

GRANDEVO[®] WDG

BIOINSECTICIDE



CAN BE USED IN ORGANIC PRODUCTION



Active Ingredient: <i>Chromobacterium subtsugae</i> strain PRAA4-1 ^T and spent fermentation media*	30.0%
Other Ingredients:	70.0%
Total:	100.0%

*Contains not less than 1,000 Cabbage Looper Killing Units (CLKU)/mg. Note: The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.

KEEP OUT OF REACH OF CHILDREN CAUTION

FIRST AID	
IF IN EYES	<ul style="list-style-type: none"> Hold eye open and rinse slowly and gently with water for 15 – 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or when going for treatment. You may also contact 1-800-222-1222 for emergency medical treatment information.	

Lot No: Printed on bag

PN 61501

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Manufactured for:
Marrone[®]
 Bio Innovations

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

CAUTION: Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- long-sleeved shirt and long pants
- waterproof gloves
- shoes plus socks
- protective eyewear
- A NIOSH-approved particulate respirator with any R or P filter with NIOSH approval number prefix TC-84A; or a NIOSH-approved powered air purifying respirator with an HE filter with NIOSH approval number prefix TC-21C. (Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.)

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables are available, use detergent and hot water. Keep and wash PPE separately from other laundry.
Engineering Controls: When handlers use closed systems, enclosed cabs or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment breakdown.

USER SAFETY RECOMMENDATIONS

Users should:

- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This product is toxic to aquatic invertebrates. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas.

This product is toxic to certain nontarget terrestrial arthropods. Minimize spray drift away from target area to reduce effects to nontarget insects.

This product is toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product if bees are visiting the treatment area.

For terrestrial uses: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

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 State or Tribal agency responsible for pesticide regulation.

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. 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 4 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
- Protective eyewear

EXCEPTION: If the product is soil incorporated or soil injected, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are **not** within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses.

Keep unprotected persons out of treated areas until sprays have dried.

PRODUCT INFORMATION

GRANDEVO WDG is a biological insecticide/miticide containing cells of *Chromobacterium subtsugae* strain PRAA4-1¹ and spent fermentation media, for use on ornamental plants and edible crops against the pests listed in the **APPLICATION RATES FOR SELECTED CROPS** section. GRANDEVO WDG functions primarily as a stomach poison for use in the control or suppression of many foliar-feeding pests, including caterpillars, and certain Coleoptera. GRANDEVO WDG has multiple effects, including reducing fecundity and oviposition, deterring feeding and acting as a stomach poison on Homoptera and Hemiptera, such as aphids, psyllids, whiteflies, *Lygus*, mealybugs, thrips, certain fruit flies, and phytophagous mites infesting labeled crops or use sites. GRANDEVO WDG must be mixed with water and applied as a foliar spray with ground or aerial equipment equipped for conventional pesticide spraying or by chemigation.

GRANDEVO WDG can be used in the field, in hoop houses, or in greenhouses for the control or suppression of any labeled pest.

GROUND AND AERIAL APPLICATIONS

Apply GRANDEVO WDG in ground and aerial equipment with quantities of water sufficient to provide thorough coverage of infested plant parts. The amount of water needed per acre will depend upon crop development, weather, application equipment, and local experience.

Do not spray when wind speed favors drift beyond the area intended for use.

Avoiding spray drift is the responsibility of the applicator.

Mixing directions

Important - Do not add GRANDEVO WDG to the tank mix before introducing 3/4 of the desired amount of water. Add water to the mix tank. Start the mechanical or hydraulic agitation to provide moderate circulation before adding GRANDEVO WDG. Add the desired volume of GRANDEVO WDG to the mix tank and continue circulation while adding the remainder of the water. Maintain circulation while loading and spraying. Do not mix more GRANDEVO WDG than is needed for immediate use. Do not let the spray mixture stand overnight in the spray tank. Use a strainer no finer than 50 mesh in conventional spray systems.

Spray volume

For conventional air and ground applications, use at least 10 gallons of total volume per acre in water-based sprays. Use a minimum of 50 gallons per acre (GPA) carrier volume for all established orchard and vine crops. For concentrated ground applications, use at least 10 gallons of carrier volume for all labeled crops.

Tank mixing

Do not combine GRANDEVO WDG in the spray tank with other pesticides, surfactants, adjuvants, or fertilizers if there has been no previous experience or use of the combination to show it is physically compatible, effective, and non-injurious under your use conditions. Observe the most restrictive of the labeling limitations and precautions of all products used in mixtures.

To ensure compatibility of tank mix combinations, they must be evaluated prior to use. To determine the physical compatibility of this product with other products, use a jar test. Using a quart jar, add the proportionate amounts of the products to one quart of water with agitation. Add dry formulations first, then flowables, and then emulsifiable concentrates last. After thoroughly mixing, let this mixture stand for 5 minutes. If the combination remains mixed or can be readily remixed, it is physically compatible. Once compatibility has been proven, use the same procedure for adding required ingredients to the spray tank.

AERIAL DRIFT REDUCTION INFORMATION

GENERAL: Avoiding spray drift at the application site is the responsibility of the applicator (specifically, see **SENSITIVE AREAS** section for the requirement regarding spray drift and honey bees). The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions. Where states have more stringent regulations, they should be observed.

BUFFER ZONE FOR AERIAL APPLICATION: Do not apply within 40 feet of aquatic habitats (such as but not limited to, lakes, reservoirs, rivers, streams, marshes, ponds, estuaries, and commercial fish ponds).

INFORMATION ON DROPLET SIZE: Use only medium or coarser spray nozzles according to ASAE (S572) definition for standard nozzles. In conditions of low humidity and high temperatures, applicators should use a coarser droplet size. The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that will provide sufficient coverage and control or suppression. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

CONTROLLING DROPLET SIZE: Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets. **Pressure** - Do not exceed the nozzle manufacturer's specified pressures. For many nozzle types, lower pressure produces larger droplets. When high flow rates are needed, use higher flow rate nozzles instead of increasing pressure. **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage. **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential. **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

BOOM WIDTH: For aerial applications, the boom width must not exceed 75% of the wingspan or 90% of the rotary blade.

APPLICATION HEIGHT: 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. If application includes a no-spray zone, do not release spray at a height greater than 10 feet above the ground or crop canopy.

SWATH ADJUSTMENT: When applications are made with a crosswind, the swath will be displaced downward. Therefore, on the upwind and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller drops, etc.).

WIND: Only apply this product if the wind direction favors on-target deposition. Do not apply when the wind velocity exceeds 15 mph. Drift potential is lowest between wind speeds of 2 - 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. **NOTE:** Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

TEMPERATURE AND HUMIDITY: When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

TEMPERATURE INVERSIONS: Do not apply during a temperature inversion because drift potential is high. 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 the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

SENSITIVE AREAS: The pesticide should only be applied 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 wind is blowing away from the sensitive areas). Do not allow spray to drift from the application site and contact people, structures people occupy at any time and the associated property, parks and recreation areas, non-target crops, blooming crops or weeds that bees are visiting, aquatic and wetland areas, woodlands, pastures, rangelands, or animals.

CHEMIGATION USE DIRECTIONS

Spray preparation

First, prepare a suspension of GRANDEVO WDG in a mix tank. Fill tank with $\frac{3}{4}$ of the amount of water for the area to be treated. Start mechanical or hydraulic agitation. Add the required amount of GRANDEVO WDG, and then the remaining volume of water. Then, set the system to deliver a minimum of 0.1 to 0.3 inch of water per acre. Start system and uniformly inject the suspension of GRANDEVO WDG into the irrigation water line so as to deliver the desired rate of GRANDEVO WDG per acre. Inject the suspension of GRANDEVO WDG with a positive displacement pump into the main line ahead of a right angle turn to ensure adequate mixing. GRANDEVO WDG is to be metered continuously for the duration of the water application.

Do not combine GRANDEVO WDG with other pesticides, surfactants, adjuvants, or fertilizers for application through chemigation equipment unless prior experience has shown the combination to be physically compatible, effective and non-injurious under your conditions of use.

General Requirements -

- 1) Apply this product only through sprinkler, including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move, or drip (trickle) irrigation systems. Do not apply this product through any other type of irrigation system.
- 2) Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.
- 3) If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.
- 4) 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.
- 5) 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.

Specific Requirements for Chemigation Systems Connected to Public Water Systems -

- 1) Public water system 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.
- 2) 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 the 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.
- 3) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 4) 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 shut down.
- 5) 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.
- 6) 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.
- 7) Do not apply when wind speed favors drift beyond the area intended for treatment.

Specific Requirements for Sprinkler Chemigation -

- 1) 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.
- 2) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 3) 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.
- 4) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 5) 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.
- 6) 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.
- 7) Do not apply when wind speed favors drift beyond the area intended for treatment.

Specific Requirements for Drip (Trickle) Chemigation -

- 1) 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.
- 2) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 3) 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.
- 4) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 5) 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.
- 6) 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.

Application Instructions for All Types of Chemigation -

- 1) Remove scale, pesticide residues, and other foreign matter from the chemical supply tank and entire injector system. Flush with clean water. Failure to provide a clean tank, void of scale or residues, may cause product to lose effectiveness or strength.
- 2) Determine the treatment rates as indicated in the directions for use and make proper dilutions.
- 3) Prepare a solution in the chemical tank by filling the tank with the required water and then adding product as required. Utilize agitation to keep solution in suspension.

Application Instructions for Drip Chemigation -

- 1) Check to be sure that the system provides a uniform water flow.
- 2) Irrigate crop with sufficient water to wet the root zone. Then, begin flow of the solution containing product solution from the chemical tank for a period to uniformly distribute the material. Discontinue flow of the GRANDEVO WDG mixture and let the system continue to run only as necessary to purge the line with fresh water. Let the GRANDEVO WDG solution remain in the root zone of the crop.

USE INSTRUCTIONS

GRANDEVO WDG is a biological insecticide/miticide for use against listed insects and mites. Close scouting and early attention to infestations is highly recommended. For insects and mites, proper timing of application targeting new populations or recently hatched larvae and nymphs is important for optimal results. Applying GRANDEVO WDG when pest populations are low is recommended.

For insects and mites, thorough coverage of infested plant parts is necessary for effective control or suppression. GRANDEVO WDG does not have systemic activity. For some crops, directed drop nozzles by ground machine are required.

Under heavy pest populations, apply a knockdown insecticide prior to or in a tank mix with GRANDEVO WDG, use the higher label rates, shorten the spray interval, and/or increase the spray volume to improve coverage.

Repeat applications at an interval sufficient to maintain control or suppression, depending upon plant growth rate, insect and mite activity, and other factors. If attempting to control or suppress an insect population with a single application, make the treatment when egg hatch is essentially complete but when larvae or nymphs are young and before economic damage occurs.

To enhance population management, consider tank mixing with contact insecticides/miticides. Use the lower label rates of GRANDEVO WDG when populations are low and when tank mixing with other insecticides/miticides. Use the higher rates of GRANDEVO WDG when applied stand-alone, when populations are high or when egg numbers are high.

For hard-to-wet crops, consider using a spreader/sticker or adjuvant, which has been approved for use on the targeted crop, to enhance coverage and adhesion of GRANDEVO WDG to the crop.

GRANDEVO WDG has been evaluated for phytotoxicity on a variety of crops under various normal growing conditions. However, testing all crop varieties, in all mixtures and combinations, is not feasible. Prior to treating an entire crop, test a small portion of the crop for sensitivity.

GENERAL SPRAY CONSIDERATIONS

GRANDEVO WDG performs best under certain conditions. To preserve product spray characteristics and overall efficacy, consider the following spray parameters:

Tank-Mixing

GRANDEVO WDG does not have ovicidal activity. When significant insect or mite population or eggs are present, consider tank mixing with a complementary ovicidal/contact insecticide.

pH

To maintain product properties, the pH of the mixed spray solution should be between 6-8, with the most desirable level being neutral.

Water Hardness

If you know or suspect you have hard water, add ammonium sulfate (AMS) at levels of 1-2% (w/w) or 8.5 to 17 pounds per 100 gallons of water to help maintain efficacy. Add AMS together with GRANDEVO WDG or add it to the water and thoroughly dissolve before adding GRANDEVO WDG. Conduct a spray test to determine if your crop/variety is compatible with these AMS levels before adding GRANDEVO WDG to the tank for spraying. For organic production, use an approved water conditioner to address suspected hard water.

Adjuvants/Carrier Volume

Avoid carrier volumes and/or adjuvants alone or in combinations that result in spray runoff or a drip accumulation.

Some adjuvants have been shown to increase or decrease the effectiveness of GRANDEVO WDG. Use of a quality adjuvant or crop oil is highly recommended.

APPLICATION RATES FOR SELECTED CROPS

For greenhouse applications on the crops and pests listed, use 1-3 pounds of GRANDEVO WDG in 100 gallons of water sprayed until just before point of runoff.

See specific application rates for each crop for additional details on greenhouse applications and for all other application types.

FOR USE ON THE FOLLOWING CROPS FOR CONTROL OR SUPPRESSION OF SPECIFIED INSECTS AND MITES:

Pre-harvest Interval (PHI) = 0 days

Alfalfa (Hay and Seed), Hay and Other Forage Crops

1-3 pounds of GRANDEVO WDG per acre

Alfalfa webworm, alfalfa caterpillar, alfalfa and cabbage loopers, armyworms, cutworms, European skipper, and sod webworm

2-3 pounds of GRANDEVO WDG per acre

Plant bugs, spittle bugs, aphids, alfalfa weevil, billbugs, chinch bug, mites (such as clover, Bermuda grass stunt, two-spotted, and winter grain), leafhoppers, and *Lygus* (such as tarnished plant bug)

Artichoke (Globe)

1-3 pounds of GRANDEVO WDG per acre
Armyworms, artichoke plume moth, and loopers

2-3 pounds of GRANDEVO WDG per acre
Aphids and whiteflies

Asparagus

2-3 pounds of GRANDEVO WDG per acre
Aphids, armyworms, asparagus beetle, cutworms, and spotted asparagus beetle

Asparagus beetle and spotted asparagus beetle: Apply when adults or larvae are seen feeding on new spears and during the fern stage when field counts or crop injury indicate damaging populations.
Suppression – Stink bugs. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression of stink bugs.

Bananas

2-3 pounds of GRANDEVO WDG per acre
Banana skipper, banana rust thrips, and Hawaiian flower thrips

Suppression – Stink bugs. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression of stink bugs.

Brassica (Cole) Leafy Vegetables

Broccoli, Broccoli Raab, Brussels Sprouts, Cabbage, Chinese Broccoli, Chinese Cabbage (Bok Choy), Chinese Cabbage (Napa), Chinese Mustard Cabbage (Gai Choy), Cauliflower, Cavalo Broccolo, Collards, Kale, Kohlrabi, Mizuna, Mustard Greens, Mustard Spinach, and Rape Greens

1-3 pounds of GRANDEVO WDG per acre
Diamondback moth, cabbage looper, imported cabbageworm, cabbage webworm, cross-striped cabbageworm, beet armyworm, armyworms, light brown apple moth, and cutworms

2-3 pounds of GRANDEVO WDG per acre
Whiteflies, thrips, aphids, leafhoppers, plant bugs, mites, billbugs, and yellow-margined leaf beetle larvae
Yellow-margined leaf beetle larvae – Apply to newly hatched to 2nd instar. If adult beetles are also present, tank mix with a knockdown insecticide.

Suppression – Flea beetles, stink bugs, and bagrada bug. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

Bulb Vegetables

Leek, Garlic, Onion (Bulb and Green), and Shallot

1-3 pounds of GRANDEVO WDG per acre

Loopers, omnivorous leafroller, hornworm, imported cabbageworm, diamondback moth, green cloverworm, webworms, saltmarsh caterpillar, armyworms, cutworms, cross-striped cabbageworm, *Heliothis*, European corn borer, and leek moth

2-3 pounds of GRANDEVO WDG per acre

Suppression – Aphids and thrips.

Bushberries

Blueberry, Currant, Gooseberry, Huckleberry, Elderberry, Juneberry, Lingonberry, and Salal

1-3 pounds of GRANDEVO WDG per acre

Armyworms, cherry fruitworm, cranberry fruitworm, fireworms, leafrollers, and loopers

2-3 pounds of GRANDEVO WDG per acre

Aphids, thrips, blueberry maggot, spotted wing drosophila, and fruit flies – Begin applications as soon as adult flies are active and continue until adult activity is no longer present. Use GRANDEVO WDG as part of an integrated management program for control of spotted wing drosophila that includes tank mixes and rotation with other products labeled for control of spotted wing drosophila. During periods of adult fly activity, make applications on no more than a 7-day interval and more frequently if necessary to maintain control.

Suppression – Stink bugs, Japanese beetles, and flea beetle. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

Caneberries

Blackberry, Loganberry, Red and Black Raspberry, and Cultivars, Varieties and/or Hybrids of These

1-3 pounds of GRANDEVO WDG per acre

Beet armyworm, bertha armyworm, green fruitworm, leafrollers, loopers, western raspberry fruitworm, and armyworms

2-3 pounds of GRANDEVO WDG per acre

Aphids and thrips

Spotted wing drosophila and fruit flies – Begin applications as soon as adult flies are active and continue until adult activity is no longer present. Use GRANDEVO WDG as part of an integrated management program for control of spotted wing drosophila that includes tank mixes and rotation with other products labeled for control of spotted wing drosophila. During periods of adult fly activity, make applications on no more than a 7-day interval and more frequently if necessary to maintain control.

Suppression – Stink bugs, Japanese beetles, and flea beetle. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

Cereal Grains

Barley, Buckwheat, Oats, Pearl Millet, Proso Millet, Rye, Sorghum (Milo), Triticale, and Wheat

1-3 pounds of GRANDEVO WDG per acre

Armyworms, corn earworm (headworm), southwestern corn borer, and webworms

2-3 pounds of GRANDEVO WDG per acre

Aphids (including greenbug), thrips, cereal leaf beetle larvae, chinch bugs, and mites

Citrus Fruit

Grapefruit, Lemons, Limes, Oranges, and Tangerines

1-3 pounds of GRANDEVO WDG per acre

Fruit tree leafroller, orangedog, citrus cutworm, and citrus leafminer

2-3 pounds of GRANDEVO WDG per acre

Aphids, two-spotted spider mite, Texas citrus mite, citrus red mite, citrus rust mite, six-spotted spider mite, Asian citrus psyllid, citrus whitefly, cloudy-winged whitefly, citrus blackfly, citrus thrips, mealybugs, and glassy-winged sharpshooter

California red scale and Florida red scale – Make a minimum of two applications of GRANDEVO WDG per generation, targeting the crawler stage.

Spotted wing drosophila and fruit flies – Begin applications as soon as adult flies are active and continue until adult activity is no longer present. Use GRANDEVO WDG drosophila as part of an integrated management program for control of spotted wing drosophila that includes tank mixes and rotation with other products labeled for control of spotted wing drosophila. During periods of adult fly activity, make applications on no more than a 7-day interval and more frequently if necessary to maintain control.

Suppression – Stink bugs, Japanese beetles, and flea beetle. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

Corn (Field Corn, Sweet Corn, Popcorn and Corn Grown for Seed)

1-3 pounds of GRANDEVO WDG per acre

Armyworms, European corn borer, southwestern corn borer, western bean cutworm, corn earworm, webworms, common stalk borer, and lesser cornstalk borer

2-3 pounds of GRANDEVO WDG per acre

Corn leaf aphid, stink bugs, thrips, mites, chinch bugs, and corn rootworm beetles

Cotton

1-3 pounds of GRANDEVO WDG per acre

European corn borer, cotton bollworm, tobacco budworm, loopers (soybean and cabbage), saltmarsh caterpillar, fall armyworm, and yellow-striped armyworm

2-3 pounds of GRANDEVO WDG per acre

Cotton aphid, leafhoppers, thrips, cotton fleahopper, silverleaf whitefly, and mites

Suppression – Stink bugs and *Lygus*. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

Cranberry

1-3 pounds of GRANDEVO WDG per acre

Armyworms, brown spanworm, cranberry fruitworm, cutworms, leafrollers, fireworms, loopers, sparganthis fruitworm, aphids, thrips, mites, and cranberry blossom weevil

Spotted wing drosophila and fruit flies – Begin applications as soon as adult flies are active and continue until adult activity is no longer present. Use GRANDEVO WDG as part of an integrated management program for control of spotted wing drosophila that includes tank mixes and rotation with other products labeled for control of spotted wing drosophila. During periods of adult fly activity, make applications on no more than a 7-day interval and more frequently if necessary to maintain control.

Suppression – Stink bugs, Japanese beetles, and flea beetle. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

Do not apply to flooded fields.

Cucurbit Vegetables

Cucumber, Edible Gourds, Muskmelon, Cantaloupe, Pumpkin, Watermelon, and Winter and Summer Squash

1-3 pounds of GRANDEVO WDG per acre

Armyworms, cabbage looper, melonworm, pickleworm, rindworm complex, corn earworm, and cutworms

2-3 pounds of GRANDEVO WDG per acre

Whiteflies, aphids, thrips, and mites

Spotted wing drosophila and fruit flies – Begin applications as soon as adult flies are active and continue until adult activity is no longer present. Use GRANDEVO WDG as part of an integrated management program for control of spotted wing drosophila that includes tank mixes and rotation with other products labeled for control of spotted wing drosophila. During periods of adult fly activity, make applications on no more than a 7-day interval and more frequently if necessary to maintain control.

Suppression – Cucumber beetle, stink bugs, Japanese beetles, and flea beetle. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

Fig

1-3 pounds of GRANDEVO WDG per acre

Navel orangeworm

2-3 pounds of GRANDEVO WDG per acre

Aphids and thrips

Spotted wing drosophila and fruit flies – Begin applications as soon as adult flies are active and continue until adult activity is no longer present. Use GRANDEVO WDG as part of an integrated management program for control of spotted wing drosophila that includes tank mixes and rotation with other products labeled for control of spotted wing drosophila. During periods of adult fly activity, make applications on no more than a 7-day interval and more frequently if necessary to maintain control.

Suppression – Stink bugs, Japanese beetles, and flea beetle. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

Flowers, Bedding Plants, and Ornamentals – Ground application only to non-blooming plants

1-3 pounds of GRANDEVO WDG per acre or 1-3 pounds of GRANDEVO WDG per 100 gallons of water

Loopers, tobacco budworm, omnivorous looper, omnivorous leafroller, diamondback moth, armyworms, ello moth, lo moth, oleander moth, and azalea caterpillar

2-3 pounds of GRANDEVO WDG per acre or 2-3 pounds of GRANDEVO WDG per 100 gallons of water

Whiteflies, aphids, thrips, azalea lace bug, *Lygus*, and mites

Fruiting Vegetables

Tomato, Tomatillo, Pepper, Groundcherry, Pepino, Okra, and Eggplant

1-3 pounds of GRANDEVO WDG per acre

Loopers, hornworms, tomato fruitworm, variegated cutworm, saltmarsh caterpillar, armyworms (including beet and yellow-striped), tomato pinworm, and European corn borer

2-3 pounds of GRANDEVO WDG per acre

Colorado potato beetle larvae – Apply to newly hatched to 2nd instar larvae. If adult beetles are also present, tank mix with a knockdown insecticide.

Aphids, mites, *Lygus*, whiteflies, plant bugs, psyllids, and thrips

Spotted wing drosophila and fruit flies – Begin applications as soon as adult flies are active and continue until adult activity is no longer present. Use GRANDEVO WDG as part of an integrated management program for control of spotted wing drosophila that includes tank mixes and rotation with other products labeled for control of spotted wing drosophila. During periods of adult fly activity, make applications on no more than a 7-day interval and more frequently if necessary to maintain control.

Suppression – Pepper weevil, stink bugs, Japanese beetles, and flea beetle. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression. Use pheromone traps to time applications of GRANDEVO WDG for management of pepper weevil.

Grape, Amur River Grape, Gooseberry, Kiwifruit, Maypop and Schisandra Berry

1-3 pounds of GRANDEVO WDG per acre

Grape leaf skeletonizer, grape leafroller, omnivorous leafroller, orange tortrix, obliquebanded leafroller, grape berry moth, and light brown apple moth

2-3 pounds of GRANDEVO WDG per acre

Pacific spider mite, Willamette spider mite, two-spotted spider mite, leafhoppers, mites, mealybugs, glassy-winged sharpshooter, whiteflies, and thrips

Spotted wing drosophila and fruit flies – Begin applications as soon as adult flies are active and continue until adult activity is no longer present. Use GRANDEVO WDG as part of an integrated management program for control of spotted wing drosophila that includes tank mixes and rotation with other products labeled for control of spotted wing drosophila. During periods of adult fly activity, make applications on no more than a 7-day interval and more frequently if necessary to maintain control.

Suppression – Stink bugs, Japanese beetles, and flea beetle. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

Herbs and Spices

Angelica, Balm, Basil, Borage, Burnet, Chamomile, Catnip, Chervil, Chive, Clary, Coriander, Costmary, Cilantro, Curry, Dillweed, Horehound, Hyssop, Lavender, Lemongrass, Lovage, Marjoram, Mint, Nasturtium, Parsley (Dried), Peppermint, Rosemary, Sage, Savory (Summer and Winter), Spearmint, Sweet Bay, Tansy, Tarragon, Thyme, Wintergreen, Woodruff, and Wormwood

1-3 pounds of GRANDEVO WDG per acre

Loopers, saltmarsh caterpillar, and armyworms

2-3 pounds of GRANDEVO WDG per acre

Aphids, thrips, whiteflies, and mites

Hops and Dried Cones

1-3 pounds of GRANDEVO WDG per acre

Armyworms and loopers

2-3 pounds of GRANDEVO WDG per acre

Hops aphid, thrips, whiteflies, and mites

Leafy Vegetables

Arugula, Celery, Corn Salad, Cress, Dandelion, Dock, Edible-Leaved Chrysanthemum, Endive, Fennel, Head Lettuce, Leaf Lettuce, Parsley, Purslane, Radicchio, Rhubarb, Spinach, and Swiss Chard

1-3 pounds of GRANDEVO WDG per acre

Cabbage looper, diamondback moth, armyworms, loopers, cutworm species, green cloverworm, and tobacco budworm

2-3 pounds of GRANDEVO WDG per acre

Aphids, whiteflies, thrips, psyllids, and mites

Suppression – Stink bugs. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression of stink bugs.

Leaves of Root and Tuber Vegetables

Beets and Turnips

1-3 pounds of GRANDEVO WDG per acre

Cabbage looper, diamondback moth, and armyworms

2-3 pounds of GRANDEVO WDG per acre

Aphids, whiteflies, and psyllids

Suppression – Stink bugs. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression of stink bugs.

Legume Vegetables (Succulent or Dried) and Legume Grain Crops

Adzuki Bean, Black-Eyed Pea, Beans, Chickpea, Cowpea, Crowder Pea, Edible-Pod Pea, English Pea, Fava Bean, Field Bean, Field Pea, Garbanzo Bean, Garden Pea, Green Pea, Kidney Bean, Lentils, Lima Bean, Lupins, Mung Bean, Navy Bean, Peas, Pigeon Pea, Pinto Bean, Runner Bean, Snap Bean, Snow Pea, Soybean, Sugar Snap Pea, Tepary Bean, Wax Bean, and Yardlong Bean

1-3 pounds of GRANDEVO WDG per acre

Armyworms, corn earworm, green cloverworm, loopers, podworms, cabbage looper, soybean looper, and velvetbean caterpillar

2-3 pounds of GRANDEVO WDG per acre

Aphids, mites, leafhoppers, whiteflies, and thrips

Spotted wing drosophila and fruit flies – Begin applications as soon as adult flies are active and continue until adult activity is no longer present. Use GRANDEVO WDG as part of an integrated management program for control of spotted wing drosophila that includes tank mixes and rotation with other products labeled for control of spotted wing drosophila. During periods of adult fly activity, make applications on no more than a 7-day interval and more frequently if necessary to maintain control.

Suppression – Bean leaf beetle, Mexican bean beetle, stink bugs, kudzu bug, Japanese beetles, and flea beetle. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

Oilseed Crops

Canola, Safflower, and Sunflower (including Sunflower Grown for Seed)

1-3 pounds of GRANDEVO WDG per acre

Armyworms, diamondback moth, loopers, saltmarsh caterpillar, *Heliothis*, and headworms

2-3 pounds of GRANDEVO WDG per acre

Aphids, thrips, whiteflies, and mites

Suppression – Kudzu bug. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

Peanut

1-3 pounds of GRANDEVO WDG per acre

Armyworms, cabbage looper, corn earworm, soybean looper, green cloverworm, European corn borer, podworms, red-necked peanut worm, saltmarsh caterpillar, and velvetbean caterpillar

2-3 pounds of GRANDEVO WDG per acre

Aphids, thrips, whiteflies, and mites

Pineapple

1-3 pounds of GRANDEVO WDG per acre

Gummosis-Batrachedra Comosae (Hodges) and *Thecla-Thecla Basilides* (Geyer)(fruit borer)

Pome Fruit*

Apples, Crabapple, Loquat, Mayhaw, Pears, and Quince

1-3 pounds of GRANDEVO WDG per acre

Leafrollers (including fruittree, obliquebanded, red-banded, and variegated), codling moth, oriental fruit moth, tufted apple budmoth, and light brown apple moth

Application timing: Optimal timing for leafrollers, codling moth, and oriental fruit moth can vary between species and geographic locations. Monitor moth flights with pheromone traps and scout regularly to determine larval populations. GRANDEVO WDG can be used to supplement mating disruption programs.

2-3 pounds of GRANDEVO WDG per acre

Aphids, mealybugs, pear psylla, thrips, whiteflies, and mites

Rosy apple aphid – Make an initial application at the pink stage of bloom. Additional applications may be necessary to maintain control.

San Jose scale – Make a minimum of two applications of GRANDEVO WDG per generation targeting the crawler stage.

Spotted wing drosophila, apple maggot, and fruit flies – Begin applications as soon as adult flies are active and continue until adult activity is no longer present. Use GRANDEVO WDG as part of an integrated management program for control of spotted wing drosophila that includes tank mixes and rotation with other products labeled for control of spotted wing drosophila. During periods of adult fly activity, make applications on no more than a 7-day interval and more frequently if necessary to maintain control.

Suppression – Stink bugs, Japanese beetles, and flea beetle. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

*Some sensitive pome fruit varieties have exhibited fruit spotting as a result of application. Spray a test strip to confirm your variety is not susceptible to spotting before spraying the entire orchard. Avoid carrier volumes and/or adjuvants alone or in combinations that result in spray runoff or a drip accumulation on fruit bottoms.

Pomegranate

1-3 pounds of GRANDEVO WDG per acre

Armyworms, cankerworms, codling moth, cutworms, filbert leafroller, fruittree leafroller, gypsy moth, obliquebanded leafroller, oriental fruit moth, red-banded leafroller, tufted apple budmoth, twig borer, variegated leafroller, and walnut caterpillar

2-3 pounds of GRANDEVO WDG per acre

European red mite, McDaniel spider mite, Pacific spider mite, and two-spotted red mite

Spotted wing drosophila and fruit flies – Begin applications as soon as adult flies are active and continue until adult activity is no longer present. Use GRANDEVO WDG as part of an integrated management program for control of spotted wing drosophila that includes tank mixes and rotation with other products labeled for control of spotted wing drosophila. During periods of adult fly activity, make applications on no more than a 7-day interval and more frequently if necessary to maintain control.

Suppression – Stink bugs, Japanese beetles, leaf-footed plant bugs, and flea beetle. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

Root and Tuber Vegetables

Black Salsify, Carrot, Cassava, Celeriac, Chayote Root, Chicory, Chinese Artichoke, Edible Burdock, Garden Beet, Ginger, Ginseng, Horseradish, Jerusalem Artichoke, Oriental Radish, Parsnip, Potatoes, Radish, Rutabaga, Salsify, Skirret, Spanish Salsify, Sugar Beet, Sweet Potatoes, Turnery, Turnip, Turnip-Rooted Chervil, Turnip-Rooted Parsley, and Yams

1-3 pounds of GRANDEVO WDG per acre

Armyworms, artichoke plume moth, European corn borer, and loopers

2-3 pounds of GRANDEVO WDG per acre

Aphids, potato aphid, potato leafhopper, psyllids (including potato psyllid), and whiteflies

3 pounds of GRANDEVO WDG per acre

Suppression – Colorado potato beetle larvae – Apply to newly hatched to 2nd instar larvae. If adult beetles are also present, tank mix with a knockdown insecticide. Heavy infestations may require repeat application. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

Suppression – Stink bugs. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression of stink bugs.

Stone Fruits

Apricots, Cherry, Nectarine, Peach, Plum, and Prune

1-3 pounds of GRANDEVO WDG per acre

Green fruitworm, leafrollers (including obliquebanded, fruittree, pandemic, red-banded, and variegated), oriental fruit moth, redhumped caterpillar, tent caterpillar, and peach twig borer

Application timing: Optimal timing for peach twig borer and leafrollers can vary between species and geographic locations. Monitor moth flights with pheromone traps and scout regularly to determine larval populations. GRANDEVO WDG can be used to supplement mating disruption programs.

2-3 pounds of GRANDEVO WDG per acre

Aphids, mealybugs, thrips, whiteflies, and mites

San Jose scale and white peach scale - Make a minimum of two applications of GRANDEVO WDG per generation targeting the crawler stage.

Spotted wing drosophila and fruit flies – Begin applications as soon as adult flies are active and continue until adult activity is no longer present. Use GRANDEVO WDG as part of an integrated management program for control of spotted wing drosophila that includes tank mixes and rotation with other products labeled for control of spotted wing drosophila. During periods of adult fly activity, make applications on no more than a 7-day interval and more frequently if necessary to maintain control.

Suppression – Stink bugs, Japanese beetles, and flea beetle. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

Strawberry

1-3 pounds of GRANDEVO WDG per acre

Armyworms, leafrollers, and cutworms

2-3 pounds of GRANDEVO WDG per acre

Aphids, *Lygus*, mites, thrips, and whiteflies

Spotted wing drosophila and fruit flies – Begin applications as soon as adult flies are active and continue until adult activity is no longer present. Use GRANDEVO WDG as part of an integrated management program for control of spotted wing drosophila that includes tank mixes and rotation with other products labeled for control of spotted wing drosophila. During periods of adult fly activity, make applications on no more than a 7-day interval and more frequently if necessary to maintain control.

Suppression – Stink bugs, Japanese beetles, and flea beetle. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

For foliar applications, exceeding water volumes of 100 gallons per acre (GPA) may result in reduced product efficacy.

Tobacco

1-3 pounds of GRANDEVO WDG per acre

Hornworms, tobacco budworm, and loopers

2-3 pounds of GRANDEVO WDG per acre

Aphids, thrips, whiteflies, and mites

Tree Farms and Plantations

Conifers, Including Christmas Trees and Deciduous Trees

1-3 pounds of GRANDEVO WDG per acre or 1-3 pounds of GRANDEVO WDG per 100 gallons of water

Bagworm, fall webworm, gypsy moth, hemlock looper, jack pine budworm, pine tip moth, redhumped caterpillar, spruce budworm, tent caterpillar, and tussock moths

2-3 pounds of GRANDEVO WDG per acre or 2-3 pounds of GRANDEVO WDG per 100 gallons of water

Cottonwood leaf beetle - Apply to newly hatched to 2nd instar larvae. If adult beetles are also present, tank mix with a knockdown insecticide. Heavy infestations may require repeat applications.

Tree Nuts

Almonds, Cashew, Chestnut, Filbert (Hazelnut), Macadamia Nut, Pecan, Pistachios, and Walnut

1-3 pounds of GRANDEVO WDG per acre

Fall webworm, filbert worm, navel orange worm, obliquebanded leafroller, peach twig borer, pecan nut casebearer, and redhumped caterpillar

2-3 pounds of GRANDEVO WDG per acre

Aphids, codling moth, mealybugs, whiteflies, mites, and walnut husk fly

San Jose scale and walnut scale - Make a minimum of two applications of GRANDEVO WDG per generation targeting the crawler stage.

3 pounds of GRANDEVO WDG per acre

Pecan weevil

Tropical and Subtropical Fruit

Acerola, Atemoya, Avocado, Biriba, Black Sapote, Canistel, Cherimoya, Custard Apple, Feijoa, Guava, Ilima, Jaboticaba, Kiwi, Longan, Lychee, Mamey Sapote, Mango, Papaya, Passionfruit, Pulasan, Rambutan, Sapodilla, Sourp, Spanish Lime, Star Apple, Starfruit, Sugar Apple, Ti Palm Leaves, Wax Jambu (Wax Apple), and White Sapote

1-3 pounds of GRANDEVO WDG per acre

Avocado leafroller, citrus peelminer, cutworms, fruittree leafroller, omnivorous leafroller, orange tortrix, and western tussock moth

2-3 pounds of GRANDEVO WDG per acre

Aphids, thrips, and whiteflies

Spotted wing drosophila and fruit flies – Begin applications as soon as adult flies are active and continue until adult activity is no longer present. Use GRANDEVO WDG as part of an integrated management program for control of spotted wing drosophila that includes tank mixes and rotation with other products labeled for control of spotted wing drosophila. During periods of adult fly activity, make applications on no more than a 7-day interval and more frequently if necessary to maintain control.

Suppression – Stink bugs, Japanese beetles, and flea beetle. Tank mix GRANDEVO WDG with a contact insecticide for control or improved suppression.

STORAGE AND DISPOSAL

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

Pesticide Storage: Store in original container in a cool, dry place.

Pesticide Disposal: To avoid wastes, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

Container Handling: Nonrefillable container. Do not reuse or refill this container.

Completely empty bag into application equipment. Then offer for recycling if available, or dispose of empty bag in a sanitary landfill or by incineration. Do not burn, unless allowed by state and local ordinances. (For instances where state and local ordinances do allow burning): If burned, stay out of smoke.

WARRANTY

To the extent consistent with applicable law, the seller makes no warranty, expressed or implied, of merchantability, fitness or otherwise concerning use of this product. To the extent consistent with applicable law, the user assumes all risks of use, storage or handling that are not in accordance with the accompanying directions.

Label date: May 2016

Made in the U.S.A.



Marrone[®]
Bio Innovations