

69592-12

1/24/2011

10f62

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Ms. Sherry D. Heins
Product Registration Manager
AgraQuest, Incorporated
1540 Drew Avenue
Davis, CA 95618-6320

JAN 24 2011

Re: AgraQuest, Incorporated; Serenade® ASO
EPA Registration No. 69592-12
Minor Label ("Fast Track") Amendment
Submissions dated 08/04/2010, 01/14/2011, 01/18/2011, and 01/19/2011
Decision No. 438693

Dear Ms. Heins:

The Agency has reviewed your request to amend the subject product registration, which included the following changes to the product label:

- 1) Removal of "dried" from the active ingredient nomenclature in the Ingredient Statement (both sub-labels).
- 2) Addition of new EPA Establishment Numbers (both sub-labels).
- 3) Correction of minor formatting inconsistencies and typographical errors (both sub-labels).
- 4) Revision, removal, and addition of certain statements and text in particular label sections (e.g., overall application instructions; chemigation; aerial drift reduction; and specific instructions for foliar and soil applications to various crops and plants grown in the field, greenhouses, glasshouses, nurseries, and shadehouses) to improve consistency with other directions and presentation to the user (sub-label A only).
- 5) Revision of some crop group names and commodity listings in accordance with 40 C.F.R. § 180.41 (both sub-labels).
- 6) Addition of pomegranate, as well as associated instructions for controlling heart rot (*Alternaria* spp.), to the foliar application rates table for field crops (sub-label A only).
- 7) Addition of cereal grains, citrus fruit, pome fruit, stone fruit, tobacco, strawberry, berries, and grape, as well as associated instructions for controlling pests of these crops, to the soil application rates table for field crops (sub-label A only).
- 8) Addition of clubroot (*Plasmodiophora brassicae*) and *Streptomyces scabies* to existing crops (i.e., brassica leafy vegetables, oilseed crops, and root and tuber vegetables) in the soil application rates table for field crops (sub-label A only).

CONCURRENCES

SYMBOL	7511P	7511P					
SURNAME	KASCH	Riley					
DATE	01/19/2011	1/24/11					

Sherry D. Heins
EPA Registration No. 69592-12

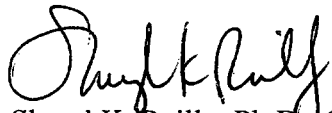
- 9) Replacement of AgraQuest, Incorporated's old company logo with a new company logo, which now includes the phrases, "better food" and "better world" (both sub-labels).
- 10) Replacement of the old OMRI-listed logo with a new OMRI-listed logo (both sub-labels).
- 11) Removal of Personal Protective Equipment, User Safety Recommendations, and Worker Protection Standard General Statements (i.e., drift and State/Tribal referral statements) given the low toxicity profile of Serenade® ASO and anticipated lack of prolonged exposure to residential users (sub-label B only).

The changes referred to above, submitted in connection with registration under FIFRA section 3(c)(5), are acceptable provided that you submit two (2) copies of your final printed labeling before you release the product for shipment. Refer to the A-79 enclosure for a further description of a final printed label.

Your release for shipment of the product bearing the amended labeling constitutes acceptance of these conditions. If you have any questions regarding this letter, please contact Ms. Jeannine Kausch by telephone (703-347-8920) or email (kausch.jeannine@epa.gov).

A stamped copy of the label is enclosed for your records.

Sincerely,



Sheryl K. Reilly, Ph.D., Chief
Microbial Pesticides Branch
Biopesticides and Pollution
Prevention Division (7511P)

Enclosures (2):
-Serenade® ASO Accepted Label
-A-79 Enclosure

30602

SERENADE® ASO

[Alternate Brand Names: Serenade® Biofungicide, Serenade® Soil, Serenade® Garden Disease Control Concentrate]

[Alternate Names for Turf Label when sold for hose-end sprayers:]
[Serenade® Garden Lawn Disease Control – Ready to Spray],
[Serenade® Garden Turf Disease Control – Ready to Spray],
[Serenade® Garden Lawn Disease Control],
[Serenade® Garden Turf Disease Control],
[Serenade® Garden Disease Control for Lawns - Ready to Spray],
[Serenade® Garden Disease Control for Turf - Ready to Spray]

MASTER LABEL

Sub-label A: Agricultural/Commercial Use

Sub-label B: Residential Use (Home and Garden Use)

ACTIVE INGREDIENT:

QST 713 strain of *Bacillus subtilis**..... 1.34%

OTHER INGREDIENTS..... 98.66%

TOTAL..... 100.00%

*Contains a minimum of 1 x 10⁹ cfu/g

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

EPA Registration No. 69592-12

EPA Est. No.:

01	02	03	04	05	06	07	09
69592-MEX-1	67545-AZ-1	66728-GA-2	37429-GA-2	69592-CA-1	34704-MS-2	42625-NJ-1	61933-FL-10
10	14						
47857-CA-1	84961-PA-1						

[Superscript corresponds to last two digits of container lot number.]

AgraQuest, Inc.
1540 Drew Avenue
Davis, CA 95618
www.agraquest.com

[Note: All text in brackets is optional language for the final printed container label.]

ACCEPTED

JAN 24 2011

Under the Federal Insecticide, Fungicide,
and Rodenticide Act, as amended, for
the pesticide registered under
EPA Reg. No. 69592-12

40962

SERENADE® ASO
AN AQUEOUS SUSPENSION BIOFUNGICIDE
SUB-LABEL A

For Agricultural/Commercial Use

50962

SERENADE® ASO

[Alternate Brand Names: Serenade® Biofungicide, Serenade® Soil]
[An Aqueous Suspension Biofungicide]

- [Optional/Alternate Statement: "NOP Logo: For Organic Production"]
- [Optional/Alternate Statement: "NOP Logo: Can be Used for Organic Production"]
- [USE INDOORS AND OUTDOORS]
- [USE IN FIELD APPLICATIONS, GREENHOUSES, GLASSHOUSES, NURSERIES, SHADEHOUSES, LANDSCAPES, INTERIORSCAPES, SEEDLING PRODUCTION SITES, AND FOREST SEEDLING PRODUCTION SITES]
- [USE IN TANK MIXES OR ROTATIONAL ALTERNATING SPRAY PROGRAMS WITH OTHER CROP PROTECTION PRODUCTS]
- [USE IN RESISTANCE MANAGEMENT PROGRAMS]
- [USE GROUND, AERIAL, CHEMIGATION AND HAND APPLICATION EQUIPMENT]
- [FOR AGRICULTURAL USE]
- [FOR USE ON ORNAMENTALS, TREES, SHRUBS, TURF, LAWNS, SOD, GOLF COURSES (GREENS, TEES, FAIRWAYS AND ROUGHS), SEEDLINGS, AND CONIFERS]
- [USE IN PRODUCTION OF CONIFERS FOR REFORESTATION]

ACTIVE INGREDIENT:

QST 713 strain of <i>Bacillus subtilis</i> *	1.34%
OTHER INGREDIENTS	98.66%
TOTAL	100.00%

*Contains a minimum of 1 x 10⁹ cfu/g

KEEP OUT OF REACH OF CHILDREN
CAUTION

[See attached label booklet for First Aid, Precautionary Statements, Storage and Disposal Instructions and Directions for Use.]

[Peel back tab for First Aid, Precautionary Statements, Storage and Disposal Instructions and Directions for Use.]

EPA Registration No. 69592-12

EPA Est. No.:

01	02	03	04	05	06	07	09
69592-MEX-1	67545-AZ-1	66728-GA-2	37429-GA-2	69592-CA-1	34704-MS-2	42625-NJ-1	61933-FL-10
10	14						
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[Superscript corresponds to last two digits of container lot number.]

AgraQuest, Inc.
1540 Drew Avenue
Davis, CA 95618
www.agraquest.com

U.S. Patent Nos. 6,060,051, 6,103,228, 6,291,426, and 6,417,163 on QST 713 strain of *Bacillus subtilis*

Net Contents:

60962

PRECAUTIONARY STATEMENTS**HAZARDS TO HUMANS & DOMESTIC ANIMALS****CAUTION**

Harmful if inhaled. Avoid breathing spray mist. Remove and wash contaminated clothing before reuse.

FIRST AID

IF INHALED:	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
Have the product container or label with you when calling a poison control center or doctor or going for treatment.	

PERSONAL PROTECTIVE EQUIPMENT (PPE)

The PPE requirements below apply to both Worker Protection Standard (WPS) uses (in general, agricultural-plant uses are covered by the Worker Protection Standard (40 CFR Part 170)) and Non-WPS uses.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

Mixers/loaders and applicators must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow manufacturer's instructions for cleaning and maintaining PPE. If no instructions are available, use detergent and hot water for washables. Keep and wash PPE separately from other laundry.

[OPTIONAL: ENGINEERING CONTROLS]

[OPTIONAL STATEMENT: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets 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 break-down.]

USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- 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

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. Do not apply when weather conditions favor drift or run-off from treated areas.

EMERGENCY INFORMATION

For emergencies such as leaks or spills, call 24-hour, toll-free CHEMTREC hotline at 1.800.424.9300.

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.

Exception: If the product is soil injected or soil incorporated, 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.

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

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses 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.

[Post-harvest applications:]

Post-harvest treatment of harvested agricultural plants does not fall within the scope of the WPS. An agricultural plant is considered harvested when 1) a desirable portion of the agricultural plant (seed, fruit, flower, stem, foliage, or roots) is detached from its parent or 2) a whole agricultural plant is separated from its growth media (soil, water, or other media).

Keep unprotected persons from handling portions of harvested agricultural plants that have been treated until sprays have dried.

[Commercial treatment of plants that are in ornamental gardens, parks, golf courses, and public or residential turf and grounds, and that are intended only for aesthetic purposes or climatic modification:]

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

BASIC USE INFORMATION

Serenade ASO is a broad spectrum, preventative product for the control or suppression of many important plant diseases. Apply Serenade ASO as a foliar spray alone, in alternating spray programs or in tank mixes with other registered crop protection products. [Apply Serenade ASO as a soil drench alone or in tank mixes with other registered crop protection products.] When conditions are conducive to heavy disease pressure, use Serenade ASO in a rotational program with other registered fungicides. Apply Serenade ASO with spray equipment commonly used for making ground or aerial applications and irrigation systems commonly used for chemigation. Heavy rainfall or irrigation shortly after application may require retreatment.

[OPTIONAL STATEMENTS: Serenade ASO is most effectively used in a preventive disease management program. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides. When using Serenade ASO alone for the first time, use a rate of 4 qt Serenade ASO per acre. Increase the application rate and/or decrease spray intervals of Serenade ASO depending upon disease pressure. To enhance performance, consider adding a surfactant, known to be safe to the target crop, to the spray tank to improve penetration and coverage of above-ground portions of the plant.]

INTEGRATED PEST MANAGEMENT (IPM)

Integrate Serenade ASO into an overall disease and pest management strategy whenever fungicide use is necessary. Follow practices known to reduce disease development. Consult local agricultural authorities for specific IPM strategies developed for your crop(s) and location.

Be sure use of this product conforms to resistance management strategies, which may include rotating and/or tank mixing with other products with different modes of action.

USE RATE DETERMINATION

Carefully read and follow all label directions, use rates and restrictions. Application of Serenade ASO prior to or in the early stages of disease development provides the best control or suppression of the targeted plant disease. Use maximum label rates and shortened spray intervals for conditions conducive to threatening or rapid disease development. For proper application, determine the number of acres to be treated, the label use rate and select appropriate gallonage to give good canopy penetration and coverage of plant parts to be protected. Prepare only the amount of spray solution required to treat the measured acreage. Accurate spray equipment calibration is essential prior to use.

PREHARVEST INTERVAL

Serenade ASO can be applied up to and on the day of harvest.

APPLICATION INSTRUCTIONS

SPRAY DRIFT: Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower/treatment coordinator are responsible for considering all of these factors when making decisions. Where states have more stringent regulations, they should be observed.

GROUND: This product can be applied by commonly used ground equipment, such as hose-end, pressurized, greenhouse and hand-held sprayers. Consult spray nozzle and accessory catalogues for specific information on proper equipment calibration. Maintain agitation during mixing and application to assure uniform product suspension. Thorough coverage of all foliage is essential for effective disease control or suppression. Use the application rate, indicated for the appropriate crop in the Application Rate tables of this label, in sufficient water to achieve thorough coverage. Overall, to achieve good coverage, use proper spray pressure, gallonage per acre, nozzles, nozzle spacing and ground speed.

AERIAL: This product can be applied by aerial application. Refer to the Aerial Drift Reduction Information section of this label for additional directions and precautions. Use the application rate, indicated for the appropriate crop in the Application Rate tables of this label, in sufficient water to achieve thorough coverage, typically between 3 – 20 gallons of water per acre depending upon the crop. Three gallons of water per acre is the minimum.

CHEMIGATION: This product can be applied through sprinkler (center pivot, lateral move, end tow, side (wheel) roll, traveler, solid set, or hand move) or drip-type irrigation systems. Refer to the Chemigation Directions for Use section of this label for additional directions and precautions. Maintain agitation during mixing and application to assure uniform product suspension. Use the application rate, indicated for the appropriate crop in the Application Rate tables of this label, in sufficient water to achieve through coverage.

MIXING INSTRUCTIONS

MIXING: Serenade ASO must be diluted with water. Partially fill the spray tank with clean water and begin agitation. Add the specified amount of Serenade ASO to the tank. Finish filling the tank to the desired volume to obtain the proper spray concentration. It is critical that the spray solution be agitated during mixing and application to assure a uniform suspension. Do not allow spray mixture to stand overnight or for prolonged periods. [Optional Statement: Maintain a spray solution pH between 4.5 and 8.5.]

Serenade ASO may be tank mixed with other registered pesticides to enhance plant disease control or suppression. This product cannot be mixed with any product with prohibition against such mixing. When tank mixing Serenade ASO with other registered pesticides, always read and follow all use directions, restrictions, and precautions of both Serenade ASO and the tank-mix partner(s). Use of the resulting tank mix must be in accordance with the more restrictive label limitations and precautions. Do not exceed label dosage rates.

COMPATIBILITY: Do not combine Serenade ASO in the spray tank with pesticides, surfactants 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.

Serenade ASO is compatible with many commonly used pesticides, fertilizers, adjuvants and surfactants but has not been fully evaluated with all of these. To ensure compatibility of tank-mix combinations, evaluate them prior to use as follows: Using a suitable container, add proportional amounts of product to water. Add wettable powders first, followed by water dispersible granules, then by liquid flowables and lastly, emulsifiable concentrates. Mix thoroughly and let stand for at least five minutes. If the combination stays mixed or can be remixed, it is physically compatible. Test the combination on a small portion of the crop to be treated to ensure that a phytotoxic response will not occur as a result of application. [OPTIONAL STATEMENT: Do not use with penetrant-type adjuvants.]

ADDITIVES: Serenade ASO is compatible with a wide range of additives. Since the product is primarily a protectant, thorough coverage of all above-ground plant parts is required for effective product performance. To improve plant surface coverage, add a nonphytotoxic [adjuvant] [surfactant] to spray tank.

CHEMIGATION DIRECTIONS FOR USE

Basic Requirements:

- 1) Apply this product only through sprinkler (including center pivot, lateral move, end tow, side (wheel) roll, traveler, solid set or hand move) or drip-type irrigation systems. Do not apply this product through any other type of irrigation system.
- 2) Crop injury or lack of effectiveness can result from non-uniform distribution of treated water.
- 3) Ensure that the irrigation system used is properly calibrated. 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 any necessary adjustments should the need arise.

Requirements for Chemigation Systems Connected to Public Water Systems:

- 1) Public water supply 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 (RPZ), backflow preventer 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.
- 8) 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 Serenade ASO to lose effectiveness or strength.
- 9) Do not combine Serenade ASO with pesticides, surfactants or fertilizers for application through chemigation equipment unless prior experience has shown the combination physically compatible, effective and non-injurious under conditions of use. Serenade ASO has not been fully evaluated for compatibility with all of these. Conduct a spray compatibility test if mixture with other pesticides, surfactants or fertilizers is planned.
- 10) Maintain agitation in the pesticide supply tank.
- 11) Apply Serenade ASO during the last half of the water application.
- 12) Dilute Serenade ASO in enough water to be able to draw through system for the last half of the water application.

Sprinkler Chemigation Requirements:

- 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 back flow.
- 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.
- 8) 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 Serenade ASO to lose effectiveness or strength.
- 9) Do not combine Serenade ASO with pesticides, surfactants or fertilizers for application through chemigation equipment unless prior experience has shown the combination physically compatible, effective and non-injurious under conditions of use. Serenade ASO has not been fully evaluated for compatibility with all of these. Conduct a spray compatibility test if mixture with other pesticides, surfactants or fertilizers is planned.

Center Pivot, Lateral Move, End Tow, and Traveler Irrigation Equipment (Use only with electric or oil hydraulic drive systems that provide a uniform water distribution):

- Determine size of area to be treated.
- Determine the time required to apply no more than 1/4 inch of water (6,750 gallons water per acre) over the area to be treated when the system and injection equipment are operated at normal pressures specified by the equipment manufacturer. Run system at 80 to 95% of manufacturer's rated capacity.
- Using only water, determine the injection pump output when operated at normal line pressure.
- Determine the amount of Serenade ASO fungicide required to treat area.
- Add required amount of Serenade ASO fungicide and sufficient water to meet the injection time requirements of the solution tank.
- Maintain constant solution tank agitation during the injection period.
- Stop injection equipment after treatment is completed. Continue to operate the system until Serenade ASO fungicide solution has cleared the sprinkler head.

Solid Set, Side (Wheel) Roll, and Hand Move Irrigation Equipment:

- Determine acreage covered by sprinkler.
- Fill injector solution tank with water and adjust flow rate to use contents over a 10- to 30-minute interval.
- Determine the amount of Serenade ASO fungicide required to treat area.
- Add the required amount of Serenade ASO fungicide into the same quantity of water used to calibrate the injection equipment.
- Maintain constant solution tank agitation during the injection period.
- Operate system at normal pressures specified by the manufacturer of the injection equipment and used for the time interval established during calibration.
- Inject Serenade ASO fungicide at the end of the irrigation cycle or as a separate application to maximize foliar fungicide retention.
- Stop injection equipment after treatment is completed. Continue to operate the system until Serenade ASO fungicide solution has cleared the last sprinkler head.

Drip Chemigation Requirements:

- 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 back flow.
- 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) 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 Serenade ASO to lose effectiveness or strength.
- 8) Do not combine Serenade ASO with pesticides, surfactants or fertilizers for application through chemigation equipment unless prior experience has shown the combination physically compatible, effective and non-injurious under conditions of use. Serenade ASO has not been fully evaluated for compatibility with all of these. Conduct a spray compatibility test if mixture with other pesticides, surfactants or fertilizers is planned.
- 9) Maintain agitation in the pesticide supply tank.
- 10) Apply Serenade ASO during the last half of the water application.
- 11) Dilute Serenade ASO in enough water to be able to draw through system for the last half of the water application.

AERIAL DRIFT REDUCTION INFORMATION

BASIC: Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower/treatment coordinator are responsible for considering all these factors when making decisions. Where states have more stringent regulations, they should be observed.

INFORMATION ON 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 provide sufficient coverage and control. Applying larger droplets will reduce 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 that are oriented straight back produce the largest droplets and the lowest drift. Use medium or coarser spray according to the ASAE 572 definition for standard nozzles or VMD for spinning atomizer nozzles.

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 release spray at a height greater than 10 feet above the top of the ground or the crop canopy 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 ground or canopy.

SWATH ADJUSTMENT: Use upwind swath displacement. 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: Apply only when wind speed is 3 - 10 miles per hour as measured by an anemometer. Drift potential is lowest between wind speeds of 3 - 10 miles per hour. Many factors, however, including droplet size and equipment type, determine drift potential at any given speed. **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, nontarget crops, aquatic and wetland areas, woodlands, pastures, rangelands, or animals.

**FOR USE AS A FOLIAR SPRAY ON SELECT AGRICULTURAL FIELD CROPS
AND SELECT AGRICULTURAL GREENHOUSE CROPS**

Serenade ASO has a 0-Day PreHarvest Interval for all crops contained on this label.

Under moderate to severe disease pressure, for improved performance, increase rates and reduce spray intervals or use Serenade ASO in a tank-mix or rotational program with other registered fungicides.

Application Rates of Serenade ASO for Selected Field Crops

Crops	Disease	Rate (qt/acre)	Application Instructions
Artichoke	Powdery Mildew <i>Leveillula taurica</i> <i>Erysiphe cichoracearum</i> Gray Mold <i>Botrytis</i> spp. Bacterial Crown Rot <i>Erwinia chrysanthemi</i>	1 - 6	Begin applications when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Serenade ASO may be applied up to and on the day of harvest.
Asparagus	Rust <i>Puccinia asparagi</i> Botrytis Blight <i>Botrytis cinerea</i>	1 - 6	Begin applications soon after emergence and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Serenade ASO may be applied up to and on the day of harvest.

Crops	Disease	Rate (qt/acre)	Application Instructions
Berries Blueberry Blackberry Raspberry Loganberry Huckleberry Cranberry Gooseberry Elderberry Currant and other berry crops	Mummy Berry <i>Monilinia vaccinii-corymbosi</i> Anthracnose Fruit Rot <i>Colletotrichum gloeosporioides</i> <i>Colletotrichum acutatum</i> Botrytis Blight <i>Botrytis cinerea</i> Leaf Rust <i>Pucciniastrum vaccinii</i> Powdery Mildew <i>Microsphaera alni</i> Sooty Mold Misc. fungi Alternaria Fruit Rot <i>Alternaria tenuissima</i> Bacterial Canker <i>Pseudomonas</i> spp. Downy Mildew <i>Peronospora sparsa</i> Phomopsis <i>Phomopsis vaccinii</i>	1 - 6	<p>Mummy Berry - For control, begin applications at the bud break stage of development and repeat on 7- to 10-day intervals or as needed.</p> <p>Bacterial Canker – Apply before fall rains and again during dormancy before spring growth. Apply throughout the growing season prior to disease development and repeat on 2- to 10-day intervals or as needed.</p> <p>Alternaria and Anthracnose Fruit Rot – Begin applications at the first sign of disease or when conditions become conducive for disease development. Repeat on 7- to 10-day intervals or as needed.</p> <p>For all other diseases – Begin applications prior to disease development and repeat on 2- to 10-day intervals or as needed. For improved performance of Serenade ASO, add a surfactant to the spray tank to enhance coverage.</p> <p>Cranberries – Make applications to non-flooded fields only.</p> <p>Serenade ASO may be applied up to and on the day of harvest.</p>

Crops	Disease	Rate (qt/acre)	Application Instructions
Brassica Leafy Vegetables (Cole Crops) Broccoli Cabbage Cauliflower Brussels Sprouts Collards Kale Mustard Greens Kohlrabi and other brassica leafy vegetables	Pin Rot Complex <i>Alternaria/Xanthomonas</i> Bacterial Leaf Spot <i>Pseudomonas syringae</i> Bacterial Soft Rot <i>Erwinia / Pseudomonas</i> Black Rot <i>Xanthomonas campestris</i> Xanthomonas Leaf Spot <i>Xanthomonas campestris</i> Alternaria Leaf Spot <i>Alternaria spp.</i> Anthracnose <i>Colletotrichum higginsianum</i> Cercospora Leaf Spot <i>Cercospora brassicicola</i> Downy Mildew <i>Peronospora parasitica</i> <i>Peronospora spp.</i> Powdery Mildew <i>Erysiphe polygoni</i> Southern Blight <i>Sclerotium rolfsii</i>	1 - 6	<p>Pin Rot - For suppression, begin applications when environmental conditions are conducive to disease development and repeat on 2- to 10-day intervals or as needed. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides for Pin Rot control.</p> <p>For all other diseases - Begin applications soon after emergence or transplant and when conditions are conducive to disease development. Repeat on 3- to 10-day intervals or as needed.</p>
Bulb Vegetables Onion Garlic Shallots and other bulb vegetables (including those grown for seed production)	Botrytis Neck Rot <i>Botrytis spp.</i> Botrytis Leaf Blight <i>Botrytis squamosa</i> Onion Purple Blotch <i>Alternaria porri</i> Onion Downy Mildew <i>Peronospora destructor</i> Downy Mildew <i>Peronospora spp.</i> Powdery Mildew <i>Erysiphe spp.</i> White Rot <i>Sclerotium cepivorum</i>	1 - 6	<p>Begin applications when environmental conditions are conducive to disease development and repeat on 7- to 10-day intervals or as needed.</p> <p>Apply sufficient water to provide complete coverage of plants. When conditions are conducive to rapid disease development, use Serenade ASO in a rotational program with other registered fungicides.</p>
	Rust <i>Puccinia porri</i>	1 - 6	<p>For suppression, begin applications when conditions are conducive to disease development and repeat on 7- to 10-day intervals or as needed. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides for Rust control.</p>

Crops	Disease	Rate (qt/acre)	Application Instructions
Cereal Grains Barley Corn Millets Oat Rice Rye Sorghum Triticale Wheat and other cereal grain crops	Powdery Mildew <i>Erysiphe graminis</i> Rust <i>Puccinia</i> spp. Blast <i>Pyricularia oryzae</i> Sheath Spot <i>Rhizoctonia oryzae</i> Sheath Blight <i>Thanatephorus cucumeris</i> (Anamorph: <i>Rhizoctonia solani</i>) <i>Thanatephorus kernel</i> Smut <i>Tilletia barclayana</i> Bacterial Blight and Streak <i>Xanthomonas</i> spp. Stem Rot <i>Sclerotium oryzae</i> <i>Magnaporthe</i> spp. Brown Rot, Leaf Spots and Smuts <i>Cercospora</i> spp. <i>Entyloma</i> spp. <i>Dreschlera</i> spp. <i>Cochliobolus</i> spp. <i>Ceratobasidium</i> spp.	1 - 6	Begin applications when environmental conditions and plant stage are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure.

Crops	Disease	Rate (qt/acre)	Application Instructions
Citrus Fruit Orange Grapefruit Lemon Tangerine Tangelo Pummelo and other citrus fruit	Greasy Spot <i>Mycosphaerella citri</i> Post Bloom Fruit Drop <i>Colletotrichum acutatum</i> Scab <i>Elsinoe fawcetti</i> Melanose <i>Diaporthe citri</i> Alternaria Leaf Spot <i>Alternaria alternate</i> Bacterial Blast <i>Pseudomonas syringae</i>	1 - 6	<p>Greasy Spot - For suppression, begin applications at first new foliar flush, and repeat with subsequent new flushes. When conditions are conducive to rapid disease development, Serenade ASO must be used in a tank-mix program with other registered products, such as spray oil or copper-based fungicides, at labeled rates.</p> <p>Post Bloom Fruit Drop – For suppression, begin applications at early bloom and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Utilize the shorter spray interval between applications if warm, wet conditions persist.</p> <p>Citrus Scab – For suppression, begin applications at first new foliar flush and repeat at petal fall and at ½ inch diameter fruit.</p> <p>Melanose – For suppression, begin applications at petal fall and repeat on 14- to 21-day intervals until fruit becomes resistant.</p> <p>Alternaria Leaf Spot – Begin applications when environmental conditions and plant stage are conducive to disease development. Repeat on 7- to 10-day intervals or as needed.</p> <p>Bacterial Blast - Begin applications when environmental conditions are conducive to disease development. Repeat on 3- to 10-day intervals or as needed.</p> <p>For improved performance on Post Bloom Fruit Drop, Scab and Melanose, use Serenade ASO in a tank-mix or rotational program with other registered fungicides.</p>
Coffee	Coffee Berry Disease <i>Colletotrichum coffeanum</i> Bacterial Blight <i>Pseudomonas syringae</i>	1 - 6	<p>Begin applications when environmental conditions are conducive to disease development. Continue applications on 7- to 10-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure.</p> <p>For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides.</p>

Crops	Disease	Rate (qt/acre)	Application Instructions
Corn Sweet Corn Popcorn Seed Corn Silage Corn Field Corn	Common Rust <i>Puccinia sorghi</i> Northern Leaf Blight <i>Exserohilum turcicum</i> <i>Helminthosporium turcium</i> Southern Leaf Blight <i>Bipolaris maydis</i> <i>Helminthosporium maydi</i> <i>Cochliobolus heterostrophus</i>	1 - 6	Begin applications when environmental conditions are conducive to disease development. Continue applications on 7- to 10-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure.
Nongrass Animal Feeds (Forage, Fodder, Straw, and Hay) Clover Alfalfa and other nongrass animal feed crops (including those grown for seed production)	White Mold (Sclerotinia Stem Rot) <i>Sclerotinia sclerotiorum</i>	1 - 6	For suppression of White Mold, begin applications soon after emergence or transplant and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed.
Cucurbit Vegetables Cucumber Cantaloupe Melon Muskmelon Squash Watermelon and other cucurbit vegetables	Powdery Mildew <i>Erysiphe</i> spp. <i>Sphaerotheca</i> spp. Gummy Stem Blight <i>Didymella bryoniae</i> <i>Phoma cucurbitacearum</i> Angular Leaf Spot <i>Pseudomonas syringae</i> Anthracnose <i>Colletotrichum lagenarium</i> Downy Mildew <i>Pseudoperonospora cubensis</i> Bacterial Fruit Blotch <i>Acidovorax avenae</i>	1 - 6	Begin applications soon after emergence or transplant and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. When environmental conditions and plant stage are conducive to rapid disease development, use Serenade ASO in a rotational program with other registered fungicides.

Crops	Disease	Rate (qt/acre)	Application Instructions
Fruiting Vegetables Pepper Tomato Eggplant Ground Cherry Tomatillo Okra and other fruiting vegetables	Bacterial Spot <i>Xanthomonas</i> spp. Target Spot <i>Corynespora cassiicola</i>	1 - 6	Begin applications soon after emergence or transplant and when environmental conditions are conducive to disease development. Continue applications on 2- to 7-day intervals or as needed. When conditions are conducive to rapid disease development, for improved control, use Serenade ASO in a tank-mix program with copper-based bactericides, registered for control of Bacterial and Target Spot, at labeled rates.
	Bacterial Speck <i>Pseudomonas syringae</i> pv. <i>tomato</i>	1 - 6	Begin applications soon after emergence or transplant and when environmental conditions are conducive to disease development. Continue applications on 2- to 7-day intervals or as needed. Use higher rates when conditions are conducive to rapid disease development.
	Early Blight <i>Alternaria solani</i>	1 - 6	For suppression, begin applications when plants are 4 to 6 inches high. Repeat applications on 5- to 7-day intervals or as needed. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides.
	Late Blight <i>Phytophthora infestans</i>	1 - 6	Use shorter spray intervals under conditions conducive to rapid disease development.
	Powdery Mildew <i>Leveillula taurica</i> <i>Oidiopsis taurica</i> <i>Erysiphe</i> spp. <i>Sphaerotheca</i> spp. Downy Mildew <i>Pseudoperonospora cubensis</i>	1 - 6	For suppression, begin applications soon after emergence or transplant and continue on 7- to 10-day intervals or as needed. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides.
	Buck-Eye Rot <i>Phytophthora parasitica</i> Anthracnose <i>Colletotrichum candidum</i>	1 - 6	Begin applications soon after emergence or transplant and continue on 7- to 10-day intervals or as needed. For improved performance of Serenade ASO, add a surfactant to the spray tank to enhance coverage.
	Bacterial Canker <i>Clavibacter michiganensis</i>	1 - 6	Begin applications when environmental conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed.
	Gray Mold <i>Botrytis cinerea</i>	1 - 6	Begin applications soon after emergence or transplant and repeat on 7- to 10-day intervals or as needed.

Crops	Disease	Rate (qt/acre)	Application Instructions
Grape	Gray Mold <i>Botrytis cinerea</i> Sour Rot [a complex of pathogens: <i>Aspergillus niger</i> , <i>Alternaria tenuis</i> , <i>Botrytis cinerea</i> , <i>Cladosporium herbarum</i> , <i>Rhizopus arrhizus</i> , <i>Penicillium</i> spp., and others]	1 - 6	Begin applications at bloom, before bunch closure, at veraison and preharvest. Apply in sufficient water to provide full coverage. Serenade ASO may be applied up to and on the day of harvest.
	Powdery Mildew <i>Uncinula necator</i>	1 - 6	Begin applications when new shoots are ½ to 1½ inches long. Repeat when shoots are 3 to 5 inches long, when shoots are 8 to 10 inches long and then at 7- to 10-day intervals until disease conditions no longer exist. Use high rates and shorter intervals when conditions are conducive to rapid disease development. Apply in sufficient water to provide thorough coverage.
	Downy Mildew <i>Plasmopara viticola</i>	1 - 6	For suppression, apply at 10-inch shoot, then at 7- to 10-day intervals until bunch closure (berry touch). For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides for Downy Mildew control.
	Phomopsis <i>Phomopsis viticola</i>	1 - 6	Begin applications when shoots are ½ to 1 inches long and repeat when shoots are 6 to 8 inches long.
	Black Rot <i>Guignardia bidwellii</i>	1 - 6	Begin applications when shoots are 4 to 6 inches in length and repeat on 7- to 10-day intervals throughout the season until the berries start to change color.
	Eutypa <i>Eutypa lata</i>	2 – 5% v/v*	Apply solution to pruning wounds. Sanitation is critical. All wood from infected plants must be removed from the vineyard and destroyed (either buried or burned).

*2-5% v/v rate (Serenade ASO to water) for this use only.

Crops	Disease	Rate (qt/acre)	Application Instructions
Herbs/ Spices	Bacterial Blight <i>Pseudomonas syringae</i> Anthracnose <i>Colletotrichum</i> spp. Alternaria Leaf Blight <i>Alternaria</i> spp. Botrytis <i>Botrytis</i> spp.	1 - 6	Begin applications when environmental conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed.
Hop	Powdery Mildew <i>Sphaerotheca macularis</i> Downy Mildew <i>Peronospora</i> spp.	1 - 6 Qt/100 gal spray volume	<p>Mix 1- 6 qt of Serenade ASO per 100 gallons of water. Use the higher rates when moderate to high disease pressure is present or expected. Begin applications when environmental conditions are conducive to rapid disease development. Continue sprays at 7-day intervals or as needed. Coverage will vary with the size of the vines and the type of spray equipment. Apply adequate spray volume to achieve complete spray coverage. Maximum spray volume is 400 gallons per acre.</p> <p>Minimum spray volume for hop growth stages are as follows:</p> <p>Emergence to training: Apply by ground equipment using a minimum spray volume of 20 gallons per acre.</p> <p>Training to wire: Apply by ground equipment using a minimum spray volume of 50 gallons per acre.</p> <p>Wire touch through harvest: Apply by ground equipment using a minimum spray volume of 100 gallons per acre. Consider higher water volumes to achieve thorough coverage after side arms develop.</p>

Crops	Disease	Rate (qt/acre)	Application Instructions
Leafy Vegetables Lettuce Celery Spinach Parsley Radicchio and other leafy vegetables (including those grown for seed production)	Downy Mildew <i>Bremia lactucae</i> <i>Peronospora</i> spp. Powdery Mildew <i>Erysiphe cichoracearum</i> White Rust <i>Albugo occidentalis</i> Pink Rot <i>Sclerotinia sclerotiorum</i> Anthracnose <i>Colletotrichum</i> spp. Bacterial Leaf Spot <i>Xanthomonas campestris</i> pv. <i>vitians</i> Bacterial Blight <i>Xanthomonas campestris</i>	1 - 6	<p>Pink Rot – Begin applications approximately 8 weeks before harvest and repeat on 14-day intervals. Apply Serenade ASO as a directed spray in sufficient water to ensure thorough coverage of the base of the plants and the surrounding soil surface. After applications, light irrigation will better incorporate Serenade ASO into the soil and may improve disease control.</p> <hr/> <p>Downy Mildew / Powdery Mildew / White Rust - For suppression, begin applications when conditions are conducive to disease development and repeat on 2- to 10-day intervals or as needed. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides for White Rust, Downy Mildew and Powdery Mildew control.</p> <hr/> <p>Anthracnose – For suppression, begin applications prior to disease development when environmental conditions and plant stage are conducive to rapid disease development. Repeat on 7- to 10-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure.</p> <hr/> <p>Bacterial Blight / Bacterial Leaf Spot- Begin applications when environmental conditions are conducive to disease development. Repeat on 2- to 10-day intervals or as needed.</p>

Crops	Disease	Rate (qt/acre)	Application Instructions
Leafy Vegetables Lettuce Celery Spinach Parsley Radicchio and other leafy vegetables (including those grown for seed production)	Sclerotinia Head and Leaf Drop <i>Sclerotinia</i> spp.	1 - 6	<p><u>For control of early Sclerotinia Head and Leaf Drop:</u> Apply at planting or immediately following planting but prior to crop emergence as a 4- to 6-inch seed line treatment. Within 7 days of thinning, make a second application as a directed spray with multiple nozzles per each seed line in sufficient water to ensure thorough coverage of lower plant leaves and surrounding soil surface. Repeat applications on 10- to 14-day intervals if conditions for disease development persist. Use higher rates under conditions conducive to moderate to severe disease pressure. After applications, light irrigation will better incorporate Serenade ASO into the soil and may improve disease control.</p> <p style="text-align: center;">OR</p> <p><u>For control of Sclerotinia Head and Leaf Drop:</u> Within 7 days of thinning or transplanting, apply as a directed spray with multiple nozzles per each seed line in sufficient water to ensure thorough coverage of lower plant leaves and surrounding soil surface. Repeat applications on 10- to 14-day intervals if conditions for disease development persist. Use higher rates under conditions conducive to moderate to severe disease pressure. After applications, light irrigation will better incorporate Serenade ASO into the soil and may improve disease control.</p>

Crops	Disease	Rate (qt/acre)	Application Instructions
Legumes Vegetables (Succulent or Dried)	Rust <i>Uromyces appendiculatus</i>	1 - 6	For suppression, begin applications soon after emergence or transplant and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides for Rust control.
Beans Green Beans Snap Beans Shell Beans Soybeans Dry Beans Garbanzo Beans Lima Beans Peas Chick Peas Split Peas Lentils and other legume vegetables (including those grown for seed or oil production)	Rust <i>Puccinia</i> spp. Bacterial Pustule <i>Xanthomonas</i> spp. Powdery Mildew <i>Erysiphe</i> spp. Downy Mildew <i>Peronospora manshurica</i>	1 - 6	Begin applications when environmental conditions and plant stage are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure.
	Asian Soybean Rust <i>Phakospora pachyrhizi</i>	1 - 6	Use as part of a program with other fungicides that are labeled for Asian Soybean Rust. Begin applications when environmental conditions are conducive to disease development. Continue at 7- to 14-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure.
	Damping-Off <i>Aphomyces</i> spp.	1 - 6	Begin applications soon after emergence or transplant and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed.
	White Mold (Sclerotinia Stem Rot) <i>Sclerotinia sclerotiorum</i> Gray Mold (Botrytis Blight) <i>Botrytis</i> spp.	1 - 6	Begin applications soon after emergence or transplant and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. When conditions are conducive to rapid disease development, use Serenade ASO in a rotational program with other registered fungicides.
Mint and other herbs/spices	Rust <i>Puccinia menthae</i> Powdery Mildew <i>Erysiphe</i> spp. Downy Mildew <i>Peronospora</i> spp.	1 - 6	Begin applications soon after emergence and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure.

Crops	Disease	Rate (qt/acre)	Application Instructions
Oilseed Crops Canola Castor Cotton Flax Rapeseed Safflower Sesame Sunflower and other oilseed crops (including those grown for seed or oil production)	Bacterial Speck <i>Pseudomonas syringae</i> pv. <i>glycinea</i> Brown Spot <i>Septoria glycines</i> Pod and Stem Blight <i>Diaporthe phaseolorum</i> var. <i>sojae</i> <i>Phomopsis longicola</i> Downy Mildew <i>Peronospora manshurica</i> Rust <i>Albugo</i> spp. <i>Puccinia</i> spp. White Mold (Sclerotinia Stem Rot) <i>Sclerotinia sclerotiorum</i> Bacterial Pustule <i>Xanthomonas</i> spp.	1 - 6	Begin applications soon after emergence and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure. For suppression of White Mold, begin applications at the first sign of disease or when conditions become conducive for disease development. Repeat on 7- to 10-day intervals or as needed.
Olive (including those grown for oil production)	Olive Knot <i>Pseudomonas savastanoi</i> Leaf Spot <i>Cercospora cladosporioides</i>	1 - 6	Apply before fall rains and again during dormancy before spring growth. Under conditions conducive to heavy disease pressure, for improved control, use Serenade ASO in a tank-mix or rotational program with a copper-based bactericide registered for control of Leaf Spot and Olive Knot. In cool, wet areas, apply preventive treatments to olive trees after harvest but before winter rains begin and again in spring if wet, rainy weather persists.

Crops	Disease	Rate (qt/acre)	Application Instructions
Peanut (including those grown for oil production)	Early Leaf Spot <i>Cercospora</i> spp. <i>Cercospora arachidicola</i> Late Leaf Spot <i>Cercosporidium personatum</i> Rust <i>Puccinia arachidis</i> White Mold <i>Sclerotinia sclerotiorum</i> Web Blotch <i>Phoma arachidicola</i>	1 - 6	<p>Begin applications when environmental conditions are conducive to disease development. Repeat applications on 14-day intervals or as needed.</p> <p>For improved control of Leaf Spot diseases, use Serenade ASO in a tank-mix program with copper-based fungicides registered for control of Peanut Leaf Spot diseases. Peanut hay may be fed to livestock.</p>
Pome Fruit Apple Crabapple Pear Quince Mayhaw and other pome fruit	Fire Blight <i>Erwinia amylovora</i>	1 - 6	<p>For suppression, begin applications at 1 – 5% bloom and repeat as needed to protect open, untreated blossoms when conditions favoring disease development are likely to occur. For maximum control, use Serenade ASO prior to and as close as possible to Fire Blight infection events. During periods of rapid bloom development and frequent infection periods, use 2- to 7-day spray intervals. After petal fall, continue applications on 7-day intervals while environmental conditions favor disease development.</p> <p>Apply in sufficient water to provide full coverage. For improved performance, use Serenade ASO in a rotational program with antibiotics registered for Fire Blight control, such as oxytetracycline or streptomycin.</p> <p>Proper orchard cultural practices are essential to eliminate Fire Blight-infected tissue from the orchard to assure good performance of any crop protection product. Care must be taken to remove and destroy dead and diseased wood from the orchard prior to and during the growing season.</p> <p>Use of Serenade ASO alone has not been shown to affect fruit finish. Use caution when selecting spray adjuvants. Select only those adjuvants, which through prior experience, do not affect fruit finish when combined with Serenade ASO.</p>

Crops	Disease	Rate (qt/acre)	Application Instructions
Pome Fruit Apple Crabapple Pear quince Mayhaw and other pome fruit	Scab <i>Venturia</i> spp.	1 - 6	For suppression, begin applications at green tip or when environmental conditions become favorable for primary Scab development and repeat on 7- to 10-day intervals or as needed. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides for Scab control.
	Brooks Spot <i>Mycosphaerella pomi</i> Cedar Apple Rust <i>Gymnosporangium juniperi-virginianae</i> Flyspeck <i>Schizothyrium pomi</i> Sooty Blotch <i>Gloeodes pomigena</i> Bot Rot <i>Botryosphaeria dothidea</i> Bitter Rot <i>Colletotrichum</i> spp. Bull's Eye Rot <i>Neofabraea</i> spp.	1 - 6	For control of Brooks Spot, Cedar Apple Rust, Flyspeck, Sooty Blotch, Bot Rot, Bitter Rot and Bull's Eye Rot: Begin applications pre-bloom when environmental conditions are conducive to disease development. Repeat applications at 7- to 14-day intervals or as needed. Apply in sufficient spray volume to ensure thorough coverage. Use higher application rates and shorter spray intervals when conditions are conducive to rapid disease development or heavy disease pressure. For improved performance of Serenade ASO, add a surfactant, known to be safe to the target crop, to the spray tank to enhance coverage and wetting of plant surfaces. Serenade ASO may be applied up to and on the day of harvest (0-day PHI).
	Powdery Mildew <i>Podosphaera leucotricha</i>	1 - 6	Begin applications at tight cluster, or sooner, if conditions are conducive to disease development. Repeat applications through the second cover spray on 7- to 10-day intervals. Additional sprays beyond second cover may be needed on susceptible varieties or when environmental conditions are conducive to rapid disease development. Use high label rate and shorter spray intervals when conditions are conducive to rapid disease development.
Pomegranate	Heart Rot <i>Alternaria</i> spp.	1 - 6	Begin applications at first sign of infection or when conditions are conducive for infection. Repeat applications at 7- to 14-day intervals or as needed. Use short spray intervals and high rates once infections become established. Tank mix or alternate with other fungicides for control and disease resistance management.

Crops	Disease	Rate (qt/acre)	Application Instructions
Root and Tuber Vegetables Carrot Potato Sweet Potato Cassava Beets Ginger Horseradish Radish Ginseng Turnip and other root and tuber vegetables (including those grown for seed production)	Black Rot/ Black Crown Rot <i>Alternaria</i> spp. Alternaria Leaf Blight <i>Alternaria dauci</i> Bacterial Leaf Spot <i>Xanthomonas campestris</i> pv. <i>carotae</i>	1 - 6	Begin applications soon after emergence or transplant and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Use high rates and shorter intervals when conditions are conducive to rapid disease development. Apply in sufficient water to provide thorough coverage.
	Bacterial Leaf Blight <i>Xanthomonas campestris</i> Downy Mildew <i>Peronospora</i> spp. Powdery Mildew <i>Erysiphe</i> spp. White Mold <i>Sclerotinia sclerotiorum</i> Gray Mold <i>Botrytis</i> spp.	1 - 6	Begin applications soon after emergence or transplant and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. For suppression of White Mold, begin applications soon after emergence or transplant and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed.
	Aerial Stem Rot <i>Erwinia carotovora</i>	1 - 6	For suppression, begin applications at the first sign of disease or when conditions become conducive for disease development. Repeat on 7- to 10-day intervals or as needed.
	Early Blight <i>Alternaria solani</i> Late Blight <i>Phytophthora infestans</i>	1 - 6	For suppression, begin applications soon after emergence and when conditions are conducive to disease development. Repeat on 5- to 7-day intervals or as needed. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides for Early and Late Blight control.
	Powdery Mildew <i>Sphaerotheca</i> spp.	1 - 6	Begin applications when environmental conditions and plant stage are conducive to disease development. Continue applications on 7- to 14-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure.
Roses, Field	Rust <i>Puccinia</i> spp.	1 - 6	Begin applications when environmental conditions and plant stage are conducive to disease development. Continue applications on 7- to 14-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure.

Crops	Disease	Rate (qt/acre)	Application Instructions
Stone Fruit Apricot Cherry Nectarine Peach Plum Prune and other stone fruit crops	Anthracnose <i>Colletotrichum</i> spp. Powdery Mildew <i>Sphaerotheca pannosa</i> <i>Podosphaera clandestine</i> <i>Podosphaera</i> spp. Rusty Spot <i>Podosphaera leucotricha</i> Bacterial Canker <i>Pseudomonas</i> spp. Alternaria Spot / Fruit Rot <i>Alternaria alternata</i> Scab <i>Cladosporium carpophilum</i> Brown Rot Blossom Blight <i>Monilinia laxa</i> Fruit Brown Rot <i>Monilinia fruticola</i> Gray Mold <i>Botrytis cinerea</i> Shot Hole <i>Wilsonomyces carpophilus</i> <i>Xanthomonas pruni</i> <i>Bhumeriella gaapi</i> <i>Cercospora</i> spp. Bacterial Leaf Spot / Bacterial Spot <i>Xanthomonas arboricola</i>	1 - 6	<p>Brown Rot Blossom Blight – Begin applications at early bloom and repeat through petal fall on 7-day intervals or as needed.</p> <p>Scab – Begin applications at petal fall and repeat on 7- to 10-day intervals or as needed.</p> <p>Bacterial Canker – Apply post harvest before fall rains and again during dormancy before spring growth.</p> <p>Powdery Mildew - For suppression, begin applications at popcorn stage and repeat on 7-day intervals or as needed.</p> <p>Bacterial Leaf Spot / Bacterial Spot - Begin applications at bud break and continue on 7- to 14-day schedule or as needed until harvest. During periods of rapid disease development and frequent infection periods, use Serenade ASO in a program with other registered antibiotics and/or copper bactericides. For improved performance of Serenade ASO, add a surfactant to the spray tank to enhance coverage.</p> <p>Anthracnose and Fruit Brown Rot – For suppression, begin applications prior to disease development when environmental conditions and plant stage are conducive to rapid disease development. Repeat on 7- to 10-day intervals or as needed.</p> <p>For all other diseases – Begin applications prior to disease development when environmental conditions and plant stage are conducive to rapid disease development. Repeat on 7- to 10-day intervals or as needed.</p> <p>For all diseases: Use higher rates and shorter application intervals under heavy disease pressure. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides.</p> <p>Post-harvest disease protection – To aid in the control of post-harvest infections of <i>Botrytis</i> and <i>Monilinia</i>, apply Serenade ASO prior to harvest with sufficient water to thoroughly cover fruit. Apply on a 7-day schedule or as needed up until the time of harvest.</p> <p>Serenade ASO may be applied up to and on the day of harvest.</p>

Crops	Disease	Rate (qt/acre)	Application Instructions
Strawberry	Powdery Mildew <i>Sphaerotheca macularis</i> <i>Erysiphe</i> spp. Anthracnose <i>Colletotrichum acutatum</i> Botrytis <i>Botrytis cinerea</i> Gray Mold <i>Botrytis</i> spp. Angular Leaf Spot <i>Xanthomonas fragariae</i>	1 - 6	<p>Botrytis / Powdery Mildew - For suppression, begin applications at or before flowering and repeat on 7- to 10-day intervals or as needed through harvest. Use higher rates and shorter application intervals under heavy disease pressure. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides for Powdery Mildew and Botrytis control.</p> <p>Anthracnose – Begin applications prior to disease development and repeat on 7- to 10-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides. Thorough coverage is essential.</p> <p>Angular Leaf Spot - Begin applications when environmental conditions are conducive to disease development. Continue applications on 3- to 10-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides. Thorough coverage is essential.</p> <p>Serenade ASO may be applied up to and on the day of harvest.</p>
Sugar Beets	Powdery Mildew <i>Erysiphe betae</i> <i>Erysiphe polygoni</i> Leaf Spot <i>Cercospora beticola</i> Ramularia <i>Ramularia</i> spp. Rust <i>Uromyces betae</i>	1 - 6	<p>Begin applications when environmental conditions are conducive to disease development. Continue applications on 7- to 10-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure.</p>
Tobacco	Blue Mold <i>Peronospora hyoscyami</i>	1 - 6	<p>Begin applications when conditions are conducive to disease development. Continue applications on 7- to 10-day intervals or as needed.</p>

Crops	Disease	Rate (qt/acre)	Application Instructions
Tree Nuts Almond Pistachio Pecan Walnut Filberts Chestnut Cashew Beechnut Butternut Macadamia and other tree nuts	Walnut Blight <i>Xanthomonas campestris</i> Alternaria Leaf Spot <i>Alternaria alternata</i> Anthracnose <i>Colletotrichum acutatum</i> Bacterial Canker <i>Pseudomonas syringae</i> Scab <i>Cladosporium carpophilum</i> Botryosphaeria Blight <i>Botryosphaeria dothidea</i> Shot Hole <i>Wilsonomyces carpophilus</i> <i>Xanthomonas pruni</i> <i>Blumeriella gaapi</i> <i>Cercospora</i> spp. Brown Rot <i>Monilinia</i> spp. Pecan Scab <i>Cladosporium caryigenum</i>	1 - 6	Walnut Blight – Begin applications no later than pistillate bloom and repeat on 3- to 10-day intervals or as needed. Apply in advance of rain for maximum protection. Under conditions conducive to heavy disease pressure, for improved control, use Serenade ASO in a tank-mix or rotational program with a copper-based bactericide registered for control of Walnut Blight. Anthracnose, Shot Hole and Brown Rot – For suppression, begin applications prior to disease development and repeat on 7- to 10-day intervals or as needed. For all other diseases – Begin applications prior to disease development and repeat on 7- to 10-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides.
Avocado Mango	Anthracnose <i>Colletotrichum gloeosporioides</i> <i>Colletotrichum ananas</i> Scab <i>Sphaceloma perseae</i> <i>Sphaceloma mangiferae</i> <i>Sphaceloma</i> spp.	1 - 6	Begin applications at budbreak and repeat on 14- to 21-day intervals or as needed through harvest.
	Bacterial Canker <i>Xanthomonas campestris</i>	1 - 6	Begin applications when environmental conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed.
Papaya	Anthracnose <i>Colletotrichum gloeosporioides</i> <i>Colletotrichum ananas</i> Bacterial Canker <i>Erwinia</i> spp.	1 - 6	Begin applications at flowering and repeat on 14- to 21-day intervals or as needed through harvest.
Pineapple	Anthracnose <i>Colletotrichum gloeosporioides</i> <i>Colletotrichum ananas</i>	1 - 6	Begin applications at flowering and repeat on 14- to 21-day intervals or as needed through harvest.

Crops	Disease	Rate (qt/acre)	Application Instructions
Bananas Plantains	Sigatoka <i>Mycosphaerella fijiensis</i>	1 - 6	Begin applications when leaves first appear and repeat on 7- to 21-day intervals or as needed. Apply in sufficient water to obtain thorough coverage of foliage. For improved disease control, Serenade ASO may be tank mixed with oil or other fungicides, registered for control of Sigatoka, at labeled rates. When conditions are conducive to rapid disease development and/or heavy disease pressure, use higher application rates and rotational spray programs with other fungicides registered for control of Sigatoka.
Kiwi	Botrytis Fruit Rot <i>Botrytis cinerea</i> Bacterial Blight <i>Pseudomonas viridiflava</i> <i>Pseudomonas syringae</i> Sclerotinia <i>Sclerotinia sclerotiorum</i>	1 - 6	Begin applications at early bloom and repeat on 7- to 10-day intervals or as needed. Serenade ASO may be applied up to and on the day of harvest.
Watercress	Cercospora Leaf Spot <i>Cercospora</i> spp.	1 - 6	Begin applications when conditions are conducive to disease development. Continue applications on 7- to 10-day intervals or as needed.
Grass Seed Production Crops Bluegrass Ryegrass Fescue Orchardgrass and other grass grown for seed production	Powdery Mildew <i>Erysiphe</i> spp. Rust <i>Puccinia</i> spp.	1 - 6	Begin applications when environmental conditions and plant stage are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure.

Application Rates of Serenade ASO for Selected Greenhouse Crops			
Greenhouse Crops	Disease	Rate (qt /100 gal spray mix)	Application Instructions
Brassica Leafy Vegetables (Cole Crops) Broccoli Cabbage Cauliflower Brussels Sprouts Collards Kale Mustard Greens Kohlrabi and other brassica leafy vegetables	Pin Rot Complex <i>Alternaria/Xanthomonas</i> Bacterial Leaf Spot <i>Pseudomonas syringae</i> Bacterial Soft Rot <i>Erwinia / Pseudomonas</i> Black Rot <i>Xanthomonas campestris</i> Xanthomonas Leaf Spot <i>Xanthomonas campestris</i> Alternaria Leaf Spot <i>Alternaria spp.</i> Anthracnose <i>Colletotrichum higginsianum</i> Cercospora Leaf Spot <i>Cercospora brassicicola</i> Downy Mildew <i>Peronospora parasitica</i> <i>Peronospora spp.</i> Powdery Mildew <i>Erysiphe polygoni</i> Southern Blight <i>Sclerotium rolfsii</i>	1 - 6	Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft ² . Pin Rot – For suppression, begin applications when environmental conditions in the greenhouse are conducive to disease development and repeat on 3- to 10-day intervals or as needed. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides for Pin Rot control. For all other diseases – Begin applications soon after emergence or transplant and when conditions in the greenhouse are conducive to disease development. Repeat on 7- to 10-day intervals or as needed.
Bulb Vegetables Onion Garlic Shallots and other bulb vegetables	Botrytis Neck Rot <i>Botrytis spp.</i> Botrytis Leaf Blight <i>Botrytis squamosa</i> Onion Purple Blotch <i>Alternaria porri</i> Onion Downy Mildew <i>Peronospora destructor</i> Downy Mildew <i>Peronospora spp.</i> Powdery Mildew <i>Erysiphe spp.</i> White Rot <i>Sclerotium cepivorum</i>	1 - 6	Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft ² . Begin applications when environmental conditions in the greenhouse are conducive to disease development and repeat on 7- to 10-day intervals or as needed. When conditions in the greenhouse are conducive to rapid disease development, use Serenade ASO in a rotational program with other registered fungicides. Thorough coverage is essential.

Greenhouse Crops	Disease	Rate (qt/100 gal spray mix)	Application Instructions
Cucurbit Vegetables Cucumber Cantaloupe Melon Muskmelon Squash Watermelon and other cucurbit vegetables	Powdery Mildew <i>Erysiphe spp.</i> <i>Sphaerotheca spp.</i> Gummy Stem Blight <i>Phoma cucurbitacearum</i> <i>Didymella bryoniae</i> Angular Leaf Spot <i>Pseudomonas syringae</i> Anthracnose <i>Colletotrichum lagenarium</i> Downy Mildew <i>Pseudoperonospora cubensis</i> Bacterial Fruit Blotch <i>Acidovorax avenae</i>	1 - 6	<p>Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft².</p> <p>Begin applications soon after emergence or transplant and when environmental conditions in the greenhouse are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Thorough coverage is essential. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides.</p>
Fruiting Vegetables Pepper Tomato Eggplant and other fruiting vegetables	Gray Mold <i>Botrytis cinerea</i>	1 - 6	<p>Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft².</p> <p>For suppression, begin applications soon after emergence or transplant and continue on 7- to 10-day intervals or as needed. When environmental conditions in the greenhouse are conducive to rapid disease development, use Serenade ASO in a rotational program with other registered fungicides. Thorough coverage is essential.</p>
	Powdery Mildew <i>Leveillula taurica</i> <i>Oidiopsis taurica</i> <i>Erysiphe spp.</i> <i>Sphaerotheca spp.</i> Downy Mildew <i>Pseudoperonospora cubensis</i>	1 – 6	<p>Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft².</p> <p>For suppression, begin applications soon after emergence or transplant and continue on 7- to 10-day intervals or as needed. Thorough coverage is essential. Use maximum label rates under conditions conducive to rapid disease development. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides.</p>
	Bacterial Speck <i>Pseudomonas syringae</i> <i>pv. tomato</i>	1 - 6	<p>Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft².</p> <p>Begin applications soon after emergence or transplant and when environmental conditions are conducive to disease development. Continue applications on 2- to 7-day intervals or as needed. Use higher rates when conditions are conducive to rapid disease development. For improved performance, use Serenade ASO in a tank-mix or in a rotational program with other registered fungicides.</p>
	Bacterial Spot <i>Xanthomonas spp.</i>	1 – 6	<p>Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade</p>

	Target Spot <i>Corynespora cassicola</i>		ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft ² . Begin applications soon after emergence or transplant and when environmental conditions are conducive to disease development. Continue applications on 2- to 7-day intervals or as needed. When conditions are conducive to rapid disease development, for improved control, use Serenade ASO in a tank-mix program with copper-based bactericides, registered for control of Bacterial and Target Spot, at labeled rates.
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Greenhouse Crops	Disease	Rate (qt/100 gal spray mix)	Application Instructions
Fruiting Vegetables Pepper Tomato Eggplant and other fruiting vegetables	Buck-Eye Rot <i>Phytophthora parasitica</i> Anthracnose <i>Colletotrichum candidum</i>	1 - 6	Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft ² . Begin applications soon after emergence or transplant and continue on 7- to 10-day intervals or as needed. For improved performance of Serenade ASO, add a surfactant to the spray tank to enhance coverage.
	Bacterial Canker <i>Clavibacter michiganensis</i>	1 - 6	Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft ² . Begin applications when environmental conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed.
	Early Blight <i>Alternaria solani</i> Late Blight <i>Phytophthora infestans</i>	1 – 6	Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft ² . For suppression, begin applications when plants are 4 to 6 inches high. Repeat applications on 5- to 7-day intervals or as needed. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides for Early and Late Blight control. Use shorter spray intervals under conditions conducive to rapid disease development.
Herbs/ Spices	Bacterial Blight <i>Pseudomonas syringae</i> Anthracnose <i>Colletotrichum</i> spp. Alternaria Leaf Blight <i>Alternaria</i> spp. Botrytis <i>Botrytis</i> spp.	1 – 6	Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft ² . Begin applications when environmental conditions in the greenhouse are conducive to disease development. Repeat on 7- to 10-day intervals or as needed.

Greenhouse Crops	Disease	Rate (qt/100 gal spray mix)	Application Instructions
Leafy Vegetables Lettuce Celery Spinach Parsley Radicchio and other leafy vegetables	Downy Mildew <i>Bremia lactucae</i> <i>Peronospora</i> spp. Powdery Mildew <i>Erysiphe cichoracearum</i> <i>Erysiphe</i> spp. White Rust <i>Albugo occidentalis</i> Pink Rot <i>Sclerotinia sclerotiorum</i> Anthracnose <i>Colletotrichum</i> spp. Bacterial Blight <i>Xanthomonas campestris</i> Bacterial Leaf Spot <i>Xanthomonas campestris</i> pv. <i>vitiens</i>	1 – 6	<p>Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft².</p> <p>Pink Rot – Begin applications approximately 8 weeks before harvest and repeat on 14-day intervals. Apply Serenade ASO as a directed spray in sufficient water to ensure thorough coverage of the base of the plants and the surrounding soil surface. After applications, light irrigation will better incorporate Serenade ASO into the soil and may improve disease control.</p> <p>Downy Mildew / Powdery Mildew / White Rust – For suppression, begin applications when conditions are conducive to disease development and repeat on 3- to 10-day intervals or as needed. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides for White Rust, Downy Mildew and Powdery Mildew control.</p> <p>Anthracnose – For suppression, begin applications prior to disease development when environmental conditions and plant stage are conducive to rapid disease development. Repeat on 7- to 10-day intervals or as needed. Use higher rates and shorter application intervals under heavy disease pressure.</p> <p>Bacterial Blight / Bacterial Leaf Spot - Begin applications when environmental conditions are conducive to disease development. Repeat on 3- to 10-day intervals or as needed.</p>
	Sclerotinia Head and Leaf Drop <i>Sclerotinia</i> spp.	1 – 6	<p>Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off or as seed line treatment. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft².</p> <p><u>For control of early Sclerotinia Head and Leaf Drop:</u> Apply at planting or immediately following planting but prior to crop emergence as a 4- to 6-inch seed line treatment. Within 7 days of thinning, make a second application as a directed spray with multiple nozzles per each seed line in sufficient water to ensure thorough coverage of lower plant leaves and surrounding soil surface. Repeat applications on 10- to 14-day intervals if conditions for disease development persist. Use higher rates under conditions conducive to moderate to severe disease pressure. After applications, light irrigation will better incorporate Serenade ASO into the soil and may improve disease control.</p> <p>OR</p> <p><u>For control of Sclerotinia Head and Leaf Drop:</u> Within 7 days of thinning or transplanting, apply as a directed spray with multiple nozzles per each seed line in sufficient water to ensure thorough coverage of lower plant leaves and surrounding soil surface. Repeat applications on 10- to 14-day intervals if conditions for disease development persist. Use higher rates under conditions conducive to moderate to severe disease pressure. After applications, light irrigation will better incorporate Serenade ASO into the soil and may improve disease control.</p>

Greenhouse Crops	Disease	Rate (qt/100 gal spray mix)	Application Instructions
Root and Tuber Vegetables Carrot Potato Sweet Potato Cassava Beets Ginger Horseradish Radish Ginseng Turnip and other root and tuber vegetables	Black Rot/Black Crown Rot <i>Alternaria</i> spp. Alternaria Leaf Blight <i>Alternaria dauci</i> Bacterial Leaf Spot <i>Xanthomonas campestris</i> pv. <i>carotae</i>	1 - 6	Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft ² . Begin applications soon after emergence or transplant and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Use high rates and shorter intervals when conditions are conducive to rapid disease development. Apply in sufficient water to provide thorough coverage.
	Bacterial Leaf Blight <i>Xanthomonas campestris</i> Downy Mildew <i>Peronospora</i> spp. Powdery Mildew <i>Erysiphe</i> spp. Gray Mold <i>Botrytis</i> spp. White Mold <i>Sclerotinia sclerotiorum</i>	1 - 6	Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft ² . Begin applications soon after emergence or transplant and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Use high rates and shorter intervals when conditions are conducive to rapid disease development. Thorough coverage is essential.
	Early Blight <i>Alternaria solani</i> Late Blight <i>Phytophthora infestans</i>	1 - 6	Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft ² . For suppression, begin applications soon after emergence and when conditions are conducive to disease development. Repeat on 5- to 7-day intervals or as needed. For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides for Early and Late Blight control.
Strawberry	Powdery Mildew <i>Sphaerotheca macularis</i> <i>Erysiphe</i> spp. Anthracnose <i>Colletotrichum acutatum</i> Botrytis <i>Botrytis cinerea</i> Gray Mold <i>Botrytis</i> spp. Angular Leaf Spot <i>Xanthomonas fragariae</i>	1 - 6	Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft ² . Botrytis / Powdery Mildew - For suppression, begin applications at or before flowering and repeat on 7- to 10-day intervals or as needed through harvest. Anthracnose – Begin applications prior to disease development and repeat on 7- to 10-day intervals or as needed. Angular Leaf Spot - Begin applications when conditions are conducive to disease development. Continue applications at 7- to 10-day intervals or as needed. Use high rates and shorter intervals when conditions are conducive to rapid disease development. For all diseases - For improved performance, use Serenade ASO in a tank-mix or rotational program with other registered fungicides. Thorough coverage is essential. Serenade may be applied up to and on the day of harvest.

FOR USE AS A SOIL TREATMENT ON SELECT AGRICULTURAL FIELD CROPS

Serenade ASO has a 0-Day PreHarvest Interval for all crops contained on this label.

Under moderate to severe disease pressure, for improved performance, increase rates and reduce spray intervals or use Serenade ASO in a tank-mix or rotational program with other registered fungicides.

Serenade ASO is a broad spectrum biofungicide for the prevention, suppression and control of soil borne diseases on a wide range of fruits and vegetables as well as cotton. Serenade ASO enhances germination and plant growth by suppressing soil diseases, such as those caused by *Rhizoctonia*, *Pythium*, *Fusarium*, *Verticillium* and *Phytophthora*. See the application tables for specific information.

APPLICATION INSTRUCTIONS:**All Soil Surface (Drench), Shanked-In, Injected and In-Furrow Applications:**

Mix 1 qt [(32 fl oz)] to 6 qt [(192 fl oz)] of Serenade ASO in the appropriate amount of water per acre. Use the higher rates when the weather conditions are expected to be conducive for disease development, if the field has a history of disease problems, or if minimum/low till programs are in place. Serenade ASO can be mixed with chemical fungicides registered for soil applications.

Soil Surface (Drench) Applications at Planting: Use at planting, seeding, or transplant. Apply finished spray mixture, at a rate to thoroughly soak the growing media through the root zone, as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems.

Shanked-In or Injected Applications: Serenade ASO can be shanked-in or injected into the soil prior to-, at-, or post-planting/transplanting of crops alone or with most types of liquid nutrients.

In-Furrow Applications:

For in-furrow applications, apply Serenade ASO as an in-furrow spray in the appropriate amount of water per acre for the crop at planting. Mount the spray nozzle so the spray is directed in the furrow just before the seeds are covered.

Soil Surface (Drench) Applications at Any Stage of Growth: Apply the finished spray mixture to the surface of the soil as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems. When applying as a spray (e.g., via hydraulic nozzles at low volumes), it is important to irrigate to move the material into the seed, root or transplant zone. Normal operation of overhead sprinklers and drip irrigation systems are sufficient for effective applications. Optimal performance is obtained with preventative treatments repeated every 21 to 28 days throughout the growing cycle.

Application Rates of Serenade ASO for Soil Uses in Field for Soil Borne/Seedling Disease Control

Crops	Disease	Rate (qt/acre)	Application Instructions
Brassica Leafy Vegetables (Cole Crops) Broccoli Cabbage Cauliflower Brussels Sprouts Collards Kale Mustard Greens Kohlrabi and other brassica leafy vegetables	<i>Rhizoctonia</i> spp. <i>Pythium</i> spp. <i>Fusarium</i> spp. <i>Verticillium</i> spp. <i>Phytophthora</i> spp. Clubroot <i>Plasmodiophora brassicae</i>	1 – 6	All Soil Surface (Drench), Shanked-In, Injected and In-Furrow Applications: Mix 1 qt [(32 fl oz)] to 6 qt [(192 fl oz)] of Serenade ASO in the appropriate amount of water per acre. Use higher application rates when the weather conditions are expected to be conducive to disease development, if the field has a history of disease problems, or if minimum/low till programs are in place. SERENADE ASO can be mixed with chemical fungicides registered for soil applications. Soil Surface (Drench) Applications At Planting: Use at planting, seeding or transplant. Apply finished spray mixture, at a rate to thoroughly soak the growing media through the root zone, as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems.
Bulb Vegetables Onion Garlic Shallots and other bulb vegetables (including those grown for seed production)			Shanked-In and Injected Applications: Serenade ASO can be shanked-in or injected into the soil prior to-, at-, or post-planting/transplanting of crops alone or with most types of liquid nutrients.
Cereal Grains Barley Corn Millets Oat Rice Rye Sorghum Triticale Wheat and other cereal grain crops	<i>Rhizoctonia</i> spp. <i>Pythium</i> spp. <i>Fusarium</i> spp. <i>Verticillium</i> spp. <i>Phytophthora</i> spp.		In-Furrow Applications: For in-furrow applications, apply Serenade ASO as an in-furrow spray in the appropriate amount of water per acre for the crop at planting. Mount the spray nozzle so the spray is directed in the furrow just before the seeds are covered.
Citrus Fruit Orange Grapefruit Lemon Tangerine Tangelo Pummelo and other citrus crops			Soil Surface (Drench) Applications At Any Stage of Growth: Apply the finished spray mixture to the surface of the soil as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems. When applying as a spray (e.g., via hydraulic nozzles at low volumes), it is important to irrigate to move the material into the seed, root or transplant zone. Normal operation of overhead sprinklers and drip irrigation systems are sufficient for effective applications. Optimal performance is obtained with preventative treatments repeated every 21 to 28 days throughout the growing cycle.

Crops	Disease	Rate (qt/acre)	Application Instructions
Corn Sweet Corn Popcorn Seed Corn Silage Corn Field Corn	<i>Rhizoctonia</i> spp. <i>Pythium</i> spp. <i>Fusarium</i> spp. <i>Verticillium</i> spp. <i>Phytophthora</i> spp.	1 – 6	<u>All Soil Surface (Drench), Shanked-In, Injected and In-Furrow Applications:</u> Mix 1 qt [(32 fl oz)] to 6 qt [(192 fl oz)] of Serenade ASO in the appropriate amount of water per acre. Use higher application rates when the weather conditions are expected to be conducive to disease development, if the field has a history of disease problems, or if minimum/low till programs are in place. SERENADE ASO can be mixed with chemical fungicides registered for soil applications.
Cotton			Soil Surface (Drench) Applications At Planting: Use at planting, seeding or transplant. Apply finished spray mixture, at a rate to thoroughly soak the growing media through the root zone, as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems.
Cucurbit Vegetables Cucumber Cantaloupe Melon Muskmelon Squash Watermelon and other cucurbit vegetables			Shanked-In and Injected Applications: Serenade ASO can be shanked-in or injected into the soil prior to-, at-, or post-planting/transplanting of crops alone or with most types of liquid nutrients.
Fruiting Vegetables Pepper Tomato Eggplant Ground Cherry Tomatillo Okra and other fruiting vegetables			In-Furrow Applications: For in-furrow applications, apply Serenade ASO as an in-furrow spray in the appropriate amount of water per acre for the crop at planting. Mount the spray nozzle so the spray is directed in the furrow just before the seeds are covered.
Leafy Vegetables Lettuce Celery Spinach Parsley Radicchio and other leafy vegetables			Soil Surface (Drench) Applications At Any Stage of Growth: Apply the finished spray mixture to the surface of the soil as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems. When applying as a spray (e.g., via hydraulic nozzles at low volumes), it is important to irrigate to move the material into the seed, root or transplant zone. Normal operation of overhead sprinklers and drip irrigation systems are sufficient for effective applications. Optimal performance is obtained with preventative treatments repeated every 21 to 28 days throughout the growing cycle.

Crops	Disease	Rate (qt/acre)	Application Instructions
Legumes Vegetables (Succulent or Dried) Beans Green Beans Snap Beans Shell Beans Soybeans Dry Beans Garbanzo Beans Lima Beans Peas Chick Peas Split Peas Lentils and other legume vegetables (including those grown for seed or oil production)	<i>Rhizoctonia</i> spp. <i>Pythium</i> spp. <i>Fusarium</i> spp. <i>Verticillium</i> spp. <i>Phytophthora</i> spp.	1 - 6	<p>All Soil Surface (Drench), Shanked-In, Injected and In-Furrow Applications:</p> <p>Mix 1 qt [(32 fl oz)] to 6 qt [(192 fl oz)] of Serenade ASO in the appropriate amount of water per acre. Use higher application rates when the weather conditions are expected to be conducive to disease development, if the field has a history of disease problems, or if minimum/low till programs are in place. SERENADE ASO can be mixed with chemical fungicides registered for soil applications.</p> <p>Soil Surface (Drench) Applications At Planting: Use at planting, seeding or transplant. Apply finished spray mixture, at a rate to thoroughly soak the growing media through the root zone, as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems.</p> <p>Shanked-In and Injected Applications: Serenade ASO can be shanked-in or injected into the soil prior to-, at-, or post-planting/transplanting of crops alone or with most types of liquid nutrients.</p>
Oilseed Crops Canola Castor Cotton Flax Rapeseed Safflower Sesame Sunflower and other oilseed crops (including those grown for seed or oil production)	<i>Rhizoctonia</i> spp. <i>Pythium</i> spp. <i>Fusarium</i> spp. <i>Verticillium</i> spp. <i>Phytophthora</i> spp. Clubroot <i>Plasmodiophora brassicae</i>		<p>In-Furrow Applications:</p> <p>For in-furrow applications, apply Serenade ASO as an in-furrow spray in the appropriate amount of water per acre for the crop at planting. Mount the spray nozzle so the spray is directed in the furrow just before the seeds are covered.</p> <p>Soil Surface (Drench) Applications At Any Stage of Growth:</p> <p>Apply the finished spray mixture to the surface of the soil as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems. When applying as a spray (e.g., via hydraulic nozzles at low volumes), it is important to irrigate to move the material into the seed, root or transplant zone. Normal operation of overhead sprinklers and drip irrigation systems are sufficient for effective applications. Optimal performance is obtained with preventative treatments repeated every 21 to 28 days throughout the growing cycle.</p>
Olive (including those grown for oil production)	<i>Rhizoctonia</i> spp. <i>Pythium</i> spp. <i>Fusarium</i> spp. <i>Verticillium</i> spp. <i>Phytophthora</i> spp.		
Peanut (including those grown for oil production)	<i>Rhizoctonia</i> spp. <i>Pythium</i> spp. <i>Fusarium</i> spp. <i>Verticillium</i> spp. <i>Phytophthora</i> spp.		

Crops	Disease	Rate (qt/acre)	Application Instructions
Pome Fruit Apple Crabapple Pear Quince Mayhaw and other pome fruit	<i>Rhizoctonia</i> spp. <i>Pythium</i> spp. <i>Fusarium</i> spp. <i>Verticillium</i> spp. <i>Phytophthora</i> spp.		All Soil Surface (Drench), Shanked-In, Injected and In-Furrow Applications: Mix 1 qt [(32 fl oz)] to 6 qt [(192 fl oz)] of Serenade ASO in the appropriate amount of water per acre. Use higher application rates when the weather conditions are expected to be conducive to disease development, if the field has a history of disease problems, or if minimum/low till programs are in place. SERENADE ASO can be mixed with chemical fungicides registered for soil applications.
Root and Tuber Vegetables Carrot pt, Fo Sweet Potato Cassava Beets Ginger Horseradish Radish Ginseng Turnip and other root and tuber vegetables (including those grown for seed production)	<i>Rhizoctonia</i> spp. <i>Pythium</i> spp. <i>Fusarium</i> spp. <i>Verticillium</i> spp. <i>Phytophthora</i> spp. <i>Streptomyces scabies</i> Clubfoot <i>Plasmidiophora brassicae</i>		Soil Surface (Drench) Applications At Planting: Use at planting, seeding or transplant. Apply finished spray mixture, at a rate to thoroughly soak the growing media through the root zone, as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems. Shanked-In and Injected Applications: Serenade ASO can be shanked-in or injected into the soil prior to-, at-, or post-planting/transplanting of crops alone or with most types of liquid nutrients. In-Furrow Applications: For in-furrow applications, apply Serenade ASO as an in-furrow spray in the appropriate amount of water per acre for the crop at planting. Mount the spray nozzle so the spray is directed in the furrow just before the seeds are covered.
Stone Fruit Apricot Cherry Nectarine Peach Plum Prune and other stone fruit	<i>Rhizoctonia</i> spp. <i>Pythium</i> spp. <i>Fusarium</i> spp. <i>Verticillium</i> spp. <i>Phytophthora</i> spp.	1 - 6	Soil Surface (Drench) Applications At Any Stage of Growth: Apply the finished spray mixture to the surface of the soil as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems. When applying as a spray (e.g., via hydraulic nozzles at low volumes), it is important to irrigate to move the material into the seed, root or transplant zone. Normal operation of overhead sprinklers and drip irrigation systems are sufficient for effective applications. Optimal performance is obtained with preventative treatments repeated every 21 to 28 days throughout the growing cycle.
Tobacco			
Strawberry	Angular Leaf Spot <i>Xanthomonas fragariae</i> Black Root Rot (complex) Common Leaf Spot <i>Ramularia tulasneii</i> Leather Rot <i>Phytophthora cactorum</i> Phytophthora Crown Rot <i>Phytophthora</i> spp. Red Stele <i>Phytophthora fragariae</i> Verticillium Wilt <i>Verticillium dahlia</i>		

Crops	Disease	Rate (qt/acre)	Application Instructions
Berries Blueberry Blackberry Raspberry Loganberry Huckleberry Cranberry Gooseberry Elderberry Currant and other berry crops	Armillaria Root Rot <i>Armillaria</i> spp. Verticillium Wilt <i>Verticillium dahlia</i> Phytophthora Root Rot <i>Phytophthora</i> spp.	1 – 6	All Soil Surface (Drench) Applications: Mix 1 qt [(32 fl oz)] to 6 qt [(192 fl oz)] of Serenade ASO in the appropriate amount of water per acre. Use higher application rates when the weather conditions are expected to be conducive to disease development, if the field has a history of disease problems, or if minimum/low till programs are in place. SERENADE ASO can be mixed with chemical fungicides registered for soil applications. Soil Surface (Drench) Applications At Planting: Use at planting, seeding or transplant. Apply finished spray mixture, at a rate to thoroughly soak the growing media through the root zone, as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems.
Grape	Oak Root Fungus Armillaria Root Rot <i>Armillaria mellea</i>		Soil Surface (Drench) Applications At Any Stage of Growth: Apply the finished spray mixture to the surface of the soil as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems. When applying as a spray (e.g., via hydraulic nozzles at low volumes), it is important to irrigate to move the material into the seed, root or transplant zone. Normal operation of overhead sprinklers and drip irrigation systems are sufficient for effective applications. Optimal performance is obtained with preventative treatments repeated every 21 to 28 days throughout the growing cycle.

FOR USE ON ORNAMENTALS, TREES, SHRUBS, FLOWERS, BEDDING PLANTS, TROPICAL PLANTS (ORNAMENTALS - Poinsettia, Orchids, Dieffenbachia, Palms, Spathiphyllum, Rhipidolepis, Aglaonema and FRUIT – Bananas, Mangos, Papaya), TURF, LAWNS, SOD, GOLF COURSES (GREENS, TEES, FAIRWAYS AND ROUGHS), SEEDLINGS, CONIFERS - [Agricultural Use], [Commercial], [Residential Use], [Reforestation]

Serenade ASO has a 0-Day PreHarvest Interval for all crops contained on this label.

Under moderate to severe disease pressure, for improved performance, increase rates and reduce spray intervals or use Serenade ASO in a tank-mix or rotational program with other registered fungicides.

[As appropriate for uses:] Serenade ASO is a protectant fungicide for use indoors and outdoors for control of certain foliar diseases in the field, greenhouses [open or enclosed], interiorscapes, residential and commercial landscapes, nurseries [open or enclosed], shadehouse environments, glasshouses, seedling production sites, golf courses (greens, tees, fairways, and roughs), forests, and forestry seedling production sites.

Serenade ASO can be applied to ornamentals, trees, shrubs, flowers, annual and perennial bedding plants, potted flowers, cut flowers, tropical foliage, container-grown trees and shrubs, forestry seedlings, turf, lawns, sod, golf courses (greens, tees, fairways, and roughs) and conifers for reforestation purposes (greenhouses, shadehouses, nurseries, indoors, outdoors, containers or field).

PLANTS EVALUATED FOR PHYTOTOXICITY

Serenade ASO has been tested for phytotoxicity on [a number of] [the] ornamental species [listed below]. Since it is impossible to test all of the species and cultivars listed on this label under all conditions, conduct a small-scale, preliminary trial to check for sensitivity before using this product on a large number of plants.

TABLE OF PLANTS EVALUATED FOR PHYTOTOXICITY

[Annual and Perennial Flowering Plants:]

[Alyssum	Asters	Azalea	Begonia	Calla Lily	Chrysanthemum
Cyclamen	Dianthus	Dwarf Bee-Balm	Hydrangea	Easter Lily	Garden Phlox
Geraniums	Gerbera	Golden Star	Impatiens		Kalanchoe

Linaria	Lisianthus	Lobelia	Marigolds	Orchids	Pansies
Petunia	Poinsettia	Portulaca	Ranunculus	Roses	Salvia spp.
Snapdragons	Stock	Verbena spp.	Vinca	Violas	Zinnias]

[Tropical Foliage:]

[Aglaonema	Dieffenbachia	Dracaena spp.	English Ivy
Hibiscus	Leatherleaf Fern	Spathiphyllum]	

[Trees and Shrubs:]

[Azalea	Boxwood	Crape Myrtle	Dogwood	Gumpo Azalea
Indian (India) Hawthorn		Japanese Maple		Ligustrum japonicum
Lilac	Loropetalum	Photinia	Rhododendron	Rosaceae spp.
Soft Touch Holly		Spirea]		

Foliar Application Use on Ornamentals, Trees, Shrubs, Flowers, Bedding Plants, Tropical Plants, Seedlings, Conifers:

APPLICATION INSTRUCTIONS: Mix 1 – 6 qt of Serenade ASO in 100 - 300 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 square feet. Make applications on a 3- to 10-day schedule. Begin applications when conditions favor disease development prior to the onset of disease. [Begin applications prior to or in the early stages of disease development.]

Under normal conditions, apply 4 qt Serenade ASO per 100 – 300 gallons of water per acre on a 7-day schedule. When conditions favor severe disease development, shorten the spray interval or use a higher rate. Thorough coverage is essential for effective disease control. See application rate tables for more detailed application instructions.

**Application Rates of Serenade ASO When Used as a Foliar Spray on
Ornamentals, Trees, Shrubs, Flowering Plants and Tropical Plants**

Crops	Disease	Rate (qt/100-300 gal spray mix)	Application Instructions
Ornamentals Trees, Shrubs, Flowering Plants, and Tropical Plants Including: Annuals Perennials Bedding Plants Potted Flowers Cut Flowers Foliage Plants Deciduous Trees Deciduous Shrubs Tropical Foliage Container- Grown Plants	Anthracnose <i>Colletotrichum</i> spp. Bacteria <i>Erwinia</i> spp. <i>Pseudomonas</i> spp. <i>Xanthomonas</i> spp. Black Spot of Rose <i>Diplocarpon rosea</i> Botrytis <i>Botrytis cinerea</i> Downy Mildew <i>Peronospora</i> spp. Leaf Spots <i>Alternaria</i> spp. <i>Cercospora</i> spp. <i>Entomosporium</i> spp. <i>Helminthosporium</i> spp. <i>Myrothecium</i> spp. Septoria spp. Powdery Mildew <i>Erysiphe</i> spp. <i>Oidium</i> spp. <i>Podosphaera</i> spp. <i>Sphaerotheca</i> spp. Phytophthora spp. Rust <i>Puccinia</i> spp. Scab <i>Venturia</i> spp.	1 - 6	<p>Plants in Fields, Greenhouses, Glasshouses, Shadehouses and Nurseries (Indoors and Outdoors):</p> <p>Mix 1 – 6 qt of Serenade ASO in 100 gallons of water. Apply dilute spray mix as a foliar treatment to the point of run-off. For each treatment, apply no more than 6 qt of Serenade ASO per acre; equivalent to 4.4 fl oz of Serenade ASO per 1000 ft²</p> <p>Make applications on a 3- to 10-day schedule. Begin applications when conditions favor disease development prior to the onset of disease. [Begin applications prior to or in the early stages of disease development.]</p> <p>Under normal conditions, apply 4 qt Serenade ASO per 100 - 300 gallons of water per acre on a 7-day schedule. When conditions favor severe disease development, shorten the spray interval or use a higher rate. Thorough coverage is essential for effective disease control.</p>

Post-Harvest Dip Use on Cut Flowers/Buds:

APPLICATION INSTRUCTIONS: For post-harvest dip applications on cut flower crops, dip flowers/buds in a solution containing 6 to 25 fl oz of Serenade ASO in 10 gallons of water soon after cutting. Immerse flowers to completely cover with the treatment solution. Use higher rates under conditions of heavy disease pressure. See application rate tables for rates and application instructions.

Application Rates of Serenade ASO for Post-Harvest Dip on Cut Flowers/Buds

Crops	Disease	Rate (fl oz/10 gal water)	Application Instructions
Cut Flowers	Black Spot of Rose <i>Diplocarpon rosea</i> Botrytis <i>Botrytis cinerea</i> Downy Mildew <i>Peronospora</i> spp. Powdery Mildew <i>Erysiphe</i> spp. <i>Oidium</i> spp. <i>Podosphaera</i> spp. <i>Sphaerotheca</i> spp.	6 - 25	Dip flowers/buds in a solution containing 6 to 25 fl oz of Serenade ASO in 10 gallons of water soon after cutting. Immerse flowers to completely cover with the treatment solution. Use higher rates under conditions of heavy disease pressure.

Soil Drench Applications on Ornamentals, Trees, Shrubs, Flowers, Bedding Plants, Tropical Plants, Seedlings, Conifers, Fruits and Vegetables: [Agricultural], [Commercial], [Residential Use], [Indoors and Outdoors], [Greenhouses, Glasshouses, Nurseries, Shadehouses], [Open and Enclosed]

Serenade ASO is a broad spectrum biofungicide for the prevention, suppression and control of soil borne diseases on a wide range of annual and perennial bedding plants, potted flowers, foliage plants, deciduous trees and shrubs, and fruits and vegetables grown in protected and outdoor environments. Serenade ASO enhances germination and plant growth by suppressing diseases caused by *Rhizoctonia*, *Pythium*, *Fusarium*, *Verticillium*, and *Phytophthora*.

APPLICATION INSTRUCTIONS: Mix 1 qt [(32 fl oz)] to 6 qt [(192 fl oz)] of Serenade ASO with 100 -300 gallons of water. Use higher application rates under conditions of heavy disease pressure. Apply finished mixture, at a rate to thoroughly soak the growing media through the root zone, as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler irrigation systems. Begin applications during or after seeding, sticking of cuttings or after transplanting to propagation beds, containers, pots or trays. Optimal performance is obtained with preventative treatments repeated every 21 to 28 days throughout the growing cycle. Serenade ASO can be mixed with chemical fungicides registered for soil applications. See application rate tables for more detailed application instructions.

Application Rates of Serenade ASO When Used as a Soil Drench in Field, Greenhouses, Glasshouses, Shadehouses, or Nurseries [Outdoors and Indoors] [Open or Enclosed]

Crops	Disease	Rate (qt/100 - 300 gal spray mix)	Application Instructions
Ornamentals Trees Shrubs Annuals Perennials Flowering Plants Tropical Plants Bedding Plants Container Plants Potted Plants Foliage Plants Deciduous Trees Deciduous Shrubs Forestry Seedlings Fruits Vegetables and other crops grown in greenhouses, glasshouses, shadehouses, Indoors/outdoors, open and enclosed nurseries	<i>Rhizoctonia</i> spp. <i>Pythium</i> spp. <i>Fusarium</i> spp. <i>Verticillium</i> spp. <i>Phytophthora</i> spp.	1 - 6	Soil Drench Uses: Field, Greenhouses, Glasshouses, Shadehouses, Indoors/Outdoors, Open And Enclosed Nurseries Mix 1 qt [(32 fl oz)] to 6 qt [(192 fl oz)] of Serenade ASO with 100 -300 gallons of water. Use higher application rates under conditions of heavy disease pressure. Apply finished mixture, at a rate to thoroughly soak the growing media through the root zone, as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler irrigation systems. Begin applications during or after seeding, sticking of cuttings or after transplanting to propagation beds, containers, pots or trays. Optimal performance is obtained with preventative treatments repeated every 21 to 28 days throughout the growing cycle. Serenade ASO can be mixed with chemical fungicides registered for soil applications.

Turf, Lawns, Sod, Golf Courses (Greens, Tees, Fairways, And Roughs), And Ornamental Turf Use: [Agricultural], [Commercial], [Residential Use]

Serenade ASO is a broad spectrum biofungicide for use in the prevention, suppression and aiding in control of turf and lawn diseases (Brown Patch, Dollar Spot, Powdery Mildew, Rust, Gray Leaf Spot and Anthracnose).

APPLICATION INSTRUCTIONS: Apply 2 - 10 fl oz of Serenade ASO per 1000 sq ft of surface area. Apply in sufficient water to provide thorough coverage, depending on the application equipment: Two gallons of water per 1000 sq ft of surface is commonly used.

See application rate tables for more detailed application instructions.

Application Rates of Serenade ASO for Turf, Lawns, Sod, Golf Courses (Greens, Tees, Fairways and Roughs), and Ornamental Turf

Crops	Disease	Rate (fl oz/1000 sq ft of surface area)	Application Instructions
Turf Sod Lawns Golf Courses (Fairways, Roughs, Greens, and Tees) Seed Production Grasses Bluegrass Bentgrass Bermudagrass Dichondra Fescue Orchardgrass Poa Annua St. Augustine Ryegrass Zoysia Mixtures and other grasses or ornamental turf	Brown Patch <i>Rhizoctonia solani</i>	2 - 10	Apply 2 to 10 fl oz of Serenade ASO per 1000 sq ft of surface area. Apply in sufficient water to provide thorough coverage, depending on the application equipment. Two gallons of water per 1000 sq ft of surface is commonly used.
	Dollar Spot <i>Lanzia spp.</i> <i>Moellerodiscus spp.</i> <i>Sclerotinia homeocarpa</i>		Begin applications when conditions are conducive to disease development. Continue applications on 7- to 10-day intervals or as needed. Under moderate to severe disease pressure, for improved performance, increase rates and reduce spray intervals or use Serenade ASO in a tank-mix or rotational program with other registered fungicides.
	Powdery Mildew <i>Erysiphe graminis</i>		Aids in control of: Brown Patch, Dollar Spot, Powdery Mildew, Rust, Anthracnose and Gray Leaf Spot.
	Rust <i>Puccinia spp.</i>		[Optional/Alternate Statements / Examples of Mixing/Application Instructions are in Brackets below.]
	Anthracnose <i>Colletotrichum graminicola</i>		[Mix at the rate of 1 to 5 fl oz of Serenade ASO per gallon of water, and apply spray solution at the rate of 2 gallons per 1000 sq ft of turf (equivalent to 2 to 10 fl oz of Serenade ASO per 1000 sq ft of turf).]
	Gray Leaf Spot <i>Pyricularia grisea</i>		[Mix at the rate of 2 to 10 fl oz of Serenade ASO per gallon of water, and apply spray solution at the rate of 1 gallon per 1000 sq ft of turf (equivalent to 2 to 10 fl oz of Serenade ASO per 1000 sq ft of turf).]
		[1% - 4% solution]	[Mix at the rate of 5 fl oz of Serenade ASO per gallon of water when included in a tank mix with other registered fungicides.]
		[2% - 8% solution]	[Mix a 1% to 4% solution, and apply spray solution at the rate of 2 gallons per 1000 sq ft of turf (equivalent to 2.5 to 10 fl oz of Serenade ASO per 1000 sq ft of turf).]
			[Mix a 2% to 8% solution, and apply spray solution at the rate of 1 gallon per 1000 sq ft of turf (equivalent to 2.5 to 10 fl oz of Serenade ASO per 1000 sq ft of turf).]

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE: Store in a dry area inaccessible to children. Store in original container only. Keep container closed when not in use.

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: [For 2.5-gallon plastic containers] - Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or mix tank and drain for 10 seconds after the flow begins to drip. Fill the container $\frac{1}{4}$ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill or by incineration. Do not burn, unless allowed by state and local ordinances. If burned, stay out of smoke.

[For 30-gallon plastic containers] - Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or mix tank. Fill the container $\frac{1}{4}$ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Empty rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill or by incineration. Do not burn, unless allowed by state and local ordinances. If burned, stay out of smoke.

[For 110-gallon or larger returnable mini-bulk containers] - Return empty container for reuse. Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill or by incineration. Do not burn, unless allowed by state and local ordinances. If burned, stay out of smoke.

[batch codes are sticker applied to the front panel of every label on every product container]

CONDITIONS FOR SALE AND WARRANTY

AgraQuest warrants to those persons lawfully purchasing this product that, at the time of the first sale of this product by Seller, this product conformed to its description and was reasonably fit for the purposes stated on the label when used in accordance with Seller's directions. Buyers and users of this product assume the risk of any use contrary to such directions. EXCEPT AS PROVIDED ELSEWHERE IN WRITING CONTAINING AN EXPRESS REFERENCE TO THIS WARRANTY AND LIMITATION OF DAMAGES, SELLER MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OR GUARANTY, INCLUDING ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR OF MERCHANTABILITY, AND NO AGENT OF SELLER IS AUTHORIZED TO DO SO. Except to the extent prohibited by applicable law, AgraQuest offers this product with the following conditions: 1) buyers and users of this product assume the risk of any storage, handling or use contrary to AgraQuest's label and directions and 2) AgraQuest's liability shall in no case exceed the purchase price of the applicable AgraQuest product.

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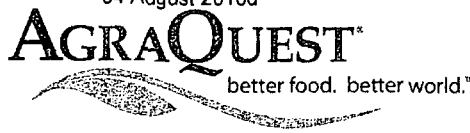
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04 August 2010d

SERENADE ASO EPA MASTER LABEL

page 48 of 60



OMRI
L i s t e d

[This label modified August 2010.]

SERENADE® ASO

AN AQUEOUS SUSPENSION BIOFUNGICIDE
SUB-LABEL B

For Home and Garden Use

SERENADE® ASO

[Alternate Brand Name: Serenade® Garden Disease Control Concentrate]

[Alternate Names for Turf Label when sold for hose-end sprayers:]

- [Serenade® Garden Lawn Disease Control – Ready to Spray],
- [Serenade® Garden Turf Disease Control – Ready to Spray],
- [Serenade® Garden Lawn Disease Control],
- [Serenade® Garden Turf Disease Control],
- [Serenade® Garden Disease Control for Lawns - Ready to Spray],
- [Serenade® Garden Disease Control for Turf - Ready to Spray]

[An Aqueous Suspension Biofungicide]

[For Home and Garden Use][For Home, Garden and [Lawn] [(Turf)] Use]
 [Optional/Alternate Statement: "NOP Logo: For Organic Gardening"]
 [Optional/Alternate Statement: "NOP Logo: Can be Used for Organic Gardening"]
 ["NOP Logo: For Organic Lawn Care"]

[Optional Claims:]

[Attacks over 40 diseases] [Attacks both fungal & bacterial diseases]
 [Apply any time of day] [Will not burn or injure [leaves] [or [lawns] [(turf)] [sod]]
 [Fungicide (or Biofungicide) that attacks harmful garden and lawn diseases]
 [[For] Use on Roses, Vegetables, Fruits, Flowering Plants, Trees, Shrubs and Lawns [(Turf)] [Sod]]
 [Controls Powdery Mildew, Rust, Gray Mold [and other listed diseases]]
 [Suppresses Black Spot, Late Blight, Scab [and other listed diseases]]
 [Concentrate] [Same active ingredient used by farmers]
 [Effectively controls or prevents a wide range of fungal and bacterial plant diseases]
 [Promotes healthier gardens]
 [Prevents and controls harmful garden diseases]
 [Powered by AgraQuest]

[Optional Claims for Lawn and Turf Label:]

[Prevents and controls harmful (major) lawn diseases (including Brown Patch, Dollar Spot, Red Thread)]
 [Controls Brown Patch, Dollar Spot and other listed [common] lawn diseases]
 [Use anytime on all lawns to prevent and control major lawn diseases]
 [Promotes healthy, disease-free lawns] ["Easy,.[.]! Attach Hose and Spray.[!]"
 [Same active ingredient used on golf courses] [Promotes Greener, Healthier Lawns]
 [Promotes greener, healthy, disease-free lawns]
 [Easy to use]

ACTIVE INGREDIENT:

QST 713 strain of *Bacillus subtilis**.....1.34%

OTHER INGREDIENTS.....98.66%

TOTAL.....100.00%

*Contains a minimum of 1 x 10⁹ cfu/g

KEEP OUT OF REACH OF CHILDREN
CAUTION

[See attached label booklet for First Aid, Precautionary Statements, Storage and Disposal Instructions and Directions for Use.]

[Peel back tab for First Aid, Precautionary Statements, Storage and Disposal Instructions and Directions for Use.]

EPA Registration No. 69592-12
EPA Est. No.:

[Superscript corresponds to last two digits of container lot number.]

01	02	03	04	05	06	07	09
69592-MEX-1	67545-AZ-1	66728-GA-2	37429-GA-2	69592-CA-1	34704-MS-2	42625-NJ-1	61933-FL-10
10	14						
47857-CA-1	84961-PA-1						

AgraQuest, Inc.
 1540 Drew Avenue
 Davis, CA 95618
www.agraquest.com
www.serenadegarden.com
 1-800-962-8980

U.S. Patent Nos. 6,060,051, 6,103,228, 6,291,426, and 6,417,163 on QST 713 strain of *Bacillus subtilis*

Net Contents:

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS & DOMESTIC ANIMALS

CAUTION

Harmful if inhaled. Avoid breathing spray mist. Remove and wash contaminated clothing before reuse.

FIRST AID

IF INHALED:

- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
- Call a poison control center or doctor for further treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment.

ENVIRONMENTAL HAZARDS

To protect the environment, do not allow pesticide to enter or run-off into storm drains, drainage ditches, gutters or surface waters. Applying this product in calm weather when rain is not predicted for the next 24 hours will help to ensure that wind or rain does not blow or wash pesticide off the treatment area. Rinsing application equipment over the treated area will help avoid run-off to water bodies or drainage systems.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

BASIC USE INFORMATION

[Serenade ASO] [This product] [Alternate Statement: is a broad spectrum, preventative biofungicide recommended for the control or suppression of many important plant diseases.] [Alternate Statement: effectively controls or prevents a wide range of important fungal and bacterial plant diseases.] [Serenade ASO] It may be used on roses, vegetables, fruits, nuts, flowers, houseplants, foliage, trees, shrubs, lawns, turf, sod, and ornamental turf [located in residential landscapes] [located in residential interiorscapes] [located in residential greenhouses] [located in commercial landscapes] [located in commercial interiorscapes].

[Serenade ASO may be applied any time of day, in full sun and high temperatures, without stressing or burning foliage.]

[Serenade ASO [This product] can be applied up to and on the day of harvest.]

[Serenade ASO can be used on the day of harvest and on all fruits and vegetables used in canning.]

[QUICK FACTS]

[READ THE LABEL FIRST!]

[READ LABEL FIRST graphic]

WHEN TO USE

- For best results, treat prior to foliar disease development or at the first sign of foliar disease infection.
- Repeat at 7-day intervals or as needed.
- [Under conditions of high disease pressure.] [When environmental conditions favor rapid disease development (high humidity, excessive rain, extreme moisture condition, etc.), spray more often] [Alternate: shorten the spray interval].

BEFORE YOU USE

Read and follow these directions when using:

- Do not allow spray to drift from application site.
- [[For Pressurized Hand-Held Sprayer and Spray Trigger Bottle Use Only] - Do not allow spray mixture to stand overnight or for prolonged periods.]

[FOR BEST RESULTS]

- [Shake Well Before Use.]
- [Spray to ensure thorough coverage.]
- [Repeat at 7-day intervals or as needed.]
- [Under conditions of high disease pressure.] [When environmental conditions favor rapid disease development (high humidity, excessive rain, extreme moisture condition, etc.), spray more often] [Alternate: shorten the spray interval].

[Specific Application Instructions in four groups as appropriate for the type of sprayer]

[Pressurized Hand-Held Sprayer and Spray Trigger Bottle] [Serenade ASO can be applied in commonly used pressurized hand-held sprayers and spray trigger bottles.]

HOW TO USE [Alternate statement: MIXING AND APPLICATION INSTRUCTIONS]

- Shake Well Before Use
- Fill sprayer or bottle with appropriate amounts of concentrate and water (use water only).
- Mix the spray solution thoroughly.
- Keep spray solution agitated during application.

HOW MUCH TO USE

[For] Fruits, Vegetables, Nuts [(e. g. Apples/Pears, Broccoli, Carrot, Cherries, Cucurbits, Grapes, Leafy Vegetables, Onions/Garlic, Pepper, Tomato, and Walnuts)]:

- 2 fl oz (¼ cup = 4 TBSP) to 4 fl oz (½ cup = 8 TBSP) of Serenade ASO per gallon of water.
- Spray plants to run-off, covering both top and bottom surface of foliage to ensure thorough coverage.

[For] [Annual and Perennial] Ornamental Plants, Flowers, Flowering Plants, Tropical Foliage, Foliage, Trees and Shrubs:

- 2 fl oz (¼ cup = 4 TBSP) to 4 fl oz (½ cup = 8 TBSP) of Serenade ASO per gallon of water.
- Spray plants to run-off, covering both top and bottom surface of foliage to ensure thorough coverage.

[For] Lawns [, Turf, Sod and Ornamental Turf]:

- 2 fl oz (¼ cup = 4 TBSP) to 8 fl oz (1 cup = 16 TBSP) of Serenade ASO per gallon of water.
- Apply at a rate of 1 gallon of spray solution per 1,000 square feet of lawn [or Turf, Sod and Ornamental Turf].

[Optional/Alternate: [For] Lawns [, Turf, Sod and Ornamental Turf]:

- 1 fl oz (½ cup = 2 TBSP) to 4 fl oz (½ cup = 8 TBSP) of Serenade ASO per gallon of water.

- Apply at a rate of 2 gallons of spray solution per 1,000 square feet of lawn [or Turf, Sod and Ornamental Turf] (equivalent to 2 to 8 fl oz of Serenade ASO per 1,000 square feet of lawn [or Turf, Sod and Ornamental Turf].)

[Hose-End Sprayer]**[Alternate statement: How To Use Hose-end Sprayer]****HOW TO USE [APPLICATION INSTRUCTIONS]**

- Shake Well Before Use
- Follow hose-end sprayer directions to determine how to fill, set dial, clean and disconnect from hose.
- Set dial on sprayer to deliver rates of Serenade ASO [this product] per gallon of water as directed below.

HOW MUCH TO USE

- No mixing or measuring is needed. Dilutes automatically as you spray. Spray plants to run-off.

[For] Fruits, Vegetables, Nuts [(e. g. Apples/Pears, Broccoli, Carrot, Cherries, Cucurbits, Grapes, Leafy Vegetables, Onions/Garlic, Pepper, Tomato, and Walnuts)]:

- Set sprayer to apply 2 fl oz (¼ cup = 4 TBSP) to 4 fl oz (½ cup = 8 TBSP) of Serenade ASO per gallon of water.
- Spray plants to run-off, covering both top and bottom surface of foliage to ensure thorough coverage.

[For] [Annual and Perennial] Ornamental Plants, Flowers, Flowering Plants, Tropical Foliage, Foliage, Trees and Shrubs:

- Set sprayer to apply 2 fl oz (¼ cup = 4 TBSP) to 4 fl oz (½ cup = 8 TBSP) of Serenade ASO per gallon of water.
- Spray plants to run-off, covering both top and bottom surface of foliage to ensure thorough coverage.

[For] Lawns [, Turf, Sod and Ornamental Turf]:

- Set sprayer to apply 2 fl oz (¼ cup = 4 TBSP) to 8 fl oz (1 cup = 16 TBSP) of Serenade ASO per gallon of water.
- Apply at a rate of 1 gallon of spray solution per 1,000 square feet of lawn [or Turf, Sod and Ornamental Turf].

[Optional/Alternate: [For] Lawns [, Turf, Sod and Ornamental Turf]:

- Set sprayer to apply 1 fl oz (⅛ cup = 2 TBSP) to 4 fl oz (½ cup = 8 TBSP) of Serenade ASO per gallon of water.
- Apply at a rate of 2 gallons of spray solution per 1,000 square feet of lawn [or Turf, Sod and Ornamental Turf] (equivalent to 2 to 8 fl oz of Serenade ASO per 1,000 square feet of lawn [or Turf, Sod and Ornamental Turf].)

[Optional/Alternative: [For] Lawns [, Turf, Sod and Ornamental Turf]:

- Set sprayer to apply 2 fl oz (¼ cup = 4 TBSP) to 4 fl oz (½ cup = 8 TBSP) of Serenade ASO per gallon of water.
- Apply one gallon of spray solution to thoroughly cover 500 square feet of lawn [or Turf, Sod and Ornamental Turf] (equivalent to 4 to 8 fl oz of Serenade ASO per 1,000 square feet of lawn [or Turf, Sod and Ornamental Turf].)

[Optional/Alternative: [For] Lawns [, Turf, Sod and Ornamental Turf]:

- Set sprayer to apply 1 fl oz (⅛ cup = 2 TBSP) to 2 fl oz (¼ cup = 4 TBSP) of Serenade ASO per gallon of water.
- Apply one gallon of spray solution to thoroughly cover 250 square feet of lawn [or Turf, Sod and Ornamental Turf] (equivalent to 4 to 8 fl oz of Serenade ASO per 1,000 square feet of lawn [or Turf, Sod and Ornamental Turf].)

[Hose-End Sprayer on Ready to Spray Bottle]

[Note to Reviewer: These instructions will recommend either 4 fl oz or 5 fl oz of Serenade ASO applied depending upon the nozzle that is used. Nozzles are manufactured to deliver set volumes of product and can not be altered by the consumer.]

HOW MUCH TO USE

- No mixing or measuring is needed. Dilutes automatically as you spray.

[COVERAGE]

- [For Lawns: Treats up to 5600 square feet. [(28 fl oz size)]
- [Alternate Statement: Treats up to 6400 square feet. [(32 fl oz size)]]

HOW TO USE [APPLICATION INSTRUCTIONS] For Lawns [, Turf, Sod and Ornamental Turf]:

1. Shake container well before using.
2. Make sure the nozzle is in the "OFF" position with the safety tab in the valve notch.
3. Securely attach a garden hose to the hose-end spray nozzle, tightening nozzle.
4. Calculate the square feet of the area to be treated by multiplying length by width. 4 [alternate text: 5] fl oz of Serenade ASO - will treat 1000 square feet of lawn [, Turf, Sod and Ornamental Turf].
5. Turn on water at faucet. Extend hose to the farthest area to be treated and work backward toward the faucet.
6. To begin spraying, point nozzle at the lawn [, Turf, Sod and Ornamental Turf] to be treated and bend the safety tab back while turning the dial clockwise. The water will automatically start mixing and spraying. Walk backwards at a steady pace sweeping the spray in an overlapping motion to cover the area to be treated. Refer to the sight gauge on the side of the bottle to guide coverage (example: When 1 fl oz of [Serenade ASO] [this product] has been used, you should have covered 200 [Alternate text: 250] square feet of lawn [, Turf, Sod and Ornamental Turf]).
7. To turn the sprayer off, turn the dial in the opposite direction (counter-clockwise) until the water stops flowing and the safety tab engages. Turn the water off at the faucet. To relieve pressure before detaching sprayer, bend the safety tab back and turn the dial on (clockwise) until the water stops spraying. Then, turn the dial back to the off position until the safety tab engages.
8. Detach the hose-end sprayer from the hose and store unused product in a cool, dark place until its next use.

[Hose-End Sprayer on Ready to Spray Bottle]

[Note to Reviewer: This nozzle is calibrated to deliver 2 - 4 fl oz of Serenade ASO per gallon of spray solution applied.]

HOW MUCH TO USE

- No mixing or measuring is needed. Dilutes automatically as you spray.
- Spray plants to run-off.

[COVERAGE]

- [For other Uses:] Makes up to 14 gallons finished spray. [(28 fl oz size)]
- [Alternate Statement: Makes up to 16 gallons finished spray [(32 fl oz size)]]

HOW TO USE [APPLICATION INSTRUCTIONS]

[For] Fruits, Vegetables, Nuts [(e. g. Apples/Pears, Broccoli, Carrot, Cherries, Cucurbits, Grapes, Leafy Vegetables, Onions/Garlic, Pepper, Tomato, and Walnuts)] [Annual and Perennial] Ornamental Plants, Flowers, Flowering Plants, Tropical Foliage, Foliage, Trees and Shrubs:

1. Shake container well before using.
2. Make sure the nozzle is in the "OFF" position with the safety tab in the valve notch.
3. Securely attach a garden hose to the hose-end spray nozzle, tightening nozzle.
4. Turn on water at faucet
5. To begin spraying, point nozzle at the area to be treated and bend the safety tab back while turning the dial clockwise. The water will automatically start mixing and spraying.
6. Spray plants to run-off, thoroughly covering both top and bottom surface of foliage to ensure thorough coverage, sweeping the spray in an overlapping motion to cover the area to be treated.
7. To turn the sprayer off, turn the dial in the opposite direction (counter-clockwise) until the water stops flowing and the safety tab engages. Turn the water off at the faucet. To relieve pressure before detaching sprayer, bend the safety tab back and turn the dial on (clockwise) until the water stops spraying. Then, turn the dial back to the off position until the safety tab engages.

8. Detach the hose-end sprayer from the hose and store unused product in a cool, dark place until its next use.

[ALTERNATE STATEMENT: WHERE TO USE: VEGETABLES, FRUITS, NUTS, FLOWERS, FOLIAGE, TREES, AND SHRUBS]

[ALTERNATE STATEMENT: USE SITES: VEGETABLES, FRUITS, NUTS, FLOWERS, FOLIAGE, TREES, AND SHRUBS]

[SERENADE ASO] [MAY BE USED ON [THE FOLLOWING]]:

[Alternate: VEGETABLES, FRUITS, NUTS, FLOWERS, FOLIAGE AND ORNAMENTAL PLANTS] [Alternate: [PLANTS] [SITES]]

[HOME and GARDEN] [VEGETABLE[S], FRUIT[S] AND NUT[S] PLANTS:]

[Artichoke, Asparagus

Berries (Blueberry, Blackberry, Raspberry, Loganberry, Huckleberry, Cranberry, Gooseberry, Elderberry, Currant, and other berries)

Brassica Leafy Vegetables (Broccoli, Cabbage, Cauliflower, Brussels Sprouts, Collards, Kale, Mustard Greens, Kohlrabi and other brassica leafy vegetables)

Bulb Vegetables (Onion, Garlic, Shallots and other bulb vegetables)

Citrus Fruit (Orange, Grapefruit, Lemon, Tangerine, Tangelo, Pummelo and other citrus fruit)

Cucurbit Vegetables (Cucumber, Cantaloupe, Melon, Muskmelon, Squash, Watermelon and other cucurbit vegetables)

Fruiting Vegetables (Pepper, Tomato, Eggplant and other fruiting vegetables)

Grape, Herbs and Spices, Hop

Leafy Vegetables (Lettuce, Celery, Spinach, Parsley, Radicchio and other leafy vegetables)

Legume Vegetables (Beans, Green Beans, Snap Beans, Shell Beans, Dry Beans, Garbanzo Beans, Lima Beans, Peas, Chick Peas, Split Peas, Lentils and other legume vegetables)

Mango, Mint, Olive, Papaya, Peanuts

Pome Fruit (Apple, Crabapple, Pear, Quince, Mayhaw and other pome fruit)

Root and Tuber Vegetables (Carrot, Potato, Sweet Potato, Beets, Ginger, Horseradish, Radish, Ginseng, Turnip and other root and tuber vegetables)

Stone Fruit (Apricot, Cherry, Nectarine, Peach, Plum, Prune and other stone fruit)

Strawberry, Sweet Corn, Tobacco, Watercress

Tree Nuts (Almond, Pistachio, Pecan, Walnut, Filberts, Chestnut, Cashew, Beechnut, Butternut and other tree nuts)]

[RESIDENTIAL] GREENHOUSE PLANTS:]

[Brassica Leafy Vegetables (Broccoli, Cabbage, Cauliflower, Brussels Sprouts, Collards, Kale, Mustard Greens, Kohlrabi and other brassica leafy vegetables)

Bulb Vegetables (Onion, Garlic, Shallots and other bulb vegetables)

Cucurbit Vegetables (Cucumber, Cantaloupe, Melon, Muskmelon, Squash, Watermelon and other cucurbit vegetables)

Fruiting Vegetables (Pepper, Tomato, Eggplant and other fruiting vegetables)

Herbs and Spices

Leafy Vegetables (Lettuce, Celery, Spinach, Parsley, Radicchio and other leafy vegetables)

Root and Tuber Vegetables (Carrot, Potato, Sweet Potato, Beets, Ginger, Horseradish, Radish, Ginseng, Turnip and other root and tuber vegetables)

Strawberry]

ORNAMENTALS, TREES, FOLIAGE, SHRUBS, FLOWERS, FLOWERING PLANTS, TROPICAL PLANTS:]

[Roses]

[Other Ornamentals, Trees, Shrubs, Foliage, Flowers, Flowering Plants, Tropical Plants, including any or all of the plants listed as evaluated for phytotoxicity as shown below:]

[PLANTS EVALUATED FOR PHYTOTOXICITY]

[Annual and Perennial Flowering Plants:]

[Alyssum	Asters	Azalea	Begonia	Calla Lily	
Chrysanthemum		Cyclamen	Dianthus	Dwarf Bee-Balm	
Easter Lily	Garden Phlox	Geraniums	Gerbera	Golden Star	
Hydrangea	Impatiens	Kalanchoe	Linaria	Lisianthus	Lobelia
Marigolds	Orchids	Pansies	Petunia	Poinsettia	Portulaca
Ranunculus	Roses	<i>Salvia</i> spp.	Snapdragons	Stock	
<i>Verbena</i> spp.	Vinca	Violas	Zinnias]		

[Tropical Foliage:]

[<i>Aglaonema</i>	<i>Dieffenbachia</i>	<i>Dracaena</i> spp.	English Ivy
Hibiscus	Leatherleaf Fern	<i>Spathiphyllum</i>]	

[Trees and Shrubs:]

[Azalea	Boxwood	Crape Myrtle	Dogwood
Gumbo	Azalea	Indian Hawthorn	Japanese Maple
<i>Ligustrum japonicum</i>		Lilac	Loropetalum
Photinia	Rhododendron	<i>Rosaceae</i> spp.	Soft Touch Holly
<i>Spirea</i>]			

ORNAMENTALS, TREES, FOLIAGE, SHRUBS, FLOWERS, FLOWERING PLANTS, TROPICAL PLANTS:]

[Optional Statement: Some pesticides can cause phytotoxic effects, ranging from slight burning or browning of leaves to distorted leaves, fruit, flowers or stems. Damage symptoms may vary with the type of plant that has been treated. It is impossible to test all plants for phytotoxicity. To assure that the plants to be treated are not sensitive to the treatment, apply a small amount of the highest application rate of the product to a few leaves or the above ground portion of a plant and check within 3 days for signs of phytotoxicity. Use product according to label directions.]

DISEASES CONTROLLED [OR SUPPRESSED] [OR PREVENTED] [BY SERENADE ASO] [ON VEGETABLES, FRUITS, NUTS, ORNAMENTAL PLANTS, TREES, SHRUBS, FOLIAGE, FLOWERS, FLOWERING PLANTS, TROPICAL PLANTS] [Alternate: [ON PLANTS] [SITES]]

Anthracoise [(*Colletotrichum* spp.)]

Bacteria [(*Erwinia* spp., *Pseudomonas* spp., *Xanthomonas* spp.)]

Bacterial Leaf Blight [(*Xanthomonas campestris*)]

Bacterial Speck [(*Pseudomonas syringae* pv. *tomato*)]

Bacterial Spot [(*Xanthomonas* spp.)] - suppression

Bean Rust [(*Uromyces appendiculatus*)] - suppression

Black Mold [(*Alternaria alternata*)]

Black Rot/Black Crown Rot [(*Alternaria* spp.)]

Black Spot [of Rose] [(*Diplocarpon rosea*)]

Botrytis [(*Botrytis* spp.)]

Botrytis Leaf Blight [(*Botrytis squamosa*)]

Botrytis Neck Rot [(*Botrytis* spp.)]

Downy Mildew [(*Bremia lactucae*, *Peronospora* spp., and *Plasmopara viticola*)] - suppression

Early Blight [(*Alternaria solani*)] – suppression

Fire Blight [(*Erwinia amylovora*)] – suppression

Gray Mold [(*Botrytis cinerea*)]

Greasy Spot [(*Mycosphaerella citri*)] - suppression

Late Blight [(*Phytophthora infestans*)] – suppression

Leaf Spots [(*Alternaria* spp., *Cercospora* spp., *Entomosporium* spp., *Helminthosporium* spp., *Myrothecium* spp., *Septoria* spp.)]

Onion Downy Mildew [(*Peronospora destructor*)]

Onion Purple Blotch [(*Alternaria porri*)]

Phytophthora spp.

Pin Rot [(*Alternaria/Xanthomonas* complex)] - suppression

Powdery Mildew [(*Uncinula necator*, *Erysiphe* spp., *Sphaerotheca* spp., *Oidiopsis taurica*, *Leveillula taurica*, *Podosphaera leucotricha*, *Oidium* spp., *Podosphaera* spp.)]

Rust [(*Puccinia* spp.)]

Scab [(*Venturia* spp.)] - suppression

Sclerotinia Head and Leaf Drop [(*Sclerotinia* spp.)]

Sour Rot

Target Spot [(*Corynespora cassiicola*)]

Walnut Blight [(*Xanthomonas campestris*)]

White Mold [(*Sclerotinia sclerotiorum*)] – suppression

[SERENADE ASO] [MAY BE USED ON LAWNS, TURF, SOD AND ORNAMENTAL TURF AND GOLF COURSES
(FAIRWAYS, GREENS, ROUGHS, TEES)]
[ALTERNATE STATEMENT: WHERE TO USE]
[ALTERNATE STATEMENT: USE SITE]

LAWNS, [TURF] [, SOD] [AND ORNAMENTAL TURF], [GOLF COURSES (FAIRWAYS, GREENS, ROUGHS, TEES)]:

Bluegrass, Bentgrass, Bermudagrass, Dichondra, Fescue, Orchardgrass, Annual Bluegrass (*Poa annua*), St. Augustine, Ryegrass, Zoysia, Mixtures and other grasses or ornamental turf.

**DISEASES CONTROLLED [OR SUPPRESSED] [OR PREVENTED] [BY SERENADE ASO] [ON LAWNS, [, SOD]
TURF AND ORNAMENTAL TURF AND GOLF COURSES (FAIRWAYS, GREENS, ROUGHS, TEES).]**

Lawn [and Turf[, Sod]] Diseases:

Brown Patch [(*Rhizoctonia solani*)]

Dollar Spot [(*Lanzia* spp., *Moellerodiscus* spp., formerly *Sclerotinia homeocarpa*)]

Powdery Mildew [(*Erysiphe graminis*)]

Rust [(*Puccinia* spp.)]

Anthracnose [(*Colletotrichum graminicola*)]

Red Thread [(*Laetisaria fuciformis*)]

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE: Store in original container only. [Alternate: in an area inaccessible to children] [or Alternate: out of reach of children]. Keep container closed when not in use. Store at room temperature.

PESTICIDE DISPOSAL AND CONTAINER HANDLING:

Nonrefillable container. Do not reuse or refill this container.

If empty:

Place in trash or offer for recycling, if available.

If partly filled:

Call your local solid waste agency for disposal instructions. Never place unused product down any indoor or outdoor drain.

[batch codes are sticker applied to the front panel of every label on every product container]

CONDITIONS FOR SALE AND WARRANTY

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[This label modified August 2010]

OMRI[®]
L i s t e d

AGRAQUEST[®]
better food. better world.™