Label Expansions for Serenade MAX and ASO Biofungicides for new crops and new diseases granted registration

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AgraQuest Inc., UAP Canada and the Pest Management Regulatory Agency recently announced the registration of significant label expansions for Serenade MAX and Serenade ASO Biofungicides for suppression of a number of commonly occurring fungal and bacterial diseases. Serenade MAX and ASO are derived from the bacterium *Bacillus subtilis* and offer growers an effective biological control alternative for these diseases.

Serenade MAX and ASO are broad spectrum, preventative biofungicides that can be applied as a foliar spray alone, or in an alternating spray program with other registered crop protection products. For maximum effectiveness they should be applied prior to or in the early stages of disease development. The biological mode of action of Serenade MAX and ASO means that they are suitable for use in a disease resistance management program with other registered fungicides.

The following table provides a **summary** of the new crop and new disease registrations on the Canadian labels for Serenade MAX and ASO Biofungicides. For detailed instructions consult the full Serenade MAX and ASO labels.

New Crop(s) addition	Disease(s) addition	Rate ASO (L per ha)	Rate MAX (kg per ha)	Application Instructions
Crop group 13; Berries	Bacterial blight	4 - 12	1 - 3	Apply before fall rains and again during dormancy before spring.
Blueberries (highbush, lowbush)	Mummy berry	24	3.5 - 6	Begin applications at the bud break stage. Repeat as necessary on a 7 – 14 day interval
Crop Group 5 (Brassica vegetables)	Downy mildew, Pin rot (*Alternaria/Xanthomonas* complex)	8 - 15	2 - 3	Make the 1st application at emergence or immediately following transplanting. Repeat applications on 10 – 14 day intervals if conditions for disease development continue.
Soybeans	Sclerotinia stem rot	4 - 15	1 - 3.5	Begin application soon after emergence and when conditions are conducive to disease development. Repeat as necessary on a 7 – 10 day interval.
	Brown spot, frog eye leaf spot	1 - 4	0.25 – 1	
Peanuts	Leaf spot (*Cercospora* and *Cercosporidium*)	4 - 12	1 - 3	Begin application soon after emergence and when conditions are conducive to disease development. Repeat as necessary on a 7 – 10 day interval.
Crop Group 1 (Root and tuber vegetables)	Sclerotinia white mold	8 - 15	2 - 4	Begin application soon after emergence and when conditions are conducive to disease development. Repeat as necessary on a 7 – 10 day interval.

New Crop(s) addition	Disease(s) addition	Rate ASO (L per ha)	Rate MAX (kg per ha)	Application Instructions
Potatoes	Early blight	8 - 15	2 - 4	Begin application soon after emergence and when conditions are conducive to disease development. Repeat as necessary on a 7 – 10 day interval.
Crop group 9 (cucurbits)	Downy mildew	5 - 15	1 - 3	Begin application soon after emergence or transplant and when conditions are conducive to disease development. Repeat as necessary on a 7 to 10 day interval. When environmental conditions and plant stage are conducive to rapid disease development, use Serenade MAX in a rotational program with other registered fungicides.
Tomatoes, Peppers	Bacterial spot	4 - 15	1 - 3	Begin application soon after emergence or transplant and when conditions are conducive to disease development. Repeat as necessary on a 7 to 10 day interval. When environmental conditions and plant stage are conducive to rapid disease development, use Serenade MAX in a rotational program with other registered bacteriacides.
Crop Group 4 (Leafy vegetables)	Sclerotinia rot	5 - 15	1 - 3	Make the 1st application at planting. Make a 2nd application as a directed spray with multiple nozzles per seed line in sufficient water to ensure thorough coverage of lower plant leaves and surrounding soil surface within 7 days of thinning. Repeat applications on 10 -14 day intervals if conditions for disease development persist.
	Grey mold	4 - 12	1 - 3	Begin applications soon after emergence or transplant and continue as necessary on a 7 to 10 day interval. When environmental conditions are conducive to disease development use Serenade MAX in a rotational program with other registered fungicides.
	Powdery mildew	4 - 12	3 - 6	Begin applications at the 1st sign of disease or when conditions become conducive for disease development. Repeat as necessary on a 7 – 10 day interval.
Spinach	White rust	4 - 8	1 - 2	Begin applications at the 1st sign of disease or when conditions become conducive for disease development. Repeat as necessary on a 7 – 10 day interval.
Crop group 12 (Stone fruits)	Brown rot	8 - 12	2 - 3	Begin application at early bloom and repeat as necessary through petal fall on a 7 day interval.

New Crop(s) addition	Disease(s) addition	Rate ASO (L per ha)	Rate MAX (kg per ha)	Application Instructions
Radish, turnip and rutabaga	Downy mildew	10	2.5	Begin application when environmental conditions are conducive to disease development and repeat on 7 -10 day intervals.
Canola	Sclerotinia stem rot	1 - 4	0.25 – 1	Ground and aerial application: begin application at 20 – 30 % bloom. A 2nd 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.

Post Harvest Disease Protection

New Crop(s) addition	Disease(s) addition	Rate ASO (mL per tonne)	Application Instructions
Potatoes (PH) [potatoes treated post harvest may not be exported to USA]	Silver scurf	85 - 175	Potatoes: for post harvest application to aid in the control of silver scurf. Sanitation and other cultural practices should also be employed. Conveyer Line Application: 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 conveyer line into the storage area to ensure complete coverage.

Serenade MAX and ASO biofungicides should be used in an integrated disease management program and in rotation with other management strategies. Follow all other precautions and directions for use on the Serenade MAX and ASO labels.

This minor use project sponsored by the Minor Use office of OMAFRA was submitted in June 2008 in response to minor use priorities identified by producers and extension personnel. Because of the size of the submissions, PMRA converted the submission to a Category B submission; however we worked very closely with the registrant and PMRA to maintain the review as though the projects were still label expansion submissions.

We also wish to thank the personnel of **Agraquest Inc. and UAP Canada Inc.** for their support of this registration and the personnel of the **Pest Management Regulatory Agency** for evaluating and approving this important pest management tool.

For copies of the new labels contact Jim Chaput, OMAFRA, Guelph (519) 826-3539 or visit http://www.uap.ca