

## **SOYBEANS - BEET ARMYWORM, ETC.**

### General Information

### USE INFORMATION

Diamond must be ingested and/or contacted by insects to be effective. Proper application techniques help ensure thorough spray coverage and correct dosage necessary to obtain optimum control. Apply at the required 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. Apply follow-up treatments of Diamond per DIRECTIONS FOR USE to keep pest populations within threshold limits. Scout fields regularly to determine optimum application timing based on pest levels and stages of growth.

The primary mode of action is by disrupting cuticle formation and deposition occurring when insects molt, resulting in their death. Due to this mode of action, Diamond has no direct effect on adults.

NOTE: The compatibility of Diamond with concurrent releases of insects for biocontrol of plant pests has not been established. When used as directed, Diamond affects developing immature stages of insects by disrupting the molting process. Consequently, fully developed adult stages of pest and beneficial species are not affected.

Rotational Crops: Only registered crops may be rotated in a treated field within 30 days of the final application.

The use of novaluron on crops grown for food in greenhouses, except tomatoes and cucumbers, is prohibited.

### SPRAY DRIFT:

Do not allow Diamond to drift on grapes as leaf spotting may occur.

For ground boom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy and when wind speed is 10 mph or less at the application site as measured by an anemometer. Use medium or coarser spray according to ASAE 572 definition for standard nozzles or VMD for spinning atomizer

nozzles.

For aerial applications, the following measures must be adhered to:

- a. The distance of the outermost nozzles on the boom must not exceed 3/4 of the length of the wingspan or rotor.
- b. Nozzles must always point backward parallel with the airstream and never be pointed downwards more than 45 degrees.
- c. Use high-flow nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- d. Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- e. Use the minimum number of nozzles that provide uniform coverage.
- f. Orient nozzles so that the spray is released parallel to the airstream. This produces larger droplets and minimizes potential drift. Significant deflection from the horizontal position will reduce droplet size and increase drift potential.
- g. Use a nozzle type that is designed for the intended application. With most nozzle types, such as low-drift nozzles, narrower spray angles produce larger droplets. Solid-stream nozzles oriented straight back produce the largest droplets and the least drift.
- h. For some use patterns, reducing the effective boom length to less than 3/4 of the wing span or rotor length may further reduce drift without reducing swath width.
- i. Do not make applications at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.
- j. When applications are made with a cross wind, the swath will be displaced downward. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Increase the swath adjustment distance with increasing drift potential (higher wind, smaller drops, etc.).
- k. Drift potential is lowest with wind speeds between 2 - 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Do not apply when wind speed is below 2 mph due to variable wind direction and high inversion potential. Local terrain can influence wind patterns. An applicator's familiarity with local wind patterns can minimize spray drift.
- l. Droplet evaporation is most severe when conditions are both hot and dry;

therefore, when making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation.

m. Do not apply during a temperature inversion because drift potential is high.

Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no winds.

Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to light variable winds common during inversions.

n. Only apply pesticides 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 the wind is blowing away from the sensitive area).

o. Ultra Low Volume (ULV) application is not permitted.

**SPRAY COVERAGE:** All parts of the crop must receive uniform spray coverage or else desired result may not occur. Higher water volumes and increased spray pressure generally provide better coverage. Consult your local agricultural specialist for specific information on the best rates, timings, and spray volumes for your region.

#### Ground Application

Apply required dosage by conventional ground sprayer equipment capable of delivering sufficient water to obtain thorough, uniform coverage of the target crop. Orient spray equipment boom and nozzles in a manner to minimize boom height to optimize coverage uniformity, maximize deposition, and reduce spray drift. Drop nozzles may be required to obtain uniform coverage against certain pests that develop down in the canopy. Use a minimum spray volume of 5 gallons per acre with ground spray equipment in cotton. Higher gallonages will provide better coverage and performance. Use hollow cone, disc-core hollow cone, or twin jet fan nozzles suitable for insecticide spraying.

#### Band Application (in Cotton Only)

Band applications may be appropriate early in the season when cotton is small. Proper nozzle selection, placement, boom orientation or shielding to compensate for windy conditions is critical to ensure adequate coverage.

When banding, determine the amount of chemical to use per acre by dividing the band width by the row width and multiplying by the appropriate broadcast rate (see formula in the label).

#### Aerial Application

For aerial application apply in a total of 2 to 10 gallons per acre using a nozzle configuration that will provide a median droplet size of 200-300 microns. Higher gallonages will provide better coverage and performance. Adhere to the minimum safe application height - not greater than 12 feet above crop canopy. Boom length must be less than 75% of wing span, and swath markers. Use flagging or GPS system during application. Make applications when wind speed is between 2 and 10 mph. Do not make applications when wind speed exceeds 10 mph. Under low humidity and high temperatures, adjust spray volume upward to compensate for evaporation of spray droplets.

#### APPLICATION THROUGH IRRIGATION SYSTEMS - CHEMIGATION

Diamond may be applied through properly equipped chemigation systems for insect control in cotton and grain sorghum. Apply this product only through sprinkler (including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move) 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 non-uniform distribution of treated water.

In order to calibrate the irrigation system and injector to apply the mixture, determine the following: 1) Calculate the number of acres irrigated by the system; 2) Set the irrigation rate and determine the number of minutes for the system to cover the intended treatment area; 3) Calculate the total gallons of the mixture needed to cover the desired acreage. Divide the total gallons of mixture needed by the number of minutes to cover the treated area. This value equals the gallons per minute that the injector must deliver. Convert the gallons per minute to ounces per minute. Calibrate the injector pump with the system in operation at the desired irrigation rate. Calibrate the injector pump at least twice before operation, and the system be monitored during operation.

If you have questions about calibration, 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.

#### CHEMIGATION SYSTEMS CONNECTED TO PUBLIC WATER SYSTEMS

If the chemigation system is connected to a public water supply, the following conditions must also be met:

- Public water systems means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
- 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 a 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.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection.
- The pesticide injection pipeline must 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 shutdown.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where 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.

- Upon completion of insecticide application, remove scale, pesticide residues, and other foreign matter from the supply tank and entire injector system. Flush thoroughly with clean water.
- Do not apply when wind speed favors drift beyond the area intended for treatment.

#### SPRINKLER CHEMIGATION

For continuously moving systems, the mixture containing Diamond Insecticide must be injected continuously and uniformly into the irrigation water line as the sprinkler is moving. If continuously moving irrigation equipment is used, apply in no more than 0.25 inch of water. For sprinkler systems that do not move during operation, apply in no more than 0.25 inch of irrigation immediately before the end of the irrigation cycle.

Maintain continuous agitation of the pesticide supply tank for the duration of the application period.

To apply a pesticide using sprinkler chemigation, the chemigation system must meet the following specifications:

- 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 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.

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

#### USE RESTRICTIONS

For ground application (all crops): Do not apply by ground equipment within 75 feet of bodies of water such as lakes, reservoirs, rivers, permanent streams, natural ponds, marshes, or estuaries. All applications must include a 25-foot vegetative buffer strip within the buffer zone to decrease runoff.

For aerial application (except cotton): Do not apply by air equipment within 150 feet of bodies of water such as lakes, reservoirs, rivers, permanent streams, natural ponds, marshes, or estuaries. All applications must include a 25-foot vegetative buffer strip within the buffer zone to decrease runoff.

For aerial application to cotton: Do not apply within 250 feet by air equipment of bodies of water such as lakes, reservoirs, rivers, permanent streams, natural ponds, marshes, or estuaries. All applications must include a 25-foot vegetative buffer strip within the buffer zone to decrease runoff.

#### Use Precautions

Carefully read this product label for crop specific instructions and precautions, as failure to do so may result in crop injury. Diamond has demonstrated some phytotoxic effects to new, expanding leaves, when mixed with products that are formulated as emulsifiable concentrates, systemic in nature, and/or intended to improve plant uptake, e.g. foliar nutrients/amendments, and/or petroleum/plant oil based products. Do not mix Diamond with oil based adjuvants intended for plant absorption. Crop injury is typically exhibited as, but may not be limited to, chlorosis or mottling of new, expanding leaves.

#### RESISTANCE MANAGEMENT:

Diamond contains the active ingredient novaluron, a benzoylurea inhibitor of chitin biosynthesis belonging to the Insecticide Resistance Action Committee (IRAC) group 15. Diamond is effective in controlling insect pests and minimizing the development of resistance when used in rotation with other insecticides in an IPM program. To reduce selection pressure for resistant pests:

- Do not use Diamond or another group 15 insecticide against consecutive insect generations. Consecutive applications can be used, however, within a single / same generation. It is best to use Diamond in rotation with classes of insecticides and

modes of action other than those in IRAC group 15.

- For management of pests with short life cycles such as whiteflies, do not use Diamond more than once within each generation cycle.
- Always apply Diamond at the required rates and according to label directions. Do not use an application rate alone or in tank mixtures that is less than the minimum amount stated on the label.
- Use Diamond as part of an insect management program that includes cultural and biological control where possible.
- Scout pest populations and begin Diamond applications before the pest becomes established. Focus treatments on early immature stages for best results. For optimum control, thoroughly wet the undersides of leaves, particularly when applications are made to control pear psylla, whiteflies and thrips.

### Limitations, Restrictions, and Exceptions

#### SOYBEANS

- Not registered for use in California.

#### Application Instructions

- Apply at egg-hatch stage or when first signs of feeding occur. Use higher rates and higher spray volumes when larvae are more than  $\frac{1}{4}$  inch long, the target pest population is 2X or more above state threshold level, or foliage canopy is tall or dense and larvae are present in the lower part of the canopy.
- Repeat application if damaging numbers reappear to protect new growth.
- Aerial Application: Apply in sufficient water (3 to 10 gallons per acre) to achieve uniform coverage of foliage.
- Ground Application: Apply in 9 to 35 gallons of water per acre to give uniform coverage.
- Do not exceed 36 fl oz per acre per year (0.23 lb a.i. per acre per year).
- Reapplication on a 10 (minimum) to 14 day interval may be required.
- Do not harvest within 30 days of application.
- Do not feed treated soybean forage to livestock.

#### Method

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

Pre-Harvest Interval



30 days

Rates

[field\\_rates 0](#)

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Restricted Entry Interval

12 hours

Timings

[At egg-hatch stage or when first signs of feeding occur.](#)