58788-4

CYD-X™
An Aqueous Suspension
Biological Insecticide
for Control of
the Codling Moth

CYD-X is an IVP (Insecticidal Virus Product) for control of the codling moth caterpillar. Read this label carefully. Refer to the Technical Bulletin for Additional Guidelines for Use.

Active Ingredient*	
Occlusion bodies (OBs) of the Granulosis Virus of *Cydia pomonella* (codling moth)	0.2%
Inert Ingredients:	99.8%

*This lot contains at least 3 x 10^{12} Obs per fluid ounce.

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.: 58788-4

Net Volume:

Lot No.

58788-4
4-1-96

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. Open dumping is prohibited. Do not re-use empty containers.

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.

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

CYD-X is a highly selective insecticide for use against the codling moth on apples, pears and walnuts. Always follow these directions:

First application should be timed to coincide with egg hatch and presence of young larvae. Subsequent applications should be repeated at 7 to 10-DAY intervals for each generation. When insect infestations are heavy, or when applying to large trees, use the higher label rates.

Thorough spray coverage is essential for good insect control. CYD-X should be applied by conventional ground 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, size of trees, and local experience. Generally, use the recommended amount of CYD-X in 20-400 gallons of water per acre for ground application.

A spreader/sticker and ultraviolet screening agent cleared for food use under the FFDCA 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 CYD-X; any spreader/sticker and ultraviolet screening agent used must be cleared for food use under the FFDCA. Mixing time can be reduced by premixing CYD-X with a small amount of water and vigorously agitating before adding to the tank. Final formulation should be mixed for 1-30 minutes.

PRODUCT INFORMATION

Application

Recommended Application Rates

CROP	RATE		
	Trillion OBs Per Acre	Fl. oz. Per Acre	
Apples, pears, walnuts	2 to 5	0.7 to 1.7	Repeat as necessary to maintain control

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

CYD-X maybe 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.

TECHNICAL BULLETIN
CYD-X BIOLOGICAL INSECTICIDE

PRODUCT DESCRIPTION

CYD-X, produced in the laboratories of Crop Genetics International, is an IVP (Insecticidal Virus Product) used to control caterpillars of the codling moth. CYD-X provides a unique opportunity for biological control of codling moth caterpillars without harmful effects on humans, domestic animals, wildlife, beneficial insects and plants.

CYD-X is a technical grade liquid homogenate. Its active ingredient is the granulosis virus of the codling moth, *Cydia pomonella*.

BIOLOGICAL PROPERTIES

CYD-X is a highly virulent and selective control agent of the codling moth and other closely related tortricids including the Oriental fruit moth. CYD-X presents no hazard to nontarget beneficial insects.

CYD-X belongs to subgroup B of the baculoviridae. An infectious virion is singly embedded within a protein crystal called an occlusion body (OB). OBs are ovocylindrical and range in size from 300 to 500 nm in length by 120 to 300 nm in width. A virion consists of a single rod-shaped nucleocapsid that is surrounded by an envelope. A nucleocapsid contains a single molecule of covalently closed, circular double-stranded DNA of approximately 126,000 base pairs.

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

MODE OF ACTION

The OBs must be ingested to be infective. When infected, at early stages of larval development, infection ultimately results in death. After ingestion, the OBs dissolve within seconds in the midgut. The released infectious virions enter the nuclei of the epithelial cells lining the midgut and replicate. Virus progeny enters the hemocoel and infect virtually all cell types, including hemocytes, tracheal cells, fat body cells and epidermal cells. Assembly of virions and formation of OBs occur only within the nucleus. Lysis of cells 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, OBs are detected in the blood. Depending on the dose and ambient temperatures, maximum effect on young larvae will occur at 3-7 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 EARLY FIRST INSTARS. 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. CYD-X 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