



HORT MATTERS

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Pest Management Guidelines for Hailed and Frosted Orchards

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A series of severe hail events hit southwestern Ontario last week resulting in considerable amounts of damage in orchards. The amount of damage in each area varies considerably from trace amounts of damage to severe fruit damage. Niagara, Hamilton, Chatham, London and Norfolk areas all reported hail damage. Many of these areas were also hit with a spring frost April 30/May 1 that resulted in a reduction in the amount of fruit. Combine the hail damage, frost damage, and poor weather during pollination time and some orchards have little or no fresh market crop (juice apples only). Growers with little or no crop still need to implement a pest management program. The extent of the program depends on the extent of the crop load in the orchard. Growers that have received hail damage may be concerned about trauma blight infections.

Hail can tear or shred leaves, puncture fruit and damage bark, making the tree more vulnerable to trauma blight infections. Traditionally OMAFRA has always recommended that growers apply Streptomycin within 12 hours of a hail event, especially on susceptible cultivars. However recent changes to the Canadian Streptomycin label indicate that the product can only be used up to 14 days after petal fall and the pre harvest interval for this product is 50 days which means that growers can not use it to manage trauma blight. Currently the only thing growers can do after a hail event is monitor the orchard carefully for fire blight and prune out infected wood wherever possible.

Orchards that have experienced a complete crop loss (juice apples only) should still make sure to follow a reduced spray program and pest monitoring should be continued. A scab program should be maintained. If growers are past the end of primary infection season and there is no scab in the orchard, then they can increase intervals between fungicide applications and adjust fungicide rates, as you would do with a normal sized crop. High scab populations will result in an increase in the overwintering populations of the scab fungus and may potentially cause more problems the following season. Management of direct pests is still important to prevent the build up of pest populations so sprays should continue to be applied for codling moth, oriental fruit moth and apple maggot. When using a reduced spray program growers may want to use border sprays of OP insecticides (Guthion, Imidan) to try to minimize costs. It is not recommended that growers use border sprays with neonicotinoids (Assail, Calypso), insect growth regulators (Confirm, Intrepid, Rimon) and Ryanodine receptor modulators (Altacor).

Preliminary research suggests that resistance to OP insecticides is developing in codling moth populations in a few Norfolk orchards. In orchards with known OP resistance in codling moth populations, or in orchards that have a history of high damage from codling moth after using OP insecticides, it is recommended that growers use alternatives to OP's for codling moth including cover sprays of Intrepid, Assail, Calypso. Indirect pests (aphids, leafhoppers, leafminers) are less of a concern in these orchards. Miticides should only be applied when bronzing occurs or when the trees are stressed by drought.

Where hail/frost has resulted in a partial crop loss (spot picking) continue with a normal insect and disease management program. Growers looking at reducing their spray bills can use border sprays of OP insecticides for codling moth and apple maggot. However, be aware that these products may not be as effective in orchards with OP resistance. Be sure to maintain good coverage and use label rates. Cutting rates and improper coverage may result in inadequate pest management and potentially increase the chances of pesticide resistance developing. Managing the pests this year will help prevent insect and disease outbreaks in subsequent years.

Plant Leaf Analysis is a Management Tool that Starts with a Great Sample

Christoph Kessel, Horticulture Crop Nutrition – Program lead

Thanks to the rains and sunny weather, crops are showing great potential. But this is also the time when you begin to see possible nutrient deficiency symptoms and you might use plant tissue analysis for diagnosis. You could also be using tissue analysis on a regular basis to manage and adjust your crop's fertilizer program.

Here are 7 points to remember when collecting and submitting plant tissues for analysis:

1. Variation, variation, variation A plant's nutrient content is not constant. It can vary hourly, daily, and monthly. It is different between older and younger leaves, sunny and shaded leaves, from the base of the leaf blade to the tip and margins, and between plants. Young plants parts are undergoing rapid changes in nutrient content while those past full maturity should not be sampled. When in doubt, always select the upper, most recently matured leaves.

2. Sample a specific plant part and at an identified growth stage Collect plant tissues for which you have interpretive reference values for a specific stage of growth. Sampling a different plant tissue or at a different time makes interpretation of the results difficult. Be consistent in the tissues you select for analysis.

3. Diagnostic comparisons When using plant tissue analysis for diagnostics collect from plants showing symptoms and from healthy plants growing within the same area. The healthy plants provide you with a reference point. To make the most of your diagnosis ensure that samples collected are as similar as possible (age, stage of growth, location on plant). Analysis is done on a dry weight basis; make sure you submit the same weight.

4. The more, the merrier or at least more representative Increasing the number of individual plants represented in the submitted sample, improves the analysis for the field being evaluated. This will help manage the naturally occurring variation between plants within the field. It is better to include more individual plants for sampling than to collect more tissue from fewer plants.

5. A good analysis report starts with a good sample

Avoid collecting from plants that:

- 1 have been under long climatic or nutritional stress
- 2 damaged mechanically, insects or diseased

- 3 covered with dust or foliar sprays
- 4 are border row plants or shaded leaves within a canopy are dead.

6. Add in a soil test Completing a soil test at the same time you take the plant tissues will help in interpreting the results. Take the soils from the same area you collected the plant tissues. If using diagnostic tissue analysis, submit separate soil samples from healthy and affected plants.

7. Handling plant tissues after collecting

Make sure leaves are not contaminated with any chemicals or dust after collection.

Do not store in plastic bags

Deliver to laboratory within 24 hours. If delivery will take longer than 12 hours, cool tissues to 5°C or remove excess moisture by air drying. Tissues can also be oven dried at 80°C. Lower temperatures will not remove all water from tissues. Higher temperatures can result in thermal decomposition.

Keeping these points in mind will help you in getting accurate results back on your tissue analysis report. With a good report in hand, you can make an informed management decision.

Allegro 500F Fungicide label expanded via Minor Use Program to include clubroot control on Brassicas and disease suppression on Crop Subgroup 13B, Bushberries

J. Chaput, Minor Use Coordinator

The Pest Management Regulatory Agency (PMRA) recently announced the approval of URMULE registrations for **ALLEGRO 500F Fungicide** for control of clubroot on crop group 5, Brassicas and for suppression of mummyberry, phomopsis fruit rot and fruit anthracnose on crop subgroup 13B, bushberries (blueberries, currants, gooseberries, saskatoons, elderberries, etc.) in Canada. Allegro was already labeled for late blight on potatoes in Canada. These are the 1st minor use label expansion registrations for this product in Canada and have been in the system since 2003 as joint projects between Agriculture & Agri-Food Canada, Pest Management Centre (AAFC-PMC) and the US IR-4 program.

These minor use projects were initiated in 2003 by AAFC-PMC as a result of minor use priorities established by growers and extension personnel in Canada and the USA. The minor use label expansions for Allegro 500 F Fungicide are a significant step towards developing a more robust and sustainable pest management toolkit for these diseases in both countries.

The following is provided as a general outline only. Users should consult the complete label before using Allegro 500F Fungicide.

For clubroot control on Brassicas, crop group 5 (cabbage, cauliflower, broccoli, bok choy, Chinese broccoli, kale, kohlrabi, mustard greens, Brussels sprouts, Nappa cabbage):

Allegro 500F Fungicide can be used for control of clubroot on Brassicas either as a pre-transplant treatment or as a transplant treatment. For pre-transplant apply Allegro at a rate of 2.9 L product in 500 L water per hectare in a minimum band of 25 cm along the planting row and incorporate to a depth of 15 to 20 cm with a precision incorporator. Transplant the seedlings into the treated band.

As a transplant treatment mix 50 mL of Allegro 500F with water to make a 100 L solution. Apply 100 mL of solution per plant immediately after transplanting.

Do not make more than 1 application per season. Do not apply within 65 days of harvest for the head and stem Brassicas, subgroup 5A (broccoli, Brussels sprouts, cabbage, cauliflower, kohlrabi) and do not apply within 30 days of harvest

for the leafy Brassicas, subgroup 5B (bok choy, collards, kale, mustard greens)

Follow all other directions for use on the Allegro 500F Fungicide label carefully.

For suppression of mummyberry, phomopsis fruit rots and fruit anthracnose on bushberries, crop subgroup 13B (blueberries, currants, elderberries, gooseberries):

Allegro 500F Fungicide can be used for suppression of mummyberry, phomopsis fruit rots and fruit anthracnose on bushberries at a rate of 2.24 L product per hectare in 300 to 1000 L water per hectare as a foliar spray. A maximum of four (4) applications per season can be made at an interval of 7 to 10 days. Begin applications at bud break and repeat until petal fall stage. Do not apply within 30 days of harvest for bushberries.

Allegro 500F Fungicide should be used in an integrated pest management program and in rotation with other management strategies to adequately manage resistance.

Follow all other directions for use on the Allegro 500F Fungicide label carefully.

The minor use projects for Brassicas and bushberries were sponsored by AAFC-PMC and trials were conducted jointly with the US IR-4 program as a result of minor use priorities established by producers in Canada and the USA. We also wish to thank the personnel of **ISK Biosciences Corporation** and 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 labels contact Jim Chaput, OMAFRA, Guelph (519) 826-3539, Pam Fisher, OMAFRA berry crops specialist at Simcoe (519) 426-2238, Kristy Grigg, OMAFRA acting vegetable specialist at Guelph (519) 826-4963 or visit the Syngenta Canada website at www.syngenta.ca/en/

CROP SUB-GROUP 1B, ROOT VEGETABLES added to APRON XL LS SEED TREATMENT label

J. Chaput, Minor Use Coordinator

The Pest Management Regulatory Agency (PMRA) recently announced the approval of a minor use label expansion for **APRON XL LS SEED TREATMENT** (metalaxyl-m) for control of *Pythium* damping-off on crop sub-group 1B, root vegetables (except sugar beet) seeds which includes celeriac, chicory, edible burdock, carrots, red beets, ginseng, horseradish, oriental radish, radish, parsnips, rutabaga, turnips, salsify, turnip-rooted chervil and turnip-rooted parsley.

Apron XL LS Seed Treatment was already labeled in Canada for management of *Pythium* damping-off on most cereal grains, legumes, sugar beets, onions, leafy vegetables, cucurbits, sunflowers and turf seed. This minor use project was sponsored by Agriculture & Agri-Food Canada, Pest Management Centre (AAFC-PMC) in 2005 as a result of minor use priorities put forward by Canadian producers; however both Ontario and Quebec have been working towards this registration since 1997. Quebec helped to complete the data requirements for this registration in collaboration with AAFC-PMC.

After more than 10 years of work and effort, this minor use registration addresses a significant minor use priority for producers of root vegetables in Canada who have a need for harmonized disease management options. Apron XL LS Seed Treatment can be applied at a rate of **20 – 40 mL product per 100 kg seed** as a seed treatment before planting.

Apron XL LS Seed Treatment should be used in an integrated pest management program and in rotation with other management strategies. Follow all other precautions and directions for use on the Apron XL LS Seed Treatment label.

We wish to thank AAFC-PMC for completing the data requirements and making this minor use submission to PMRA. We also wish to thank the Quebec Horticultural Council and MAPAQ who have worked patiently and diligently in cooperation with stakeholders for a number of years to secure this registration. Furthermore, we 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 supplemental label contact Kristy Grigg, OMAFRA acting vegetable specialist, Jim Chaput, OMAFRA, Guelph, (519) 826-3539 or visit Syngenta Crop Protection at www.syngenta.ca

POTATO GROWERS Receive Minor Use Registration for AGRI-MEK Miticide for control of SPIDER MITES including TWO-SPOTTED SPIDER MITES

J. Chaput, Minor Use Coordinator

The Pest Management Regulatory Agency (PMRA) recently announced the approval of a minor use registration for **AGRI-MEK (abamectin)** insecticide/miticide for control of spider mites including **two-spotted** mites on potatoes. The active ingredient abamectin was already labeled in Canada for control of spider mites on pome fruit, strawberries, caneberries, greenhouse ornamentals, greenhouse peppers, cucumbers and tomatoes.

Spider mites are not a major pest of potatoes in Eastern Canada; however they are a significant pest of potatoes in British Columbia who sponsored this minor use submission originally in 2001. A new submission was made in 2005 and the data requirements were fulfilled by BC in 2007.

AGRI-MEK insecticide/miticide can be used for control of spider mites including two spotted spider mites on potatoes at a rate of 1 L product per hectare in 185 L water per hectare with a 14 day pre-harvest interval. Apply AGRI-MEK when mites first appear and a 2nd application if monitoring indicates it is necessary at a 7 day interval. Do not apply more than 2 applications per year.

Follow all other directions for use and precautions on the AGRI-MEK insecticide/miticide label carefully. AGRI-MEK insecticide/miticide should be used in an IPM program and in rotation with other management strategies to adequately manage resistance.

We thank the British Columbia Ministry of Agriculture and Lands for sponsoring this minor use label expansion. We also wish to thank **Syngenta Crop Protection Canada** and Engage Agro Corporation for their support of this registration and the personnel of the Pest Management Regulatory Agency for evaluating and approving this important pest management tool.

ONTARIO, NOVA SCOTIA, MANITOBA AND ALBERTA DRY BULB ONION GROWERS Receive Urgently Needed Emergency Use Registrations for THRIPS

J. Chaput, Minor Use Coordinator

The Pest Management Regulatory Agency (PMRA) recently announced the approval of an emergency use registration for **CARZOL SP** Miticide-Insecticide (formetanate hydrochloride) for control of **onion** thrips on dry bulb onions in Nova Scotia, Ontario, Manitoba and Alberta. Carzol SP Miticide-Insecticide was already labeled in Canada for control of mites and leafhoppers on apples, pears, peaches and nectarines. Furthermore a complete minor use submission will be prepared to seek eventual, full registration of CARZOL for thrips control on dry bulb onions in Canada.

Onion thrips, *Thrips tabaci* (Lindeman) are a pest of onions around the world. In Canada, it is considered a key pest wherever onions are grown and the number one pest of onions in most provinces. Various life stages of onion thrips actively feed on onion leaves, reducing photosynthesis, reducing plant vigor and yield, and vector and transmit Iris Yellow Spot Virus (IYSV).

In the US, onion thrips were ranked as the number one pest requiring urgent attention due to lack of effective solutions at the 2005 US IR-4 Food Use workshop. Rapid resistance development to all available, registered materials has become widespread in North America and around the world. Carzol SP Miticide-Insecticide was identified as a viable solution to help manage onion thrips. There have been no new products registered in Canada for onion thrips management in several years and control failures continue to increase.

The emergency use registration of Carzol SP will help in the interim to manage resistant thrips populations; however management of onion thrips will require 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 Carzol SP.

CARZOL SP Miticide-Insecticide can be used for control of onion thrips in dry bulb onions in Ontario, Nova Scotia, Manitoba and Alberta until October 31st, 2008 only. Carzol SP can be applied once at a rate of 1.4 kg product per hectare or Carzol can be applied twice at a rate of 0.84 kg product per hectare at a 7 – 10 day interval. Do not exceed 1.68 kg per hectare per year. A minimum spray volume of 94 L water per hectare is recommended and a 30 day pre-harvest interval is permitted.

Follow all other directions for use on the CARZOL SP Miticide-Insecticide label carefully.

CARZOL SP Miticide-Insecticide 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 for preparing the rationale documents on behalf of Ontario Nova Scotia, Manitoba and Alberta dry bulb onion growers as well as the personnel of Manitoba Agriculture, Alberta Agriculture and Nova Scotia Agriculture for their input, support and assistance. We also wish to thank the personnel of the Ontario Ministry of the Environment, Alberta Environment, Manitoba Conservation, Nova Scotia Environment and **Gowan** Company for their support of this registration and the personnel of the Pest Management Regulatory Agency for evaluating and approving this important pest management tool. Special thanks are expressed to Kroeker Farms Limited of Winkler, Manitoba who generously covered the submission fee for this emergency use registration.

For copies of the emergency use label contact Kristy Grigg, OMAFRA Vegetable Crops specialist at Guelph (519) 826-4963, Jim Chaput, OMAFRA, Guelph (519) 826-3539 or visit UAP Canada Inc. website at www.uap.ca or N. M. Bartlett's website at <http://www.bartlett.ca/bartlett/default.htm>

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