HORT MATTERS

OMAFRA Specialists in Horticulture and Specialty Crops.

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Switch WG Fungicide label expanded via Minor Use Program to include white mold and gray mold control on dry and succulent beans

J. Chaput, Minor Use Coordinator

The Pest Management Regulatory Agency (PMRA) recently announced the approval of an URMULE registration for **Switch 62.5 WG** Fungicide for control of white mold (*Sclerotinia sclerotiorum*) and gray mold (*Botrytis cinerea*) on dry and succulent beans in Canada. Switch Fungicide was already labeled for a number of diseases on a range of specialty crops in Canada. This minor use label expansion project has been in the system since early 2007 and addresses a significant crop management priority of both dry and succulent bean producers.

This minor use project was initiated in 2007 by the minor use office of OMAFRA as a result of minor use priorities established by growers and extension personnel in Canada. The minor use label expansion for Switch WG Fungicide is a significant step towards developing a more robust and sustainable pest management toolkit for these diseases in Canada.

The following is provided as a general outline only. Users should consult the complete label before using Switch WG Fungicide.

Switch WG Fungicide can be used for control of white mold and gray mold on dry and succulent beans at a rate of 775 – 975 g product per hectare in 175 to 225 L water per hectare as a foliar spray. A maximum of three (3) applications per crop can be made at an interval of 7 days if conditions remain favourable for disease development. In general begin applications prior to or at the onset of disease. For white mold, make the 1st application at 10 – 20 % bloom. Do not apply within 7 days of harvest for dry and succulent beans.

Switch WG Fungicide should be used in an integrated pest management program and in rotation with other management strategies to adequately manage resistance.

Follow all other precautions and directions for use on the Switch WG Fungicide label carefully.

The label expansion project for dry and succulent beans was sponsored by the minor use office of OMAFRA as a result of priorities established by producers in Canada. We also wish to thank the personnel of **Syngenta Crop Protection 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 minor use label contact Jim Chaput, OMAFRA, Guelph (519) 826-3539, Albert Tenuta, OMAFRA Field Crops Plant Pathologist at Ridgetown (519) 674-1617, Elaine Roddy, Vegetable Crops Specialist at Ridgetown (519) 674-1616 or visit the Syngenta Canada website at www.syngenta.ca/en/

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http://www.ontario.ca/crops

COMING EVENTS

October 15, **Raspberry and Blackberry High Tunnel Open House**, Cornell University, East Ithaca farm, 1 to 4 p.m. For more information contact Cathy Heidenreich at 315-787-2367 or mcm4@cornell.edu

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Ontario Leafy Brassica Greens Producers Receive Urgently Needed Emergency Use Registration For Downy Mildew

J. Chaput, Minor Use Coordinator

The Pest Management Regulatory Agency (PMRA) recently announced the approval of an emergency use registration for **RAMPART Fungicide** (potassium salts of phosphorous acid) for suppression of **downy mildew on leafy Brassica greens (crop subgroup** 5B) in Ontario. Crop subgroup 5B includes crops such as mustard greens, bok choy, pak choy, yow choy, gai choy, collards, kale, mizuna, mustard spinach and rape greens.

Rampart Fungicide was registered under the emergency use program in late 2008 in Canada for control of late blight as a post-harvest use on potatoes. A full registration submission for Rampart Fungicide is also underway by UAP Canada.

Because of a severe downy mildew outbreak on leafy Brassicas in Ontario combined with a low supply of registered fungicides in eastern North America an emergency use for RAMPART Fungicide was submitted by OMAFRA and the Fresh Vegetable Growers of Ontario (FVGO).

Ontario leafy Brassica producers have identified downy mildew as a top disease priority for several years. Although there are a few registered downy mildew fungicides, the supplies of the key fungicides were used up very quickly in 2009 due to widespread disease outbreaks on several major crops. Canadian leafy Brassica producers do not have access to as many products to manage downy mildew including products like Rampart Fungicide. This represents a significant area of concern in the current pest control product technology gap as identified by the North American Free Trade Agreement (NAFTA) technical working group on pesticides.

Without access to Rampart Fungicide, the Ontario leafy Brassica crops industry faced the risk of very serious losses to downy mildew in 2009 and in fact the risk of serious losses remains critical.

The emergency use registration of Rampart Fungicide will help in the interim to manage the current downy mildew outbreak; however management of downy mildew requires a comprehensive IPM and resistance management program with access to all available tools and strategies. The following is provided as general information only. Users should consult the complete label before using Rampart Fungicide.

Rampart Fungicide can be used for suppression of downy mildew on leafy Brassicas in Ontario until December 31, 2009 only. Rampart can be applied at a rate of 3 - 7 L product per hectare in 300 – 500 L water per hectare. Use the higher rate when disease pressure is severe. Apply at 2 – 3 week intervals and more frequently if disease pressure is severe, however do not apply at less than 3 day intervals. A pre-harvest interval of 0 days is permitted for Rampart Fungicide on leafy Brassicas. Follow all other precautions and directions for use on the Rampart Fungicide label carefully.

Rampart Fungicide should be used in an IPM program and in rotation with other management strategies to adequately manage resistance.

We wish to thank Dr. Jennifer Allen, OMAFRA, Guelph and the FVGO for helping to prepare the submission and the rationale documents on behalf of Ontario leafy Brassica producers. We also wish to thank the **Ontario Ministry** of the Environment, Loveland Products 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 emergency use label contact Dr. Jennifer Allen, OMAFRA Vegetable Crop Specialist at Guelph (519) 826-4963, Jim Chaput, OMAFRA, Guelph (519) 826-3539 or contact UAP Canada Inc. at 1-800-265-4624 or www.uap.ca

Chilling injury and sweet potatoes

Melanie Filotas, Integrated Pest Management Specialist, Specialty Crops

It is commonly known that sweet potatoes cannot tolerate a heavy spring or fall frost, and this fact influences the timing of both planting and harvest in northern growing regions. However, as we head into the cooler temperatures of fall, it is important to remember that sweet potatoes are also susceptible to chilling injury when roots are exposed to temperatures of 10-12°C or less.

Chilling injury can be defined as damage to fruits and vegetables exposed to temperatures above their freezing point but below some minimum temperature (usually 5-15°C). It is common in plants originating from tropical or subtropical regions. Chilling injury differs from injury due to freezing, where damage is due to ice crystals forming in the tissues and is immediately obvious. With chilling injury, exposure to lower temperatures can damage cell membranes or affect the normal metabolism of plant tissues, resulting in a cascade of other reactions. In contrast to freezing damage, chilled roots often appear fine when dug, but may decay quickly during curing. Sometimes, symptoms may not even become evident until several weeks after roots are placed into storage.

Fig 1 – Tissue decay in sweet potato exposed to chilling temperatures in the field. This root appeared fine at harvest, with decay developing during curing.

Symptoms of chilling injury in sweet potatoes can be difficult to diagnose and include surface pitting, loss of dry matter, internal breakdown and discolouration of tissue when exposed to air (Figure 1 and 2). Chilling greatly increases susceptibility of roots to decay in storage due to a variety of fungi (Figure 3). Chilling can also negatively affect the colour, texture, taste and smell of sweet potatoes, and the core of the root may stay hard after cooking.

Fig 2 – Breakdown extending into the interior of the root. Other symptoms include pitting, dry matter loss and impacts on taste and quality.

The key thing to keep in mind is that, when we are talking about chilling injury to unharvested roots, the important temperature is that of the **soil around the roots** and not the ambient air temperature. Soil temperatures at the depth of a sweet potato root are usually different than that of the air (typically being higher during the fall months). There are also many factors that can influence soil temperature such as wind, soil moisture, crop canopy, rain, sunlight and height of the hill. This is why it is a good idea to take soil temperatures directly, rather than relying solely on air temperatures when determining if there is potential for chilling injury to roots. At the Simcoe Research Station, soil temperatures averaged 21°C between September 12 and 15, and at a depth of 5 cm the lowest temperature recorded was 13.8°C, so chilling temperatures are not far away. In southwestern Ontario, the risk of injury from exposure to chilling temperatures increases greatly in late September and early October.

Fig 3 – Chilling greatly increases susceptibility of sweet potatoes to colonization by various fungi in storage.

Furthermore, chilling injury is a function of both the temperature and the length of exposure, so exposure to one or two hours at 4°C may cause the same amount of damage as several hours at 7°C. The effects are also cumulative – one brief period of exposure to soil temperatures below 10°C may not result in any significant injury, while several days where soil temperatures dip below 10°C for short periods could be damaging.

All of these factors combine to make avoiding chilling injury a challenge. Monitor soil temperatures frequently, preferably early in the morning when they are likely to be lowest, and try to finish harvest before soil temperatures are consistently dropping below 10°C. If you are forced to harvest later in the season, consider separating these roots from earlier harvested roots, as these will be more likely to develop fungal rots in storage. Ensure harvested roots are moved out of the field as quickly as possible if air temperatures during harvesting operations are dropping below 12°C, and never leave harvested roots in the field overnight.

The Impact of Travel Speed on Spraying -or- Slow Down to Spray the Roses

Dr. Jason S.T. Deveau, Application Technology Specialist

Whether boom or airblast spraying, travel speed impacts application rate, coverage uniformity, canopy penetration and drift.

As forward speed increases, spray can be diverted backwards into upward wind currents and vortices behind the sprayer. This increases variability in spray deposit, which is generally undesirable and adds to drift. This effect is amplified when driving into the wind because the shearing effect increases the number of driftable fines, even when using coarser droplets. One study on boom spraying showed that reducing speed from 8 to 6 kph has the potential to reduce drift by ~50%.

When performing airblast applications, canopy penetration and uniformity is greatly improved at slower speeds. Air and droplet velocity has a high rate of drop off, and this loss of momentum means it takes time for spray to get to the target.

Studies in grapes demonstrated that increasing air volume does not compensate for higher forward speeds; it reduced deposition on the spray side of a fully developed canopy, while it did not affect deposition on the far side. Moreover, the backward angles increased variability and ground deposition beneath vine rows. Adding more liquid will not permit a higher forward speed, either. This will only increase the material deposited on the area already sprayed.

So, why do growers spray so quickly?

Time Constraints

Obviously, there are time constraints associated with spraying; many pests and diseases develop rapidly under certain conditions, limiting the window of opportunity for control. Uncooperative weather often exasperates the issue by imposing further restrictions. Given that many growers have insufficient sprayer capacity for their plantings, they often resort to alternate row spraying and higher forward speeds in order to keep up. Employing additional operators or additional sprayers may not be economically feasible, so what are the alternatives?

Studies have shown the actual "spraying" part of a spray operation can be less than 50%. You can save some of that time by:

- installing a rapid-fill overhead water source and using large-bore hoses;
- using worksheets to allow operators to refill with all the facts on paper, rather than trying to calculate rates on the fly;
- moving water supply tanks closer to spray operations to reduce travel time when refilling;
- reducing spray volume to some extent, being aware that this could reduce efficacy;
- increasing boom width, being aware they are more difficult to keep level;
- employing over-the-row sprayers to apply to multiple rows in a single pass; and
- ensuring your speedometer is properly calibrated – see below.

Calibration

Speedometers can become inaccurate over time or because of wheel slippage during spraying. An important part of sprayer calibration is checking your driving speed by timing how long it takes to drive over a measured distance under true field conditions.

- Use a tape measure to place 2 stakes 50 metres (164 feet) apart in the field.
- Fill the sprayer half full of water.
- Select the throttle and gear settings you plan to use when spraying.
- Drive the distance between the stakes three times, timing each pass in seconds. Each time, make sure the tractor is at the desired spraying speed as you pass the first stake. Keep driving at this speed until you pass the second stake. Run the course in both directions and do not drive in the same tracks.
- Take the average time of three passes and use the formula below:

Driving Speed (km/hr) = 50 meters / average travel time (seconds) x 3.6 (a constant)

A modern alternative is to use a hand-held GPS receiver to determine accurate forward speed in specific gears at known RPMs. They're also handy for measuring row length and block areas.

So what is an effective speed?

Choosing an Effective Speed

Several factors must be considered in choosing the most effective operating speed:

- weight of sprayer being pulled;
- slope of terrain and ground conditions (leading to wheel slippage);
- the size and spacing of the crop;
- the density of the foliage;
- wind conditions; and
- the limitations of the equipment itself.

Generally, the recommended operational speed is **between 6 and 10 kph for tractor-drawn boom sprayers** and **4 to 6 kph for airblast sprayers**. There will always be exceptions, but if the speed is too fast, the pesticide will drift and will not provide optimal results.

Don't compromise the effectiveness of an already expensive and time-consuming spray programme by speeding through applications, find some good music to listen to and slow down to spray the roses.

New OMAFRA Factsheets now available online

Weed Management in Carrots—Order no. 09-045w
http://www.omafra.gov.on.ca/english/crops/facts/09-045w.htm

Six Elements of Effective Spraying in Orchards and Vineyards—Order no 09-039
http://www.omafra.gov.on.ca/english/crops/facts/09-039.htm

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Kitchener: GROWMARK Inc. – Distribution Centre
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Jordan Station: Vineland Growers Co-operative Ltd.
Thornloe: Co-op Regionale – Temiskaming Ag Centre
Orangeville: Holmes Agro Ltd.
Thunder Bay: Thunder Bay Co-op Farm Supply
Tilbury: Cargill AgHorizons
Vienna: Max Underhill's Farm Supply Ltd.

Where do I get more information?

- Visit the AGCare or Ontario Farm Animal Council websites: www.agcare.org or www.ofac.org.
- Call the Ontario Farm Animal Council/AGCare: 519-837-1326
- Contact the Ontario Ministry of Agriculture. Food and Rural Affairs Agricultural Information Contact Centre
  Toll Free: 1-877-424-1300
  Local: 519-826-4047
  Email: ag.info.omafra@ontario.ca