TREE NUTS GROUP - HICKORY SHUCKWORM

General Information

PRODUCT INFORMATION

DoubleTake is a premix product containing both an insecticide and an insect growth regulator effective in the control of a wide variety of insect pests. Because it contains two modes of action, DoubleTake provides both quick knockdown and long residual control. Initial and residual control is contingent upon thorough coverage of the crop. Apply as a foliar spray in sufficient water to obtain full coverage of the foliage and fruit. When foliage is dense or pest pressure is high (heavier insect or egg pressure, larger instar stages), user higher application volumes and/or higher listed use rates where permitted by the label.

RESISTANCE MANAGEMENT: DoubleTake contains active ingredients from IRAC groups 3 and 15. Some insects are known to develop resistance to products used repeatedly for control. Because resistance development cannot be predicted, the use of this product should conform to resistance management strategies established for the use area. Consult your local or state agricultural authorities for details. Additionally, DoubleTake should be part of an IPM program that follows good management practices to include:

− Scouting regularly and using DoubleTake against early immature stages for best results
− Following the label rate and timing directions
− Maintaining good coverage of all leaf surfaces with adequate water volume
− Alternating treatments to classes of insecticides with different modes of action

RESTRICTIONS
Rotational Crops: Do not plant food or feed crops in Double Take or diflubenzuron treated soils within 1 month following last application, unless DoubleTake or other diflubenzuron containing products are labeled for use on the rotational crop.

APPLICATION INSTRUCTIONS

USE AND MIXING DIRECTIONS IF USED WITH WATER:
1. Fill tank with half of the required amount of water.

2. Begin agitation and add required amount of Double Take.

3. Continue agitation while adding remainder of water.

4. If permitted for the use site, add proper quantity of oil slowly. To avoid formation of an invert emulsion, use at least 2 parts of water for each part of oil.

5. Continue to provide agitation while applying.

USE AND MIXING DIRECTIONS IF USED WITHOUT WATER:
Always evaluate any potential mixture for compatibility and sprayability. To ensure thorough mixing of DoubleTake with insecticides or other carriers, premix ingredients in a nurse tank prior to being transferred to aerial or ground ULV application equipment. If nurse tank is not available, or unable to simultaneously mix:

1. Fill tank with the required amount of oil and/or oil based insecticide.

2. Begin agitation and add required amount of Double Take.

3. After the contents of the tank have been thoroughly agitated, a volume of carrier sufficient to fill the booms and piping system should be drained and then added back to the tank.

4. Continue to provide agitation while applying.

SPRAY DRIFT LABELING

BUFFER ZONES

Vegetative Buffer Strip
Only apply to fields where a 10 foot wide vegetative filter strip of grass or other permanent vegetation exists between the field edge and downward gradient aquatic habitats such as, but not limited to lakes; reservoirs; rivers; permanent streams; marshes, pot holes or natural ponds; estuaries; and commercial fish farm ponds).

For guidance, refer to the following publication for information on constructing and

maintaining effective buffers: Conservation Buffers to Reduce Pesticide Losses, Natural Resources Conservation Services, USDA, NRCS. 2000. Fort Worth, TX. 21 pp. www.in.nrcs.usda.gov/technical/agronomy/newconbuf.pdf

For ground application, do not apply within 25 feet of aquatic habitats.

For aerial application (low and high volume), do not apply within 150 feet of aquatic habitats.

For aerial application (ULV), do not apply within 450 feet of aquatic habitats.

In the state of New York, a 25 foot vegetative non-crop buffer strip untraversed by drainage tiles must be maintained between a treated field and a coastal marsh (or stream that drains into a coastal marsh), for both aerial and ground application. For aerial applications, the 25 foot vegetative non-crop buffer strip for runoff protection would be part of the larger 150 foot buffer strip (or 450 ft. buffer strip for ULV application) required for spray drift.

SPRAY DRIFT REQUIREMENTS

Wind Speed and Direction

Only apply this product if the wind direction favors on-target deposition.

Do not apply when the wind velocity exceeds 15 mph.

Temperature Inversion
Do not make ground or aerial applications into temperature inversions. Inversions are characterized by stable air and increasing temperatures with height above the ground. Mist or fog may indicate the presence of an inversion in humid areas. The applicator may detect the presence of an inversion by producing smoke and observing a smoke layer near the ground surface.

Droplet Size
Apply spray with aerial or ground equipment designed or modified to insure full uniform coverage of the entire plant. Use only medium or coarser spray nozzles (for ground and non-ULV aerial applications) according to ASAE (S572) definition for standard nozzles. In conditions of low humidity and high temperatures, applicators should use a coarser droplet size.

Adjust equipment to provide droplets with a diameter of 150 to 220 microns.

Additional Requirements for Ground Application
Wind speed must be measured adjacent to the application site on the upward side, immediately prior to application. For ground boom applications, apply using a nozzle height of no more than 4 feet above the ground or crop canopy.

Additional Requirements for Aerial Application
Mount the spray boom on the aircraft so as to minimize drift caused by wingtip or rotor vortices. Use the minimum practical boom length, and not to exceed 75% of the wing span or 80% rotor diameter.
Flight speed and nozzle orientation must be considered in determining droplet size.

Spray must be released at the lowest height consistent with pest control and flight safety. Do not release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety.

When applications are made with a cross-wind, the swath will be displaced downward. The applicator must compensate for this displacement at the downward edge of the application area by adjusting the path of the aircraft upward.

APPLICATION THROUGH IRRIGATION SYSTEMS – CHEMIGATION

DoubleTake may be applied through properly equipped chemigation systems for insect control in row crops. 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. It is suggested that the injector pump be calibrated 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 flow 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, 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.

- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection.

- 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 DoubleTake 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.

Limitations, Restrictions, and Exceptions

TREE NUT RESTRICTIONS: Do not exceed 4 applications (3 for walnuts) per growing season.

Do not exceed 20 fl. ozs. (0.313 lb. diflubenzuron + 0.156 lb. lambda-cyhalothrin) per acre per growing season.

Do not exceed 15 fl. ozs. (0.234 lbs. diflubenzuron + 0.117 lb. lambda-cyhalothrin) per acre per growing season post bloom.

Pre-harvest Interval: Do not harvest within 28 days of application.

Application Timing

Begin applications when hickory shuckworm moth emergence begins or larval feeding is detected at half-shell hardening. Make subsequent applications at 21-day intervals through shuck split, or while nuts are susceptible to heavy shuckworm pressure. Use the higher rate under higher pest infestations, low crop load, larger trees or heavy, dense foliage.

Apply ground applications in sufficient water for thorough coverage, using at least 50 gallons per acre for small trees (10 feet tall) and at least 100 to 300 gallons per acre for larger trees. Using insufficient water for thorough coverage and/or using an uneven spray pattern across the canopy will likely result in less than desired efficacy. If 4 applications are used, application timing should correspond to dormant to pre-bud swell, bloom to petal fall, and at leaves/immature nut fruit formation and at hull split.

Method
Broadcast/Foliar Ground
Pre-Harvest Interval

28 days

Rates
field_rates 0
field_rates 1

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Restricted Entry Interval

24 hours

Timings
When hickory shuckworm moth emergence begins or larval feeding is detected at half-shell hardening.