

2017-2976  
2018-03-16

**Serenade® ASO™**  
An Aqueous Suspension Biofungicide



**COMMERCIAL**

ACTIVE INGREDIENT: QST 713 strain of dried *Bacillus subtilis*, contains a minimum of  $1 \times 10^9$  CFU/g

**KEEP OUT OF REACH OF CHILDREN**

**READ THE LABEL AND BOOKLET BEFORE USING**

**POTENTIAL SKIN SENSITIZER**

**REGISTRATION NO.: 28626 PEST CONTROL PRODUCTS ACT**

**NET CONTENTS: 9.46L - 1000L**

Product Information: 1-888-283-6847  
[www.cropscience.bayer.ca](http://www.cropscience.bayer.ca)

Bayer CropScience Inc.  
Suite 200, 160 Quarry Park Blvd. S.E.  
Calgary, Alberta T2C 3G3

In case of spills, poisoning or fire, telephone emergency response number  
1-800-334-7577 (24 hours a day).

Date of Manufacture:

Made in Mexico

**NOTICE TO USER:** This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *Pest Control Products Act* to use this product in a way that is inconsistent with the directions on the label.

**PRECAUTIONS: KEEP OUT OF REACH OF CHILDREN.** May cause sensitization. Avoid contact with eyes, skin or clothing. Avoid inhaling/breathing mist. Wear a long-sleeved shirt, long pants, shoes plus socks, water-proof gloves and NIOSH approved mist filtering mask or respirator when handling, mixing/loading or applying the product and during all clean-up/repair activities. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

**FIRST AID:**

If swallowed: Call a poison control centre or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person.

If on skin/clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. Call a poison control centre or doctor for treatment advice.

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

If in eyes: Hold eye open and rinse slowly and gently with water for 15–20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control centre or doctor for treatment advice.

Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

**TOXICOLOGICAL INFORMATION:** Treat symptomatically.

**STORAGE AND DISPOSAL:** To prevent contamination, store this product away from food or feed.

**STORAGE:** Store in a dry area inaccessible to children. Store at room temperature for up to three years from the date of manufacture. Store in original container only. Keep container closed when not in use.

**DISPOSAL:** Triple- or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank. Follow provincial instruction for any required additional cleaning of the container prior to its disposal. Make the empty container unsuitable for further use.

Dispose of the container in accordance with provincial requirements.

For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

Serenade ASO is a registered trademark of Bayer.



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#### DISPOSAL:

1. Triple- or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank.
2. Follow provincial instruction for any required additional cleaning of the container prior to its disposal.
3. Make the empty container unsuitable for further use.
4. Dispose of the container in accordance with provincial requirements.

5. For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

## **GENERAL USE INFORMATION:**

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Serenade ASO is a broad spectrum, preventative biofungicide for the suppression of many important plant diseases. It may be applied as a foliar spray or soil application by various methods either alone, or in an alternating program of applications with other registered crop protection products. For maximum effectiveness in foliar sprays, apply Serenade ASO prior to or in the early stages of disease development. When conditions are conducive to heavy disease pressure, use Serenade ASO in a rotational program with other registered fungicides. Serenade ASO may be applied with ground and aerial application equipment for indicated crops.

### **INTEGRATED PEST MANAGEMENT (IPM):**

For disease resistance management, Serenade ASO can be integrated 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.

### **USE RATE DETERMINATION:**

Carefully read and follow all label directions, use rates and restrictions. Apply Serenade ASO in foliar sprays prior to or in the early stages of disease development. Use maximum label rates and shortened application intervals for conditions conducive to rapid disease development or heavy disease pressure. For proper application, determine the number of hectares to be treated, the recommended label use rate and select appropriate application volume for the method of application to be used. For foliar applications, ensure good canopy penetration and coverage of plant parts to be protected. Prepare only the amount of solution required to treat the measured hectareage. Accurate equipment calibration is essential prior to use.

### **PREHARVEST INTERVAL:**

Serenade ASO can be applied up to and including the day of harvest, and may be applied postharvest on potato prior to storage.

### **APPLICATION INSTRUCTIONS:**

**GENERAL:** 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 provinces/territories have more stringent regulations, they should be observed.

As this product is not registered for the control of pests in aquatic systems, **DO NOT** use to control aquatic pests.

DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of washwater.

**GROUND:** Be sure to maintain agitation during mixing and application to assure uniform product suspension. For foliar applications, thorough coverage of all foliage is essential for effective disease control. Serenade ASO can be applied in commonly used ground application equipment. Use the appropriate spray pressure, water volume per hectare, nozzles, nozzle spacing and ground speed. Consult spray nozzle and accessory catalogues for specific information on proper equipment calibration.

**AIR:** Use the application rate indicated for the appropriate crop in sufficient water to achieve thorough coverage.

### **Aerial Application Instructions**

Apply only by fixed-wing or rotary aircraft equipment which has been functionally and operationally calibrated for the atmospheric conditions of the area and the application rates and conditions of this label.

Label rates, conditions and precautions are product specific. Apply only at the rate recommended for aerial application on this label.

Ensure uniform application by using appropriate marking devices and/or electronic tracking equipment.

### **Use Precautions**

Apply only when meteorological conditions at the treatment site allow for complete and even crop coverage. Apply only when meteorological conditions are in compliance with local and/or provincial authorities.

### **Operator Precautions**

Do not allow the pilot to mix product to be loaded onto the aircraft. Loading of premixed chemicals with a closed system is permitted. It is desirable that the pilot have communication capabilities at each treatment site at the time of application. The field crew and the mixer/loaders must wear the personal protective equipment described in the PRECAUTIONS section of this label. All personnel on the job site must wash hands and face thoroughly before eating and drinking. Protective clothing, aircraft cockpit and vehicle cabs must be decontaminated regularly.

Read and understand the entire label before opening this product. If you have questions, call the manufacturer at 1-888-283-6847 or obtain technical advice from the distributor or your provincial agricultural or forestry representative. Application of this specific product must meet and/or conform to the aerial uses and rates on this product.

## DIRECTIONS FOR USE:

### SOIL APPLICATIONS:

Serenade ASO suppresses the diseases specified for the listed crops. Higher rate is recommended under conditions of moderate to high disease pressure. Apply Serenade ASO in a manner that will concentrate the product in the seed, root, or transplant zone. Delivery of Serenade ASO to the seed, root, or transplant zone can be accomplished by in-furrow application, transplant drench, broadcast or banded applications on the soil surface, or by surface drip irrigation. These application methods facilitate the colonization of crop roots with the active ingredient and optimize efficacy.

For in-furrow applications spray Serenade ASO in a narrow band with the spray directed at the seed and surrounding soil before covering the seed or seed piece. For broadcast or banded application to the soil surface, Serenade ASO must be incorporated into the seed zone by rainfall or overhead irrigation within 24 hours. Serenade ASO may also be applied via overhead irrigation. Drip irrigation applications should be made with the first irrigation after seeding or transplanting. Serenade ASO may be injected or shanked into the soil, at the seed zone, prior to planting a crop. With transplanted crops, optimum performance is achieved when Serenade ASO is applied in the drench water at the time of transplanting.

After crop germination or transplanting, additional applications of Serenade ASO may be made. Such applications may include drip irrigation (surface or subsurface), directed sprays or shanking in. Use higher rates with broadcast applications and in fields with a history of disease problems. Serenade ASO has a 0 day PHI, and can be applied up to, and including, the day of harvest. Serenade ASO can be used in a rotational program with other registered fungicides which control the disease. Do not use on crops that are not specifically listed on the label.

### Ground Application Only

<b>Crop Group 1: Root, tuber vegetables</b> <b>Garden beet, sugar beet, carrot, celeriac, chervil, chicory, ginseng, horseradish, parsley, parsnip, potato, radish, Oriental radish, rutabaga, salsify, sweet potato, turnip.</b>		
Disease Suppressed	Rate (litre/ hectare)	Soil Application Methods and Instructions*
Rhizoctonia root rot, black scurf and stem canker ( <i>Rhizoctonia solani</i> )	2.7 - 14	1. Surface applications 2. Transplant drench 3. In-Furrow Applications 4. Shanked-In and Injected Applications 5. Post planting applications at any crop stage
Phytophthora root rot and pink rot ( <i>Phytophthora erythroseptica</i> )		
Pythium root rot and cavity spot ( <i>Pythium</i> spp.)		
Fusarium root rot ( <i>Fusarium</i> spp.)		

<b>Crop Group 3: Bulb Vegetables</b> <b>Garlic, leek, onion, shallot</b>		
Disease Suppressed	Rate (litre/ hectare)	Soil Application Methods and Instructions*
Rhizoctonia damping-off and root rot ( <i>Rhizoctonia solani</i> )  Pink root ( <i>Phoma terrestris</i> )  Pythium root rot ( <i>Pythium</i> spp.)	2.7 - 14	1. Surface applications 2. Transplant drench 3. In-Furrow Applications 4. Shanked-In and Injected Applications 5. Post planting applications at any crop stage

<b>Crop Group 4: Leafy vegetables</b> <b>Celery, lettuce, parsley, raddichio, rhubarb, spinach, Swiss chard</b>		
<b>Crop Group 5: Brassica (Cole) leafy Vegetables</b> <b>Broccoli, brussels sprouts, cabbage, cauliflower, collards, kale, kohlrab, mustard greens</b>		
Disease Suppressed	Rate (litre/ hectare)	Soil Application Methods and Instructions*
Rhizoctonia damping-off and root rot ( <i>Rhizoctonia solani</i> )  Phytophthora root rot ( <i>Phytophthora erythroseptica</i> )  Pythium root rot ( <i>Pythium</i> spp.)	2.7 - 14	1. Surface applications 2. Transplant drench 3. In-Furrow Applications 4. Shanked-In and Injected Applications 5. Post planting applications at any crop stage

<b>Crop Group 6: Legume Vegetables</b> <b>Bean (<i>Lupinus</i> spp., <i>Phaseolus</i> spp., and <i>Vigna</i> spp.), chickpea, lentil, and pea (all types)</b>		
Disease Suppressed	Rate (litre/ hectare)	Soil Application Methods and Instructions*
Fusarium root rot ( <i>Fusarium</i> spp.)  Pythium root rot ( <i>Pythium</i> spp.)  Rhizoctonia root rot ( <i>Rhizoctonia solani</i> )	2.7 - 14	1. Surface applications 2. Transplant drench 3. In-Furrow Applications 4. Shanked-In and Injected Applications 5. Post planting applications at any crop stage



<b>Crop Group 8: Fruiting Vegetables</b> <b>Eggplant, ground cherry, okra, pepino, peppers (all varieties), tomatillo, tomatoes</b>		
Disease Suppressed	Rate (litre/ hectare)	Soil Application Methods and Instructions*
Phytophthora blight ( <i>Phytophthora capsici</i> ) Pythium root rot ( <i>Pythium</i> spp.) Rhizoctonia damping off and root rot ( <i>Rhizoctonia solani</i> ) Fusarium wilt, crown and root rot ( <i>Fusarium oxysporum lycopersici</i> )	2.7 - 14	1. Surface applications 2. Transplant drench 3. In-Furrow Applications 4. Shanked-In and Injected Applications 5. Post planting applications at any crop stage

<b>Crop Group 9: Cucurbits:</b> <b>Cantaloupe, Chinese waxgourd, cucumber, gherkin, edible gourd, melon, muskmelon, squash, pumpkin, and watermelon.</b>		
Disease Suppressed	Rate (litre/ hectare)	Soil Application Methods and Instructions*
Rhizoctonia damping off and root rot ( <i>Rhizoctonia solani</i> ) Fusarium root rot ( <i>Fusarium</i> spp.) Phytophthora blight ( <i>Phytophthora capsici</i> , <i>Phytophthora richardiae</i> ) Pythium root rot ( <i>Pythium</i> spp.)	2.7 - 14	1. Surface applications 2. Transplant drench 3. In-Furrow Applications 4. Shanked-In and Injected Applications 5. Post planting applications at any crop stage

<b>Asparagus</b>		
Disease Suppressed	Rate (litre/ hectare)	Soil Application Methods and Instructions*
Phytophthora root rot ( <i>Phytophthora</i> spp.)	2.7 - 14	1. Surface applications 2. Transplant drench 3. In-Furrow Applications 4. Shanked-In and Injected Applications 5. Post planting applications at any crop stage

<b>Peanut</b>		
Disease Suppressed	Rate (litre/ hectare)	Soil Application Methods and Instructions*
Rhizoctonia damping off and root rot ( <i>Rhizoctonia solani</i> )	2.7 - 14	<ol style="list-style-type: none"> <li>1. Surface applications</li> <li>2. Transplant drench</li> <li>3. In-Furrow Applications</li> <li>4. Shanked-In and Injected Applications</li> <li>5. Post planting applications at any crop stage</li> </ol>

<b>Strawberry</b>		
Disease Suppressed	Rate (litre/ hectare)	Soil Application Methods and Instructions*
Rhizoctonia damping off and root rot ( <i>Rhizoctonia solani</i> )	2.7 - 14	<ol style="list-style-type: none"> <li>1. Surface applications</li> <li>2. Transplant drench</li> <li>3. In-Furrow Applications</li> <li>4. Shanked-In and Injected Applications</li> <li>5. Post planting applications at any crop stage</li> </ol>

<b>Tobacco</b>		
Disease Suppressed	Rate (litre/ hectare)	Soil Application Methods and Instructions*
Rhizoctonia damping off and root rot ( <i>Rhizoctonia solani</i> )  Pythium root rot ( <i>Pythium</i> spp.)	2.7 - 14	<ol style="list-style-type: none"> <li>1. Surface applications</li> <li>2. Transplant drench</li> <li>3. In-Furrow Applications</li> <li>4. Shanked-In and Injected Applications</li> <li>5. Post planting applications at any crop stage</li> </ol>

## **\*APPLICATION INSTRUCTIONS**

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### **1. Surface applications:**

Broadcast or Band. Apply as a 15-cm band over the top of the seed row or as a broadcast spray after planting. Use higher rates for broadcast applications. Ensure incorporation into the seed zone within 24 hours of applications with rain or overhead irrigation.

Overhead irrigation. Apply with irrigation water, ensuring uniform coverage of the soil and incorporation of product into the seed zone.

Surface drip irrigation. Apply product with the first irrigation after planting.  
Instructions Continued from above.

### **2. Transplant drench:**

Apply finished spray mixture, at a rate to thoroughly soak the growing media through the root zone or as a drench or directed spray using sufficient water to soak the root zone.

### **3. In-Furrow Applications:**

Apply 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.

### **4. Shank-In and Injected Applications:**

Product can be shank-in or injected into the soil prior to-, at-, or post-planting/transplanting of crops.

### **5. Post planting applications at any crop stage:**

Apply the finished spray mixture to the soil as a drench, spray, or drip irrigation, directing it towards the base of the plant to optimize efficacy. 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. Applications may be repeated at 21-28 day intervals to enhance preventive treatments. Shorter interval is recommended under moderate to high disease pressure.

## **FOLIAR SPRAY APPLICATIONS:**

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When applied with ground or aerial spray equipment as directed, Serenade ASO will suppress the following listed diseases on the following listed field crops. Under conditions of moderate to high disease pressure, use the higher rate and shorter application intervals. For maximum effectiveness, apply Serenade ASO prior to, or at the early stages of disease development. Apply in sufficient water volume to ensure full coverage for effective control. Serenade ASO has a 0 day PHI, and can be applied up to, and including, the day of harvest. Serenade ASO can be used in a rotational program with other registered fungicides which control the disease. Do not use on crops that are not specifically listed on the label.

### **Ground Application Only**

<b>Crop Group 6: Legume vegetables</b>		
<b>Bean (<i>Lupinus</i> spp., <i>Phaseolus</i> spp., and <i>Vigna</i> spp.), chickpea, lentil, and pea (all types)</b>		
Disease suppressed	Rate (litre/ hectare)	Application Instructions
Botrytis blight ( <i>Botrytis cinerea</i> )	4.0-15.0	Begin application soon after emergence or transplant and when conditions are conducive for disease development. Repeat on 7-10 day intervals.
White Mould ( <i>Sclerotinia sclerotiorum</i> )		

<b>Soybean</b>		
Disease suppressed	Rate (litre/ hectare)	Application Instructions
White Mould ( <i>Sclerotinia sclerotium</i> )	4.0 -15.0	Begin application soon after emergence and when conditions are conducive to disease development. Repeat as necessary on a 7-10 day interval.
Brown spot ( <i>Septoria glycines</i> )	1.0 - 4.0	
Frog eye ( <i>Cercospora sojina</i> )		

## Ground and Aerial Application

<b>Canola</b>		
Disease suppressed	Rate (litre/ hectare)	Application Instructions
Sclerotinia stem rot ( <i>Sclerotinia sclerotiorum</i> )	1.0-4.0	<p>Begin application at 20% - 30% bloom. A second application may be made 7-10 days later, at approximately 50% bloom and prior to significant petal fall, if conditions for disease development remain favorable. Use higher rates in fields with a history of heavy disease pressure.</p> <p>Spray Volume: minimum 50 L/ha</p>

## POST HARVEST DISEASE PROTECTION

<b>Potatoes</b>		
Disease suppressed	Rate (mL/tonne)	Application Instructions
Silver Scurf ( <i>Helminthosporium solani</i> )	85-175	<p>Potatoes: For post harvest application to aid in the control of silver scurf. Sanitation and other cultural practices should also be employed to aid in control and minimize the potential for disease.</p> <p><u>Conveyer Line Application:</u> Prepare the equivalent of 5 - 10 liters of Serenade ASO in 100 liters of water. Spray 2 liters of the Serenade ASO/water suspension per tonne of potatoes. Potatoes must rotate along the conveyor line into the storage area to ensure complete coverage. If needed, adjust rate of spray solution to ensure thorough coverage while maintaining recommended rate of Serenade ASO per tonne of potatoes.</p>

## MINOR USES:

NOTE TO USER: READ THE FOLLOWING BEFORE USING THIS PRODUCT FOR THE INDICATED SPECIAL USE APPLICATIONS (BELOW): The DIRECTIONS FOR USE for this product for the uses described below were developed by persons other than Bayer CropScience Inc. and accepted for registration by Health Canada under the User Requested Minor Use Label Expansion program. Bayer CropScience Inc. itself makes no representation or warranty with respect to performance (efficacy) or crop tolerance (phytotoxicity) claims for this product when used on the crops listed below. Accordingly, the Buyer and User assume all risks related to performance and crop tolerance arising, and agree to hold Bayer CropScience Inc. harmless from any claims based on efficacy or phytotoxicity in connection with the uses described below.

### Alfalfa

Disease suppressed	Rate (litres/ hectare)	Application Instructions
Blossom blight ( <i>Botrytis cinerea</i> )	4.0 – 15.0	Begin application prior to disease development when environmental conditions are conducive to disease development. Use higher rate and shorter application intervals under conditions of moderate to high disease pressure. Repeat as necessary on a 7- to 10-day interval.

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