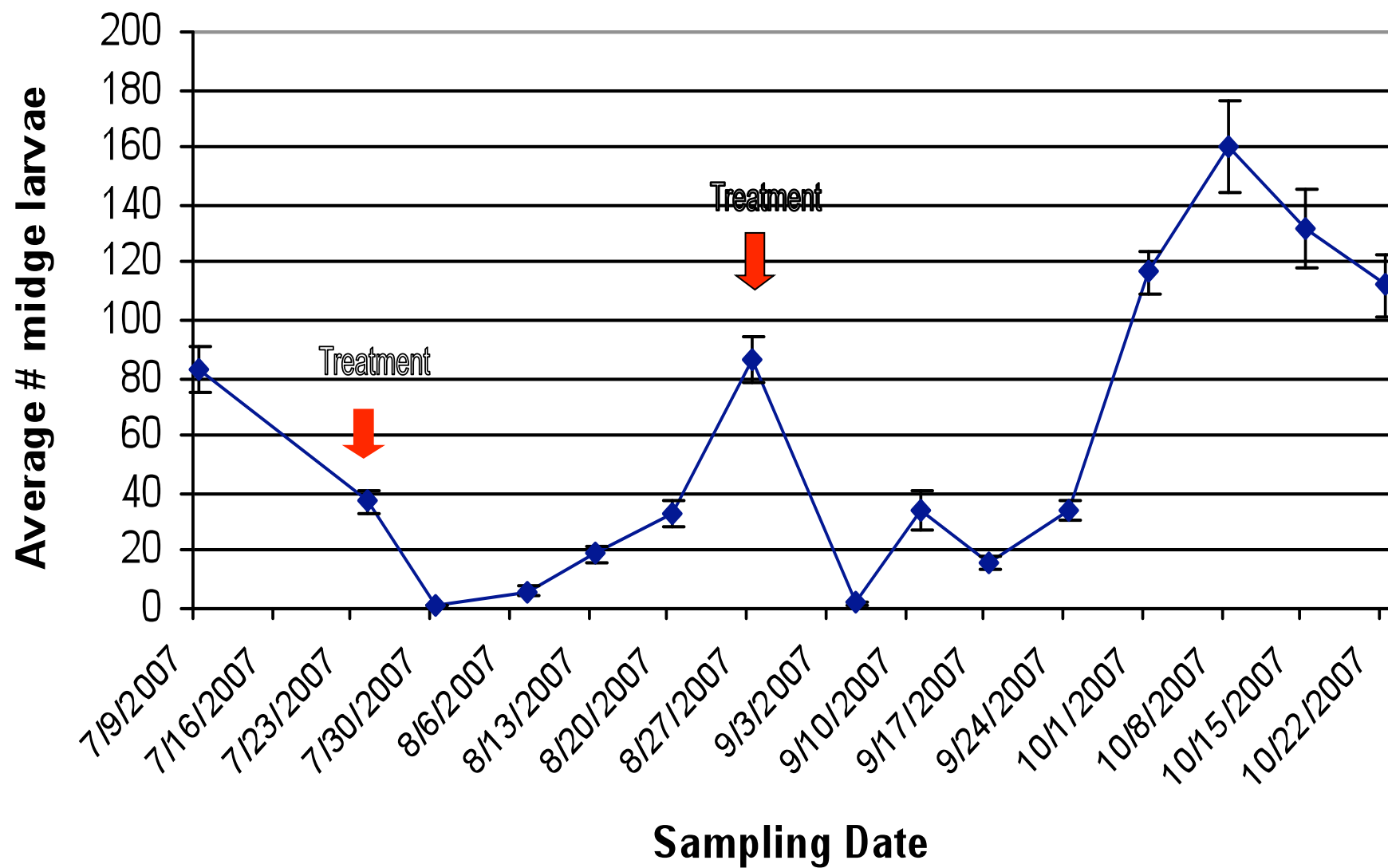
September 24, 2007 Band Treatment @ 27lbs/ac



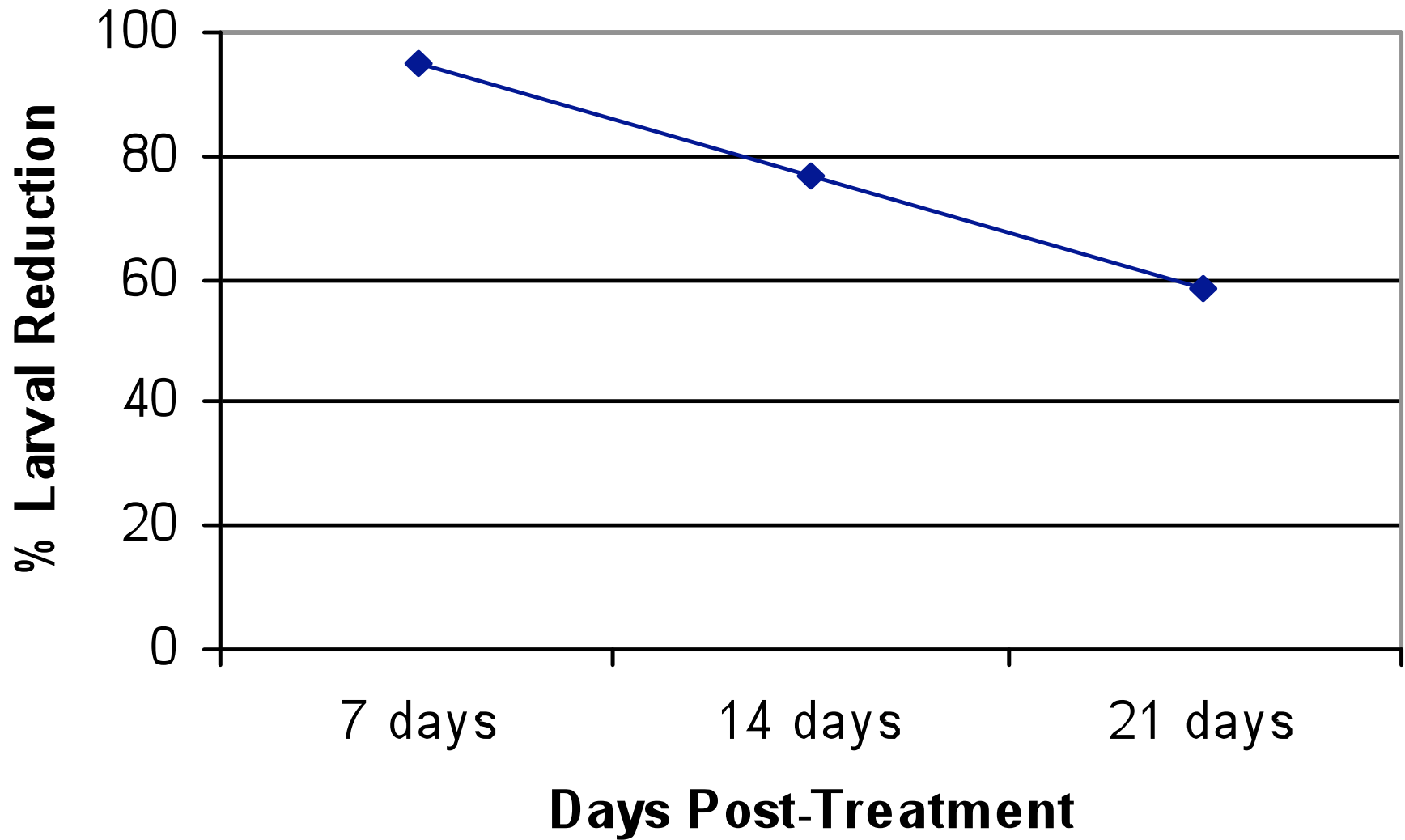
Planters Row Pond - 2007 Midge Season



Scarborough Head Road Pond



Summary - % Larval Reduction







In Conclusion

- Bactimos PT has demonstrated good efficacy against the primary nuisance species, *Glyptotendipes paripes*
- Treatments every 14-28 days
- Band Treatment may be possible
- Firm, sandy bottoms highly productive
- Mucky areas with decaying material not as productive
- **NUISANCE MIDGE POPULATIONS NOT GOING AWAY!**



