

LARVICIDES

What is BTI?

Bti (Mosquito Dunks, Vectobac, Aquabac or Bactimos, trade names), or *Bacillus thuringiensis israelensis*, is a naturally occurring bacteria which produces a crystal that is fatal to mosquitoes when eaten. Bti has little or no impact on other organisms in the mosquito environment.

This organism was first isolated in 1977 from dead mosquito larvae in Israel. Although similar to a strain that has been used for caterpillar control since the early 1900's, the new variety was found to be very effective and very specific against mosquitoes. Bti is grown commercially in fermentation tanks, but only a dormant spore, not live bacteria, are used in the finished product.

All mosquitoes start their lives in water, with the young hatching from eggs into what is known as the larval, or wriggler, stage. They move through the water, filtering out food as they go. When Bti is placed in this environment, mosquitoes eat it. The Bti spores, which contain a crystallized toxin, are released by the mosquito's stomach fluids. The toxin ruptures the stomach of the mosquito, causing death. Other organisms are not affected in this manner. Polluted water will bind the material and require higher application rates. Bti takes longer to act in cold water due to the slower feeding rate of larvae at low temperatures, but is eventually effective in these conditions. The product does not work against older larvae or the next stage in the mosquito life cycle (pupa or tumbler) because mosquitoes stop feeding before becoming adults.

Bti is formulated as a granule or as a dilute liquid. The granules are applied without further mixing at about 5-10 lbs. per acre, the liquid is diluted so that 1/2 to 1 pint per acre is applied. This product carries only a caution label, the lowest toxicity category of EPA classifications. Bti can be considered essentially non-toxic for humans. After application, the product breaks down within one or two days.

What is Altosid (Methoprene)?

Altosid, or methoprene, is a compound that was developed after scientists discovered and analyzed a hormone in mosquitoes that kept them in the juvenile, or immature stage. Other, similar compounds produce the same effect in other insects.

Mosquitoes, after hatching from the egg stage, go through four larval (immature) stages, then become pupae (tumblers) before becoming adults. During the immature stages, a juvenile hormone is present that stops them from becoming adults. By placing a chemical mimic of this compound in the water in very small quantities (around 0.010 lb./acre of active ingredient – less than an ounce/acre), mosquitoes are prevented from maturing to adulthood. They simply die during the pupal stage. A benefit of using Altosid is that larvae remain in the food chain, reducing the impact on other organisms in the habitat. Altosid must be present when the mosquito is in the later stages of larval development to work.

Altosid is formulated as a liquid, a 30 day slow release pellet, a 30 day briquette, and a 150 day extended release briquet. The benefit of the slow release versions is that they can be placed in

difficult to reach locations and continue controlling mosquitoes for a long time. Altosid carries a caution label, the lowest toxicity category of EPA classifications. The product can be considered non-toxic for humans. Altosid is one of the so called “biorational” compounds, meaning the impact on the environment is minimized by using natural products or chemicals that are similar to these natural products.

For more information visit:

<http://www.summitchemical.com/mosquito/mosquito-dunks/>

<https://www.centralmosquitocontrol.com/all-products/altosid>