

# **CABBAGE - LOOPERS, DIAMONDBACK MOTH, ETC.**

## General Information

### DIRECTIONS FOR USE

#### Restricted Use Pesticide

Do not apply this product in a way that will contact worker or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

Do not formulate this product into other end-use products without written permission from SOLERA ATO, LLC.

LEMUR LV insecticide must be used only in accordance with directions for use on this label or in separate SOLERA ATO, LLC supplemental labeling.

SOLERA ATO, LLC will not be responsible for use of the product in a manner not specified by SOLERA ATO, LLC in the product's labeling and User assumes all risk for such use.

Use only in commercial and farm plantings. Not for use in home plantings. Not for use during any period after a commercial crop site is opened for public entry as a "U-Pick", "Pick Your Own" or similar operation; in no case shall preharvest applications be made after first public entry. The restricted entry interval and preharvest interval for the crop stated elsewhere on this label must be followed.

### PRODUCT INFORMATION

LEMUR LV is a water soluble liquid that is applied by foliar application to control many important insect pests. LEMUR LV is mixed with water for application.

#### Restrictions:

- Do not apply this product through any other type of irrigation systems, except those allowed by instructions provided in a supplemental, SLN or this product label.
- Chemigation: Overhead sprinkler chemigation is allowed for use in alfalfa, succulent and dry beans, onions, succulent peas, potatoes, sugar beets, sweet corn

and wheat (in ID, OR and WA only). Drip chemigation is allowed for onions. See Federal Supplemental labeling for overhead sprinkler chemigation directions for use in sweet corn, succulent peas and succulent and dry beans; and for directions for use for drip chemigation in onions. Refer to supplemental, or Special Local Need (SLN) labeling or the crop specific sections of this label for use directions for chemigation.

- Hand-held equipment is prohibited for applications to crops. This product must be applied to crops only with mechanical ground, overhead sprinkler chemigation or aerial application equipment.

## SCOUTING

Monitor insect populations to determine whether or not there is a need for application of LEMUR LV based on locally determined economic thresholds. More than one treatment of LEMUR LV may be required to control a population of pests.

## BENEFICIAL ARTHROPODS

LEMUR LV at rates of 2/5 to 3/4 pt. per acre helps conserve certain beneficials, including big-eyed bugs, damsel bugs, flower bugs and spiders in cotton and soybeans. While these beneficials cannot be relied upon to control pests, they are of potential value and should be monitored along with pests in pest management programs on these crops.

## RESISTANCE MANAGEMENT

For resistance management, LEMUR LV insecticide is a group 1A insecticide. Repeated exclusive use of LEMUR LV or other group 1A insecticides may lead to the buildup of resistant strains of insects in some crops. Not all members of this group have been shown to be cross-resistant. Different resistance mechanisms that are not linked to target site of action, such as enhanced metabolism, are common for this group of chemicals. Alternation of compounds from different sub-groups within this group may be an acceptable part of an integrated pest management program.

Some insects are known to develop resistance to products used repeatedly for control. When this occurs, the recommended dosages fail to suppress the pest population below the economic threshold. Because the development of resistance cannot be predicted, the use of this product should conform to resistance management strategies established for the use area. These strategies may include

incorporation of cultural and biological control practices, alternation of mode-of-action classes of insecticides on succeeding generations and targeting the most susceptible life stage. Consult your local or state agricultural authorities for details.

If resistance to this product develops in your area, this product, or other products with a similar mode of action, may not provide adequate control. If poor performance cannot be attributed to improper application or extreme weather conditions, a resistant strain of insect may be present. If you experience difficulty with control and resistance is a reasonable cause, immediately consult your local company representative or agricultural advisor for the best alternate method of control for your area. For additional information on insect resistance monitoring, visit the Insecticide Resistance Action Committee (IRAC) on the web at <http://www.irc-online.org>.

## INTEGRATED PEST MANAGEMENT

This product should be used as part of an Integrated Pest Management (IPM) program which can include biological, cultural, and genetic practices aimed at preventing economic pest damage. Application of this product should be based on IPM principles and practices including field scouting or other detection methods, correct target pest identification, population monitoring, and treating when target pest populations reach locally determined action thresholds. Consult your state cooperative extension service, professional consultants or other qualified authorities to determine appropriate action treatment threshold levels for treating specific pest/crop systems in your area.

## APPLICATION

Apply at the recommended rates when insect populations reach locally determined economic thresholds. Consult the cooperative extension service, professional consultants or other qualified authorities to determine appropriate threshold levels for treatment in your area.

Follow-up treatments of LEMUR LV should be applied, as needed, to keep pest populations within threshold limits. On most crops, LEMUR LV should be applied at 5 to 7 day intervals to maintain control.

Refer to crop specific directions for use in the crop tables for more specific information on treatment intervals.

Use sufficient water to obtain thorough, uniform coverage. Since LEMUR LV is a fast acting contact insecticide, best results follow direct spraying of the target insect.

For aerial, use a minimum of 2 gals. per acre (gpa) except 10 gpa for nectarines and peaches; 15 gpa for oranges, lemons, grapefruit, tangelos and tangerines.

LEMUR LV is recommended for use as a low volume aerial spray 0.53 gpa (2L) for cotton\* and soybeans\* and 1gpa for the crops listed below providing the following conditions are met:

- equipment is adjusted to distribute spray uniformly over the spray swath,
- wind conditions and other factors such as temperature and humidity are such that the spray is delivered to the target area,
- local regulations do not prohibit low-volume aerial sprays,

Apply the low rates on small plants, small insects and light infestations of insects. Use intermediate rates on large insects and heavier infestations of insects. Use 1 to 3 applications of the highest recommended rate for controlling severe infestations. Thereafter, use the lowest rate possible to maintain control.

\*Not Registered for aerial application in a diluted volume of less than 1 gal in CA.

## CHEMIGATION

Instructions for the Use of LEMUR LV on Alfalfa, Green and Dry Bulb Onions, Potatoes, Sugar Beets and Wheat Using Overhead Sprinkler Chemigation

Overhead chemigation applications offer the advantage of greater penetration and coverage of the target plant. However, typical chemigation applications are more dilute than ground or aerial applications. For best results, it is recommended to keep the concentration of LEMUR LV as high as possible in the application. Apply LEMUR LV in 0.1 to 0.2 inches of water per acre.

LEMUR LV is most active as a contact insecticide, although it does also have activity via ingestion of treated plants. For best results, applications of LEMUR LV should

take place when the insects are active and most likely to come into direct contact with the application.

#### Types of Irrigation Systems:

LEMUR LV may be applied through overhead sprinkler irrigation systems for control of various pests. The irrigation system used must provide uniform water distribution. Do not use filter screens smaller than 50 mesh throughout the system, due to possible build up of material on 100 mesh or smaller screens. Do not apply LEMUR LV through any other type of irrigation systems, except those allowed by instructions provided in a supplemental, SLN or this product label.

#### Directions for Chemigation:

##### Preparation

A pesticide tank is recommended for the application of LEMUR LV in chemigation systems. Thoroughly clean the injection system and tank of any fertilizer or chemical residues using a standard clean-out procedure. Dispose of any residues in accordance with State and Federal laws. Add 1/4 to 1/2 of the desired amount of water and then measure the required amount of LEMUR LV into the tank. Complete filling the tank by adding the required amount of water. Agitate thoroughly to insure a uniform solution of LEMUR LV. Once in solution, no further agitation is required. Injection solution should not be stored overnight. Highly alkaline water should be buffered so that the pH of the spray solution is in the range of neutral to slightly acidic (pH5-7).

##### Injection Into Chemigation Systems

Inject the proper amount of the LEMUR LV solution into the irrigation water flow using a positive displacement injection pump. Injection should occur at a point in the main irrigation water flow to ensure thorough mixing with the irrigation water.

##### Uniform Water Distribution

The irrigation system used for application of LEMUR LV must provide for uniform distribution of LEMUR LV treated water. Non-uniform distribution might result in crop injury, lack of effectiveness or illegal pesticide residues in or on the crop being treated. Ensure the irrigation system is calibrated to uniformly distribute the chemigation application to the crop. Contact the equipment manufacturer, the local

University Extension agent or other experts if you have questions about achieving uniform distribution of the application.

### Equipment Calibration

Calibrate the irrigation system and injector before applying LEMUR LV. Calibrate the injection pump while the system is running using the expected irrigation rate. If you have questions about calibration, you should contact your state extension service specialists, equipment manufacturer or other experts.

### Monitoring of Chemigation Applications

A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of a responsible person, shall shut the system down and make necessary adjustments should the need arise. Wear the personal protective equipment as defined in the PPE section of the label for cleaners and repairers of application equipment when making adjustments or repairs on the chemigation system when LEMUR LV is in the irrigation water.

### Required System Safety Devices

Do not connect any irrigation system used for pesticide applications to a public water system unless the pesticide label-prescribed safety devices are in place. Public water system means a system for the provision to the public of piped water for human consumption, if such a system has at least 15 service connections or regularly serves an average of at least 25 individuals at least 60 days out of the year.

1. 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.
2. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
3. 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.
4. The system must contain functional interlocking controls to automatically shut off

the pesticide injection pump when the water pump motor stops.

5. 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 pesticide distribution is adversely affected.

6. 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.

7. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction.

There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

#### Posting of Areas to be Treated

Posting of areas to be chemigated is required when 1) any part of a treated area is within 300 feet of sensitive areas such as residential areas, labor camps, businesses, daycare centers, hospitals, in-patient clinics, nursing homes, or any other public areas such as schools, parks, playgrounds, or other public facilities not including public roads, or 2) when the chemigated area is open to the public such as golf courses or retail greenhouses.

Posting must conform to all the following requirements. Treated areas shall be posted with signs at all usual points of entry and along likely routes of approach from the listed sensitive areas. When there are no usual points of entry, signs must be posted in the corners of the treated areas and in any other location affording maximum visibility to sensitive areas. The signs shall be printed in ENGLISH. Signs must be posted prior to application and must remain posted until foliage has dried and soil surface water has disappeared. Signs may remain in place indefinitely as long as they are composed of materials to prevent deterioration and maintain legibility for the duration of the posting period. All words shall consist of letters at least 2 1/2 inches tall, and all letters and the symbol shall be a color, which sharply contrasts with their immediate background. At the top of the sign shall be the words

"KEEP OUT", followed by an octagonal stop sign symbol at least 8 inches in diameter containing the word "STOP". Below the symbol shall be the words "PESTICIDE IN IRRIGATED WATER". Posting for chemigation does not replace other posting and reentry requirements for farm worker safety.

## Operation

Start the water pump and sprinkler, and let the system achieve the desired pressure and speed before starting the injector. Start the injector and calibrate the injection system according to the directions above. This procedure is necessary to deliver the desired rate per acre in a uniform manner. Apply LEMUR LV in 0.1 to 0.2 inches of water per acre. When the application is finished, allow the entire irrigation and injector system to be thoroughly flushed clean before stopping the system.

End guns must be turned off during the application, if they irrigate nontarget areas or if they do not provide uniform application and coverage.

It is recommended that nozzles in the immediate area of control panels, chemical supply tanks, wellheads and system safety devices be plugged to prevent contamination of these areas.

Do not apply when wind speed favors drift beyond the area intended for treatment.

Do not apply when system connections or fittings leak or when nozzles do not provide uniform distribution.

## Cleaning the System

Thoroughly clean the injection system and tank of any fertilizer or chemical residues using a standard clean-out procedure. Dispose of any residues in accordance with State and Federal laws. Consult your owner's manual or your local equipment dealer for cleanout procedures for your injection system.

## TEMPERATURE INVERSIONS



Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions.

Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

#### SENSITIVE AREAS

The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas).

#### SHIELDED SPRAYERS

Shielding the boom or individual nozzles can reduce the effects of wind. However, it is the responsibility of the applicator to verify that the shields are preventing drift and not interfering with uniform deposition of the product.

#### AIR ASSISTED (AIR BLAST) FIELD CROP SPRAYERS

Air assisted field crop sprayers carry droplets to the target via a downward directed air stream. Some may reduce the potential for drift, but if a sprayer is unsuitable for the application and/or set up improperly, high drift potential can result. It is the responsibility of the applicator to determine that a sprayer is suitable for the intended application, is configured properly, and that drift is not occurring.

Note: Air assisted field sprayers can affect product performance by affecting spray coverage and canopy penetration. Consult the application equipment section of this label to determine if use of an air assisted sprayer is recommended.

#### AIR ASSISTED (AIR BLAST) TREE AND VINE SPRAYERS

Air assisted tree and vine sprayers carry droplets into the canopy of trees and vines via a radially or laterally directed air stream. These sprayers are not suitable for applying herbicides. In addition to the general drift management principles already described, the following specific practices will further reduce the potential for drift:

- Adjust deflectors and aiming devices so that spray is only directed into the canopy.
- Block off upward pointed nozzles when there is no overhanging canopy.
- Use only enough air volume to penetrate the canopy and provide good coverage.
- Do not allow spray to go beyond the edge of the cultivated area. Spray the outside row only from outside the planting.

#### Limitations, Restrictions, and Exceptions

##### CABBAGE

Do not apply more than 24 pints of LEMUR LV/acre/crop.

Do not make more than 15 applications/crop; minimum interval between treatments is 2 days.

Do not use for Loopers in AL & GA.

Rate - Add a wetting agent to improve coverage.

##### Method

[Foliar application](#)

##### Pre-Harvest Interval

1 day

##### Restricted Entry Interval

48 hours

##### Timings

When insect populations reach locally determined economic thresholds.