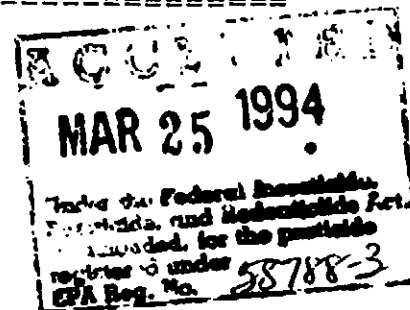


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## Draft Labelling

**GUSANO™**

A Wettable Powder  
Biological Insecticide  
for Control of  
Caterpillars



GUSANO is an IVP (Insecticidal Virus Product) for control of the caterpillars of the insects listed on this label. 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 Autographa  
californica (alfalfa looper)

3.3%

## Inert Ingredients:

96.7%

\*This lot contains at least 10 billion OBs/gr.

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

EPA REGISTRATION No.: 58788-6  
ESTABLISHMENT No.: 58788-MD-002

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.

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## PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals: Avoid contact with skin and eyes. This product can cause eye irritation. Wash thoroughly with soap and water after handling. Call a physician if eye irritation persists.

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

Follow manufacturer's instructions for cleaning/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.

**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

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# Draft Labelling

## GENERAL INFORMATION

GUSANO 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 on foliage. Apply before extensive foliar damage has occurred. When insect infestations are heavy, use the higher label rates.

Thorough spray coverage is essential for good insect control. GUSANO 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 GUSANO 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.

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

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

## APPLICATION RATES

	<u>Billion</u> <u>OBs per acre</u>	<u>grams</u> <u>per acre</u>
Vegetables	<u>100 to 500</u>	<u>5 - 50</u>
Tomatoes, lettuce, cabbage, beans, peppers, celery, escarole, sweet corn, peas, asparagus, beets, cauliflower, cucumber, broccoli, onion		
Other Crops	<u>100 to 500</u>	<u>5 - 50</u>
Cotton, alfalfa, soybeans, peanuts, potatoes, corn, wheat, sweet-potatoes, tobacco, sunflower, sugarbeets		
Silviculture	<u>100 to 500</u>	<u>5 - 50</u>
Trees of various species		

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STORAGE AND DISPOSAL

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

Storage

Store this product in a cool, dry place inaccessible to children and pets. Store at temperatures below 90° F. Bioactivity may be impaired by storage above 90° F. 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.

Paper container -- completely empty bag into application equipment. Then dispose of empty bag 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.

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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.

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TECHNICAL BULLETIN

GUSANO BIOLOGICAL INSECTICIDE

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PRODUCT DESCRIPTION

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

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

GUSANO is a technical grade lyophilized powder. Its active ingredient is the multicapsid nuclear polyhedrosis virus of the alfalfa looper, Autographa californica.

Active Ingredient\*

Polyhedral occlusion bodies (OBs) of the nuclear polyhedrosis virus of Autographa californica (alfalfa looper)

3.3%

Inert Ingredients:

96.7%

\*This lot contains at least 10 billion OBs per gram.

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BIOLOGICAL PROPERTIES

GUSANO 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 OBs are on average about 2  $\mu$ m in size. The virions occluded within the OBs are the infectious units. Virions consist of a variable number of rod-shaped nucleocapsids that are surrounded by an envelope. A nucleocapsid contains a single molecule of covalently closed, circular double stranded DNA of approximately 130,000 base pairs.

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

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TECHNICAL BULLETIN

GUSANO BIOLOGICAL INSECTICIDE

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MODE OF ACTION

The IVP must be ingested to be infective. When infected, 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.

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 POLYHEDRA TO BE INFECTED, WHICH IS THE CASE WHEN THEY CONSUME SPRAYED PLANT MATERIAL.

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

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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 and is to be used at the risk of the user of such information.

Crop Genetics International  
10150 Old Columbia Road  
Columbia, MD 21046

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