



Bayer CropScience

Bayer CropScience LP  
 P.O. Box 12014  
 2 T.W. Alexander Drive  
 Research Triangle Park, NC 27709  
 1-866-99BAYER (1-866-992-2937)

**Serenade ASO®**

Recommended use as a soil treatment on select agricultural field crops for soil borne /seedling disease control, and recommended reduced application rates on select field crops for in-furrow applications.

**EPA Reg. No. 264-1152**

**PRODUCT BULLETIN**

FOR DISTRIBUTION AND USE IN ALL STATES

**FIFRA Section 2(ee) Recommendation:** This recommendation is made as permitted by Section 2(ee) of FIFRA, as amended, and has not been submitted to or approved by the U. S. Environmental Protection Agency.

**Recommended use as a soil treatment on select agricultural field crops for soil borne /seedling disease control, and recommended reduced application rates on select field crops for in-furrow applications.**

This FIFRA Section 2(ee) recommendation contains new or additional directions for use of this product, which may not appear on the package label. Read and carefully observe the applicable directions, restrictions and precautionary statements plus all the other information appearing on the EPA-registered product label.

**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. For use only as described on this label. Not for isolation or deformulation. Do not culture.

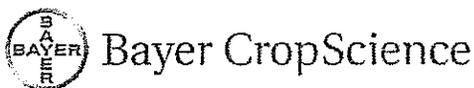
**FOR USE AS A SOIL TREATMENT ON SELECT AGRICULTURAL FIELD CROPS**

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 as stated or use Serenade ASO in a tank-mix or rotational program with other registered fungicides. Serenade Soil 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.

For MEDICAL And TRANSPORTATION Emergencies ONLY Call 24 Hours A Day 1-800-334-7577

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### APPLICATION INSTRUCTIONS:

#### All Soil Surface (Drench), Shanked-In, Injected and In-Furrow Applications:

Mix 2 qt (64 fl oz) to 6 qt (192 fl oz) of Serenade ASO in the appropriate amount of water per acre. Use the stated 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 postplanting/ 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 required 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.

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

Crops	Disease	Rate qt/acre	Application Instructions
<b>Brassica (Cole) Leafy Vegetables</b> Broccoli Cabbage Cauliflower Brussels Sprouts Collards Kale Mustard Greens Kohlrabi and other brassica leafy vegetables	<i>Rhizoctonia</i> spp. <i>Verticillium</i> spp.*  <b>Clubroot*</b> <i>Plasmiodiophora brassicae</i>  <b>*NOT FOR USE IN CALIFORNIA</b>	2 - 6	<b>All Soil Surface (Drench), Shanked-In, Injected and In-Furrow Applications:</b> Mix 2 qt (64 fl oz) to 6 qt (192 fl oz) of Serenade ASO in the appropriate amount of water per acre. Use the stated 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 Soil can be mixed with chemical fungicides registered for soil applications. <b>Soil Surface (Drench) Applications At Planting:</b> 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. <b>Shanked-In and Injected Applications:</b> 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. <b>In-Furrow Applications:</b> 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. <b>Soil Surface (Drench) Applications At Any Stage of Growth:</b> 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.
<b>Bulb Vegetables*</b> Onion Garlic Shallots and other bulb vegetables (including those grown for seed production)	<b>Pink Root *</b> <i>Phoma</i> spp. – (Suppression)  <b>*NOT FOR USE IN CALIFORNIA</b>		

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Crops	Pests	Rate qt/acre	Application Instructions
Citrus Fruit* Orange Grapefruit Lemon Tangerine Tangelo Pummelo and other citrus crops	<i>Pythium spp.*</i>  *NOT FOR USE IN CALIFORNIA	4 - 6	<p><b>All Soil Surface (Drench), Shanked-In, Injected and In-Furrow Applications:</b>            Mix 4 qt (128 fl oz) to 6 qt (192 fl oz) of Serenade ASO in the appropriate amount of water per acre. Use the stated 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><b>Soil Surface (Drench) Applications At Planting:</b>            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><b>Shanked-In and Injected Applications:</b>            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> <p><b>In-Furrow Applications:</b>            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><b>Soil Surface (Drench) Applications At Any Stage of Growth:</b>            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>

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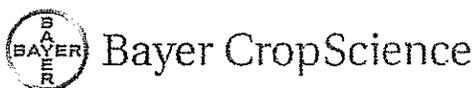
Crops	Pests	Rate qt/acre	Application Instructions
Continued Citrus Fruit* Orange Grapefruit Lemon Tangerine Tangelo Pummelo and other citrus crops	<i>Phytophthora spp.*</i>  *NOT FOR USE IN CALIFORNIA	4 - 6	<b>Soil Surface (Drench) Applications At Root Flush:</b> Apply 1 fl oz of the finished spray mixture per plant to the surface of the soil at root flush (just prior to foliar (vegetative) flush) 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 root or transplant zone. Normal operation of overhead sprinklers and drip irrigation systems are sufficient for effective applications.
Corn* Sweet Corn Popcorn Seed Corn Silage Corn Field Corn	<i>Rhizoctonia spp.*</i> <i>Pythium spp.*</i> <i>Fusarium spp.*</i>  *NOT FOR USE IN CALIFORNIA	2 - 6	<b>All Soil Surface (Drench), Shankd-In, Injected and In-Furrow Applications:</b> Mix 2 qt (64 fl oz) to 6 qt (192 fl oz) of Serenade ASO in the appropriate amount of water per acre. Use the stated 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. <b>Soil Surface (Drench) Applications At Planting:</b> 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. <b>Shanked-In and Injected Applications:</b> 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.
		1 - 6	<b>In-Furrow Applications:</b> 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.

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Cucurbit Vegetables Cucumber Cantaloupe Melon Muskmelon Squash Watermelon and other cucurbit vegetables	<i>Rhizoctonia spp.</i> <i>Pythium spp.</i> <i>Fusarium spp.</i> <i>Verticillium spp.*</i> <i>Phytophthora spp.</i>  *NOT FOR USE IN CALIFORNIA	2-6	<p><b>All Soil Surface (Drench), Shanked-In, Injected and In-Furrow Applications:</b>            Mix 2 qt (64 fl oz) to 6 qt (192 fl oz) of Serenade ASO in the appropriate amount of water per acre. Use the stated 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><b>Soil Surface (Drench) Applications At Planting:</b>            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><b>Shanked-In and Injected Applications:</b>            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> <p><b>In-Furrow Applications:</b>            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><i>(continued on next page)</i></p>

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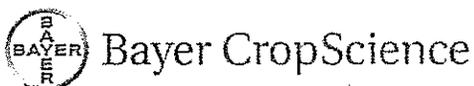
Crops	Pests	Rate qt/acre	Application Instructions
Fruiting Vegetables Pepper Tomato Eggplant Ground Cherry Tomatillo Okra and other fruiting vegetables	<i>Rhizoctonia spp.</i> <i>Pythium spp.</i> <i>Fusarium spp.</i> <i>Verticillium spp.*</i> <i>Phytophthora spp.</i>  <b>*NOT FOR USE IN CALIFORNIA</b>	2 - 6	<i>(continued from previous page)</i> <b>Soil Surface (Drench) Applications At Any Stage of Growth:</b> 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.
Leafy Vegetables Lettuce Celery Spinach Parsley Radicchio and other leafy vegetables	<i>Rhizoctonia spp.</i> <i>Verticillium spp.</i>		

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Crops	Pests	Rate qt/acre	Application Instructions
Continued Leafy Vegetables Lettuce Celery Spinach Parsley Radicchio and other leafy vegetables	Sclerotinia Head and Leaf Drop - <i>Sclerotinia spp.</i>	2 - 6	<p><b>All Soil Surface (Drench), Shanked-In, Injected and In-Furrow Applications:</b>          Mix 2 qt (64 fl oz) to 6 qt (192 fl oz) of Serenade ASO in the appropriate amount of water per acre. Use the stated 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><b>Soil Surface (Drench) Applications At Planting:</b>          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. Repeat applications on 10- to 14-day intervals if conditions for disease development persist. Use the stated higher rates under conditions conducive to moderate to severe disease pressure. Light irrigation after application to incorporate the product may improve disease control.</p> <p><b>Shanked-In and Injected Applications:</b>          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. Repeat applications on 10- to 14-day intervals if conditions for disease development persist. Use the stated higher rates under conditions conducive to moderate to severe disease pressure. Light irrigation after application to incorporate the product may improve disease control.</p> <p><i>(continued on next page)</i></p>

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Continued Leafy Vegetables  Lettuce Celery Spinach Parsley Radicchio and other leafy vegetables	Sclerotinia Head and Leaf Drop - <i>Sclerotinia spp.</i>	2 - 6	<i>(continued from previous page)</i> <b>In-Furrow Applications:</b> 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. Repeat applications on 10- to 14- day intervals if conditions for disease development persist. Use the stated higher rates under conditions conducive to moderate to severe disease pressure. Light irrigation after application to incorporate the product may improve disease control. <b>Soil Surface (Drench) Applications At Any Stage of Growth:</b> 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 on 10- to 14-days intervals if conditions for disease development persist. Use the stated higher rates under conditions conducive to moderate to severe disease pressure.

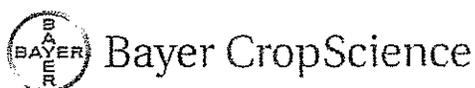
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Legumes Vegetables (Succulent or Dried) Beans Green Beans Snap Beans Shell Beans Soybeans Dry Beans Garbanzo Beans Lima Beans Peas Chick Peas Split Peas Lentils and other legume (including those grown for seed or oil production)	<i>Rhizoctonia spp.</i> <i>Pythium spp.*</i> <i>Fusarium spp.*</i> <i>Verticillium spp.*</i> <i>Phytophthora spp.*</i>  *NOT FOR USE IN CALIFORNIA	2 - 6	<p><b>All Soil Surface (Drench), Shanked-In, Injected and In-Furrow Applications:</b>            Mix 2 qt (64 fl oz) to 6 qt (192 fl oz) of Serenade ASO in the appropriate amount of water per acre. Use the stated 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><b>Soil Surface (Drench) Applications At Planting:</b>            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><b>Shanked-In and Injected Applications:</b>            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> <p><b>In-Furrow Applications:</b>            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><b>Soil Surface (Drench) Applications At Any Stage of Growth:</b>            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>

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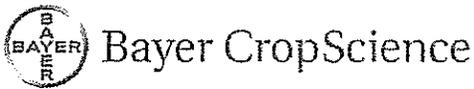
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# PRODUCT BULLETIN

Crops	Pests	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)	<i>Rhizoctonia spp.</i> <i>Pythium spp.</i> <i>Fusarium spp.</i> <i>Verticillium spp.*</i> <i>Phytophthora spp.</i> <i>Erwinia spp.*</i>  *NOT FOR USE IN CALIFORNIA	2 - 6	<p><b>All Soil Surface (Drench), Shanked-In, Injected and In-Furrow Applications:</b>            Mix 2 qt (64 fl oz) to 6 qt (192 fl oz) of Serenade ASO in the appropriate amount of water per acre. Use the stated 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><b>Soil Surface (Drench) Applications At Planting:</b>            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><b>Shanked-In and Injected Applications:</b>            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> <p><b>In-Furrow Applications:</b>            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><b>Soil Surface (Drench) Applications At Any Stage of Growth:</b>            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>
Strawberry	Verticillium Wilt <i>Verticillium dahlia</i>		<p><b>Soil Surface (Drench) Applications At Any Stage of Growth:</b>            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>

For MEDICAL And TRANSPORTATION Emergencies ONLY Call 24 Hours A Day 1-800-334-7577

For PRODUCT USE Information, Call 1-866-99BAYER (1-866-992-2937)

As with any crop-protection product, always read and follow label directions.

For additional information call toll-free 1-866-99BAYER (1-866-992-2937).