

US ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF PESTICIDES PROGRAMS  
REGISTRATION DIVISION (75-767)  
WASHINGTON, DC 20460

EPA REGISTRATION NO.

DATE OF ISSUANCE

58788-5

FEB 15 1995

TERM OF ISSUANCE

NOTICE OF PESTICIDE:  REGISTRATION  
 REREGISTRATION

(Under the Federal Insecticide, Fungicide,  
and Rodenticide Act, as amended)

NAME OF PESTICIDE PRODUCT

GEMSTAR<sup>TM</sup> LC

NAME AND ADDRESS OF REGISTRANT (Include ZIP code)

CROB GENETICS INTERNATIONAL  
10150 Old Columbia Road  
Columbia, Maryland 21046

NOTE: Changes in labeling formula differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above U.S. EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby Registered/Reregistered under the Federal Insecticide, Fungicide, and Rodenticide Act.

A copy of the labeling accepted in connection with this Registration/Reregistration is returned herewith.

Registration is in no way to be construed as an indorsement or approval of this product by this Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is unconditionally registered in accordance with FIFRA section 3(c)(5). Once a pesticide is registered, however, it is not regarded as permanently acceptable. Registration does not eliminate the need for continual reassessment of pesticides. If EPA determines at any time that additional data are required to maintain in effect an existing registration, the Agency will require submission of such data under section 3(c)(5) of FIFRA.

1. Add the phrase, "EPA Registration No. 58788-5" to the label and submit five (5) copies of your final printed labeling before you release the product for shipment.

A stamped copy of the label is enclosed for your records.

ATTACHMENT IS APPLICABLE

SIGNATURE OF APPROVING OFFICIAL

DATE

GEMSTAR LC DRAFT LABELING

Page 1 of 6

GEMSTAR™ LC  
A Liquid Concentrate  
Biological Insecticide  
for Control of  
Corn earworm (Cotton bollworm)  
and Tobacco budworm

GEMSTAR LC is an IVP (Insecticidal Virus Product) for control of the caterpillars of the corn earworm, Helicoverpa zea (also known as the cotton bollworm and tomato fruitworm), and the tobacco budworm, Heliothis virescens. Read this label carefully. Refer to the Technical Bulletin for Additional Guidelines for Use.

Active Ingredient\*

Polyhedral occlusion bodies (OBs) of the nuclear polyhedrosis virus of Helicoverpa zea (corn earworm)

0.64%

Inert Ingredients:

99.36%

\*This lot contains at least 2 billion OBs/ml.

KEEP OUT OF THE REACH OF CHILDREN

CAUTION

STATEMENT OF PRACTICAL TREATMENT

In case of contact with eyes flush with plenty of water for at least 15 minutes. If on skin, wash thoroughly with soap and water. If inhaled, remove victim to fresh air. Apply respiration if indicated. Get medical attention if irritation persists.

Mfg. By: Crop Genetics International  
10150 Old Columbia Road  
Columbia, MD 21046

ESTABLISHMENT No. 58788-MD-002

EPA REGISTRATION No.

Net Volume.

Lot No

ACCEPTED  
with COMMENTS  
in EPA Letter Dated

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under EPA Reg. No.

58788-5

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS (AND DOMESTIC ANIMALS)**

Precautionary Statements: Avoid inhalation or contact with skin, eyes or clothing. Avoid breathing spray mist.

Personal Protective Equipment: Applicators and other handlers must wear  
Long-sleeved shirt and long pants  
Shoes plus socks

Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

**USER SAFETY RECOMMENDATION**

Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

**ENVIRONMENTAL HAZARDS**

Do not contaminate water when disposing of equipment washwaters.

**STORAGE AND DISPOSAL**

Do not contaminate water, food, or feed by storage or disposal.

**STORAGE:** Store this product in original sealed container in a cool, dry place inaccessible to children and pets. Store at temperatures below 90° F.

Bioactivity may be impaired by storage above 90° Fahrenheit. Storing the product in a freezer or refrigerator will extend its shelf-life.

**PESTICIDE DISPOSAL:** Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Pesticide, spray mixture or rinsate that cannot be used should be disposed of on site or at an approved waste disposal facility in accordance with Federal and local regulations.

**CONTAINER DISPOSAL:**

Plastic container—triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by State and local authorities, by burning. If burning is allowed, stay out of smoke.

Glass container—triple rinse (or equivalent) Then dispose of in a sanitary landfill or by other approved State and local procedures

## GEMSTAR LC DRAFT LABELING

Page 3 of 6

### DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers 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.

(Refer to Technical Bulletin for Additional Guidelines for Use.)

### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted entry interval (REI). The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Waterproof gloves
- Shoes plus socks

### GENERAL INFORMATION

GEMSTAR LC is a highly selective insecticide for use against the insects and on the crops listed on this label. Always follow these directions:

Treat when larvae are young (early instars) and are actively feeding. Apply before extensive damage has occurred. When insect infestations are heavy, use the higher label rates.

Thorough spray coverage is essential for good insect control. GEMSTAR LC should be applied by conventional ground or aerial application equipment with quantities of water to provide thorough coverage of infested plants without runoff. The amount of water needed per acre will depend on weather, spray equipment, and local experience. Generally, use the recommended amount of GEMSTAR LC in 20-100 gallons of water per acre for ground application and in at least 5 gallons of water for aerial application.

A spreader/sticker and ultraviolet screening agent may enhance the performance of this product.

GEMSTAR LC DRAFT LABELING

Fill the mix tank with desired quantity of water. Agitation should be used during mixing. If a spreader/sticker or ultra-violet screen is used, add prior to the addition of GEMSTAR LC. Mixing time can be reduced by premixing GEMSTAR LC with a small amount of water and vigorously agitating before adding to the tank. Final formulation should be mixed for 10-30 minutes.

PRODUCT INFORMATION

Application

Recommended Application Rates

CROP	RATE		
	Billion OBs Per Acre	mls Per Acre	
Vegetables Tomatoes, lettuce, cabbage, beans, peppers, celery, escarole, sweet corn, peas, asparagus, beets, cauliflower, cucumber, broccoli, onion	600	300	Repeat as necessary to maintain control
Other Crops Cotton, alfalfa, soybeans, peanuts, potatoes, corn, wheat, sweet- potatoes, tobacco, sunflower, sugarbeets	600	300	

USE NON-CHLORINATED WATER AT A pH NEAR 7.0 IN THE SPRAY-TANK MIX

GEMSTAR LC may be applied up to and including the day of harvest and storage.

Limited Warranty: Crop Genetics International, makes no warranty, express or implied including the warranties of merchantability and/or fitness for any particular purpose, concerning this material except those which are contained on this label and/or accompanying technical bulletin.

# GEMSTAR LC DRAFT LABELING

Page 5 of 6

## TECHNICAL BULLETIN GEMSTAR LC BIOLOGICAL INSECTICIDE

### PRODUCT DESCRIPTION

GEMSTAR LC, produced in the laboratories of Crop Genetics International is an IVP (Insecticidal Virus Product) used to control caterpillars of labeled insect pests.

GEMSTAR LC provides a unique opportunity for biological control of insect caterpillars without harmful effects on humans, domestic animals, wildlife, beneficial insects and plants.

GEMSTAR LC is a liquid concentrate. Its active ingredient is the nuclear polyhedrosis virus of Helicoverpa zea.

#### Active Ingredient\*

Polyhedral occlusion bodies (OBs) of the nuclear polyhedrosis virus of Helicoverpa zea

0.64%

#### Inert Ingredients:

99.36%

\*This lot contains at least 2 billion OBs per ml.

### BIOLOGICAL PROPERTIES

GEMSTAR LC belongs to the family Baculoviridae, subgroup A. Numerous virus particles or virions are randomly occluded within a protein paracrystalline matrix called a polyhedral occlusion body (OB). The virions occluded within the OBs are the infectious units. Virions consist of rod-shaped nucleocapsids that are surrounded by an envelope.

The product is rapidly inactivated by temperatures above 90° F. For prolonged storage, the product should be kept below 40° F.

### MODE OF ACTION

The virus must be ingested to be infective. When ingested, at early stages of larval development, infection ultimately results in death. The OBs dissolve within seconds in the midgut after ingestion. The released infectious virions enter the nuclei of the epithelial cells lining the midgut and replicate. Virus progeny enter the hemocoel and infect virtually all cell types, including hemocytes, tracheal cells, fat body cells and epidermal cells. All the cells of tissues are susceptible.

GEMSTAR LC DRAFT LABELING

Page 6 of 6

Assembly of virions and formation of OBs occur only within the nucleus. Lysis of cell and disintegration of larval tissue begin shortly thereafter.

Within a day after ingestion, the usually clear hemolymph becomes increasingly cloudy. Another 1-2 days later, polyhedra-shaped bodies are detected in the blood. Depending on the dose and ambient temperatures, maximum effect on young larvae will occur at 5-7 days after initial ingestion. Shortly after death, larvae become flaccid and the integument ruptures, releasing billions of OBs.

**APPLICATION SHOULD BE MADE WHEN LARVAE ARE IN THE FIRST AND SECOND INSTAR. LARVAE MUST INGEST OBS TO BE INFECTED, WHICH IS THE CASE WHEN THEY CONSUME SPRAYED PLANT MATERIAL.**

Baculoviruses have been found only in invertebrates; no member of this family is known to infect vertebrates or plants. GEMSTAR LC does not reproduce in mammalian cells. No adverse effect to fish, wildlife or beneficial organisms has been observed.

The information contained herein is based on data which are believed to be reliable, but it is understood that such information is not guaranteed by Crop Genetics International Inc. and is to be used at the risk of the user of such information.

Crop Genetics International  
10150 Old Columbia Road  
Columbia, MD 21046