



Altosid®

LIQUID LARVICIDE CONCENTRATE

PREVENTS EMERGENCE OF ADULT FLOODWATER MOSQUITOES

GUIDE TO PRODUCT APPLICATION

FOR THE FIRST TIME USER

Zoëcon® Altosid® Liquid Larvicide Concentrate (A.L.L.) is the result of extensive research into the intricacies of natural biochemical and physiological development of insects. New chemical technology and biological findings were combined to develop a unique mosquito larvicide.

A.L.L., an insect growth regulator (IGR), acts by inducing morphological changes which interfere with normal development. These effects, not immediately apparent, result in the failure of adult mosquitoes to emerge from pupae. **A.L.L.** is **not** a conventional pesticide. It does not produce the nondiscriminatory rapid, directly toxic effects that are associated with traditional larvicides. **A.L.L.** differs from other larvicides you may have used only in the manner and time course of its action **after** application.

A.L.L. is applied to second, third or fourth instar larvae using standard larviciding equipment in a manner similar to other larvicides. After application to second, third or fourth instar larvae at recommended rates, absolutely no effects on larvae will be observed. They will continue developing normally and will pupate. Pupae will appear unaffected, but will eventually die. **Adults will not emerge.** Infrequently, a few adults may be seen at the water surface but they will have abnormalities preventing flight and will not survive. Because the effect of **A.L.L.** is neither larval death nor widespread mortality immediately following pupation, **the number of adults which emerge is the only criterion for accurately assessing control.** Checks by dip counts during larval and pupal stages will give no measure of effectiveness.

Refer to the following diagram and checklist, in addition to label instructions for guidance in timing of application and performance evaluation. They will assist you in obtaining the best possible results with this unique product.

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CHECKLIST

Things to remember when using **A.L.L.**

DO the following:

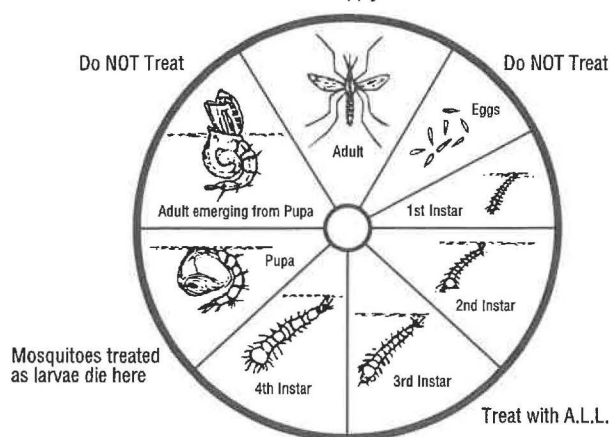
1. **DO** treat second, third, and/or fourth instar larvae, not pupae or adults. (First instar larvae are so small they are not readily detectable.)
2. **DO** wait until treated larvae have pupated. Then **collect pupae** and transfer to laboratory to observe for emergence of adults.
3. **DO** observe pupae for several days, since death of IGR treated mosquitoes occurs when pupae would normally emerge as adults. (Careful observation is necessary since dead pupae decompose rapidly and thus are not easily seen.)
4. **DO** monitor emerging adults at the treatment site. This absolutely requires that emergence traps be placed in treatment areas to capture adult mosquitoes as they emerge.

DO NOT do the following:

1. **DO NOT** take dip counts of larvae after treatment for the purpose of performance evaluation. **Normal looking larvae** will be present.
2. **DO NOT** take dip counts of pupae after treatment for the purpose of performance evaluation. **Normal looking pupae** will be seen but these will not develop into normal adults.
3. **DO NOT** think **A.L.L.** has failed if some adult mosquitoes are flying in treated areas; they probably have flown in from nearby untreated areas. Numbers 2 and 4 of the "**DO**" checklist are the only methods of accurately assessing effectiveness.
4. **DO NOT** spray again, either with **A.L.L.** or a conventional insecticide, because larvae or pupae are present after application. This is normal. The effectiveness of **A.L.L.** can only be measured by lack of adult emergence.

LIFE CYCLE OF MOSQUITO

When to Apply A.L.L.



Preparation of **ALTOSAND**[®]

Granular Formulation

An "On-Site" Method of Preparing a Granular Formulation of **A.L.L.**

INTRODUCTION

A method of application of **A.L.L.**, using sand as a carrier, has been developed for use in floodwater mosquito breeding areas with dense vegetation or canopy. The characteristics of **ALTOSAND**[®] provide excellent foliage penetration, ensuring that the active ingredient reaches the water where it is released from the sand.

ALTOSAND[®] will prevent the emergence of species of the floodwater mosquito complex when applied to second, third, or fourth larval instars at a rate of 10 to 13 pounds per acre.

PREPARATION INSTRUCTIONS

The following materials are required to prepare a 100 lb batch of **ALTOSAND**[®]:

99 lb washed, dry sand (20 to 45 mesh)

0.5 lb **A.L.L.** (15 fl oz/lb)

0.5 lb HiSil 233 (silicon dioxide)

Small Funnel

Cement Mixer

1. Measure the time required for a level funnel full of sand to empty.
2. Into a rotating-type mixer, place 99 lb of dry (20 to 45 mesh) sand. While the mixer is rotating, slowly pour 0.5 lb (7.5 fl oz) of **A.L.L.** onto the sand. (If better wetting is required, **A.L.L.** may be diluted in up to an equal volume of water.)
3. Mix until the sand is uniformly coated with **A.L.L.** (usually 5 to 10 minutes).
4. Stop the mixer and add 0.5 lb of HiSil 233. Cover the mixer to reduce dust. Start the mixer and run for approximately 5 minutes. (The quantity of HiSil 233 necessary to achieve a dry, free-flowing mixture will vary depending on the particle size distribution and moisture of the sand.)
5. Compare the flow rate of the **ALTOSAND**[®] mixture with that of untreated sand in Step No. 1. Add more HiSil if it flows significantly slower and reduce the amount of HiSil in subsequent batches if the mixture flows at the same or a faster rate and is excessively dusty.

APPLICATION RATE AND METHODS

Apply at a rate of 10 to 13 lb of the final mixture per acre, using standard granular dispersal equipment.

Chemigation: Apply this product only through flood (basin), furrow, or border irrigation systems. Do not apply this product through any other type of irrigation system. Crop injury, lack of effectiveness or illegal pesticide residues in the crop can result from nonuniform distribution of treated water. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.

Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.

A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Flood (Basin), Furrow, and Border Chemigation: Systems using a gravity flow pesticide dispensing system must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity such as a drop structure or weir box to decrease potential for water source contamination from backflow if water flow stops.

Systems utilizing a pressurized water and pesticide injection system must meet the following requirements:

- The system must contain a functional check valve, vacuum relief valve and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
- The pesticide injection pipeline must contain a functional, automatic quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where the pesticide distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

A pesticide supply tank is recommended for the application of **A.L.L.** by chemigation.



For information, call **1-800-248-7763** or
visit our Web site: **www.altosid.com**

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