



# HORT MATTERS

OMAFRA Specialists in Horticulture and Specialty Crops.

VOLUME NO. 9, ISSUE NO. 14

JULY 8, 2009

## Weather Causes Weed Challenges

Kristen Callow, Weed Management Program Lead - Horticulture

Cool, wet conditions have resulted in weed management challenges for most producers. The first challenge has been getting on the field to spray. Delays have resulted in producers spraying in less than optimum weather conditions and / or crop / weed growth stage conditions, resulting in less than adequate weed control and crop phytotoxicity which results in subsequent yield loss. We have also seen a lot of herbicide drift onto sensitive horticulture crops.

The second challenge has been common weeds emerging later than normal, which again causes difficulties with spray timing (ie. the crop is passed the safe stage for application).

The third challenge has been higher densities of weeds that perform well in cool / wet conditions; such as, barnyard grass and chickweed.

The fourth challenge has been slower burn down or visual weed control, which leads producers to believe that their herbicide has not worked. Typically, the herbicide is working just slower than normal. This issue tends to result in an increased number of herbicide applications, causing the potential for more resistance management issues in the future if products are not rotated.

### IN THIS ISSUE...

- Fusarium or Bulb & Stem Nematode?
- Downy Mildew—Current Status
- Reading the Leaves
- Minor Use Updates

Remember, weeds are extremely adaptive and prolific. You will never have exactly the same weed problems in your fields each year. In cool, wet conditions plant metabolism slows, until conditions improve making herbicide uptake and coverage difficult.

If we were having a hot, dry year the problems would be different. In drought conditions weeds grow thicker cuticles which serve as a barrier to herbicide absorption and harden off with thick stems and deep root systems competing with the crops for moisture. And in extreme heat plant leaves roll up to minimize moisture loss, again making herbicide coverage and uptake difficult.

Timely weed control is even more important when crops are stressed because the weeds are competing for limited resources – nutrients in wet solids and water in drought conditions.

The best thing producers can do is monitor the growth stages of both their weeds and their crop, apply herbicides when the weeds are actively growing and small to ensure good control when weather conditions are less than optimal.

## OMAFRA STAFF working for you

### Horticulture Technology

Mike Celetti	Pathologist	519-824-4120, x58910
Jim Chaput	Minor Use Coordinator	519-826-3539
Hannah Fraser	Entomologist	905-562-1674
Kristen Callow	Weed Management	519-674-1335
Christoph Kessel	Nutrition	519-824-4120, x52480
Donna Speranzini	Nutrient Management Planning Spec.	905-562-1170
Anne Verhallen	Soil Management Specialist	519-674-1614
Hugh Martin	Organic Crop Production	519-826-4587
Denise Beaton	Crop Protection Program Lead	519-826-6594
Jason Deveau	Application Technology Spec	519-426-8934

### Horticulture Crops

Marg Appleby	IPM Systems Specialist	613-475-5850
Eugenia Banks	Potato Specialist	519-826-3678
Wendy McFadden-Smith	Tender Fruit & Grape IPM Spec.	905-562-3833
Jennifer DeEll	Fresh Market Quality	519-426-1408
Pam Fisher	Berry Crop Specialist	519-426-2238
Janice LeBoeuf	Vegetable Specialist	519-674-1699
Elaine Roddy	Vegetable Specialist	519-674-1616
Ken Slingerland	Tender Fruit & Grape Specialist	905-562-1639
Leslie Huffman	Apple Specialist	519-738-1256
Kathryn Carter	Pome Fruit IPM Specialist	519-426-4322
Jennifer Allen	Vegetable Crop Specialist	519-826-4963

### Greenhouse, Agroforestry & Specialty Crops

Jim Todd	Transition Crops Specialist	519-426-3823
Melanie Filotas	Specialty Crops IPM Specialist	519-426-4434
Sean Westerveld	Ginseng & Medicinal Herbs Spec.	519-426-4323
Evan Elford	New Crop Development Specialist	519-426-4509
Wayne Brown	Greenhouse Floriculture Specialist	905-562-4141, x179
Graeme Murphy	Greenhouse Floriculture IPM Spec.	905-562-4141, x106
Shalin Khosla	Greenhouse Vegetable Specialist	519-738-1257
Gillian Ferguson	Greenhouse Vegetable IPM Spec.	519-738-1258
Pam Charbonneau	Turfgrass Specialist	519-824-4120, x52597
Jennifer Llewellyn	Nursery Crops Specialist	519-824-4120, x52671
Todd Leuty	Agroforestry Specialist	519-826-3215
Mahendra Thimmanagari	Crop Bioproducts Specialist	519-826-4593

<http://www.ontario.ca/crops>

## COMING EVENTS

July 15 & 29—**2009 Apple IPM Summer Twilight Meeting**—For more information contact Kathryn Carter—519-426-4322

July 14, 15, 16—**Ontario Weed Tour**—Woodstock, Exeter, Harrow, Ridgetown, Elora, For enquiries and/or directions to locations, please contact: Rob Nurse, [Robert.Nurse@agr.gc.ca](mailto:Robert.Nurse@agr.gc.ca), 519-738-1288

July 22—**Summer Tree Fruit Orchard Meeting**, Cedar Springs Research Station, Blenheim. 2:00-6:00 p.m. For further information contact John Zandstra at [jzandstr@ridgetownc.uoguelph.ca](mailto:jzandstr@ridgetownc.uoguelph.ca)

July 23, 2009: **Day Neutral and Plasticulture Strawberry Production**. Meet with researchers John Zandstra and Rob Nurse and visit their trials at the Cedar Springs Research Station, near Blenheim. 4 pm-7 pm. For more information call Pam Fisher 519-426-2238.

August 11, **Grape Tailgate Tour**, 12:30 pm—5:30 p.m. More information to follow

August 18, **Simcoe Vegetable and Alternative Crop Open House**, 1:30 p.m., Simcoe Research Station. Please RSVP by Aug 14 to 519-426-7127, ext 323. For more info visit: <http://www.omafra.gov.on.ca/english/crops/conferences/20090818.htm>

**Permit to Take Water Workshop**—9:00 a.m. or 1:00 p.m., Simcoe OMAFRA office.

• October 15, November 19, December 17  
For more information call 519-426-4920 or visit [http://www.omafra.gov.on.ca/english/engineer/facts/ptw\\_course.htm](http://www.omafra.gov.on.ca/english/engineer/facts/ptw_course.htm)

Subscribe on-line to receive notice by email when a new issue of Hort Matters is posted. All you need to do is enter your email address at <http://www.omafra.gov.on.ca/english/subscribe/index.html> and submit.

To receive a fax version of Hort Matters, send your fax number to: OMAFRA, Vineland Resource Centre, Box 8000, 4890 Victoria Avenue N, Vineland Station, ON L0R 2E0 or fax to 905-562-5933.

### Edited by:

Donna Speranzini, Nutrient Management Program Lead (Hort)

### Prepared by:

Cathy Mous, Client Service Rep, Vineland Resource Centre

## Suggestions?

### We'd like to hear from you

Hort Matters  
OMAFRA, Box 8000,  
4890 Victoria Avenue N,  
Vineland Station, ON L0R 2E0  
Ph. 905-562-1674 Fax 905-562-5933

Email:

[donna.speranzini@ontario.ca](mailto:donna.speranzini@ontario.ca)  
[hannah.fraser@ontario.ca](mailto:hannah.fraser@ontario.ca)

## Fusarium or Bulb & Stem Nematode?

Jennifer Allen, Vegetable Crop Specialist

This season a number of garlic growers have complained about yellowing and dieback of leaves. Tip yellowing and dieback in alliums, including onions, garlic, chives and shallots can be caused by abiotic factors such as plant overcrowding, drought, salt stress, wind desiccation and occasionally ozone damage. As well, these symptoms can be caused by biotic factors like *Fusarium* basal plate rot (*Fusarium oxysporum cepae*) and the notorious bulb & stem nematode (*Ditylenchus dipsaci*).

Both *Fusarium* and bulb & stem nematode are soil organisms capable of surviving for long periods of time. Both can enter healthy bulbs directly, or through new or old wounds such as those caused by insect injury, pink root infection, or cultivation injury. Spread occurs season to season through infected soil or via contaminated sets or cloves. Within infected fields, affected plants can be either localized or scattered throughout the field. Although it is not believed that bulb-to-bulb movement in storage is significant, this may be a concern for garlic growers who store bulbs for garlic seed stock.

Roots and basal plates can be infected at any age. In the case of *Fusarium*, symptoms include a gradual yellowing and dieback of leaves. When infected plants are pulled the roots are pinkish-brown and if cut vertically, a discolouration of the plate is evident. Optimum disease development occurs in wet soils when soil temperatures reach 25 to 28°C. Bulb & stem nematode on the other hand usually result in a sudden yellowing and dieback of leaves. When pulled, portions of the roots are completely missing and there is often a separation of the basal plate from the cloves.

If you suspect you have either of these organisms, have some samples tested. It's the only way to be sure and to implement mitigation measures for next year's crops.



Bulb & stem nematode damage



Fusarium basal plate rot



Bulb & stem nematode

### Looking for more information on Cucurbit Crop Diseases?



Visit the Ontario CropIPM website. Simply type "Ontario CropIPM" in your web browser.

CD versions of this new OMAFRA tool are available for \$10. Call Service Ontario Publications at 1-800-668-9938 or visit <https://www.publications.serviceontario.ca/ecom/>

## Downy Mildew—Current Status

Elaine Roddy, Vegetable Crop Specialist

Downy mildew has now been identified in three Kent County cucumber fields. Infection levels at all three sites are low. An outbreak has also been identified in Sandusky County, Ohio.

The long range forecast predicts a return to more favourable growing conditions. Given the extended period of wetness we have experienced this week, combined with a fair amount of new growth on the cucumber plants; growers may choose to shorten the spray interval to ensure thorough protection of the plant.

Use only targeted downy mildew fungicides at this time. Ranman and Tattoo C fungicides offer the most consistent protection available in Canada. Growers are advised to ensure they have adequate spray supplies on hand for the entire season. Products such as Ranman and Tattoo C are also registered on other (larger acreage) vegetable crops. If the wet weather continues, there may be considerable demand for these products.

### Unsprayed Areas

Ensure that all areas of the field are sprayed. We commonly see downy mildew enter a field in the small areas that have been left unsprayed. Typical problem areas include: the field edges where the boom was turned off too early or started too late; and entire rows at the edge of fields where the field size does not match the spray boom width.

### Pumpkin, Squash and Melon Disease Control Recommendations

Downy mildew is less common in pumpkin, squash and melon crops than it is in cucumbers. The disease generally appears later in the season (if at all) and does not cause the same level of devastation. Growers of these crops are more likely to encounter other foliar diseases including powdery mildew, gummy stem blight, anthracnose and alternaria.

In general, factors that promote disease development include: high humidity and extended periods of leaf wetness. Foliar infections often appear once the crop canopy has closed and air movement is restricted. Consider applying a broad spectrum fungicide just prior to row closure. This is an optimum time to achieve good spray coverage and to eliminate any low levels of disease present in the crop at this time.

Fungicide controls are most effective when they are applied prior to infection, or at a very early stage of infection. There are a number of different broad spectrum fungicides registered for use in the cucurbit crops. Rotating between several different products will help to extend the range of diseases controlled as well as prevent the development of resistance.

Product	Labeled Diseases	Chemical Family	Notes
<i>Mancozeb</i> Dithane Manzate Penncozeb	Alternaria, Anthracnose, Gummy Stem Blight, Scab	M3	14-day pre-harvest interval.
<i>chlorothalonil</i> Bravo	Powdery mildew, anthracnose, scab	M3	Also provides control of alternaria and gummy stem blight
<i>pyraclostrobin</i> Cabrio	Powdery mildew, alternaria, an- thracnose, gummy stem blight	QoI (group 11)	3-day pre-harvest interval. 24 Hour re-entry interval.
<i>boscalid</i> Lance	Alternaria, Gummy stem blight, white mould	carboxamide (group 7)	Research trials in New York State indicate good powdery mildew control with this product.

**Agricultural Information Contact Centre: 1-877-424-1300**

**E-mail: [ag.info.omafra@ontario.ca](mailto:ag.info.omafra@ontario.ca)**

**Northern Ontario Regional Office: 1-800-461-6132**

**[www.ontario.ca/omafra](http://www.ontario.ca/omafra)**

For perennial crops, leaf analysis is an important complement to soil testing.

Over the long term, it can tell you whether your soil fertility program is supplying adequate nutrients for optimum growth. It is also a useful tool for trouble shooting problems. If your soil tests show adequate nutrient levels, deficiencies indicated by a leaf test may give clues to other problems restricting nutrient uptake.

Your leaf analysis is particularly useful to evaluate phosphorus, potassium magnesium and manganese. Soil tests for boron, copper, iron, and molybdenum have limited usefulness, so leaf analysis is an important tool to assess these micronutrients.

Your leaf analysis results are compared to established normal ranges for the crop. This indicates whether a specific nutrient is deficient or sufficient. Sample collection timing and the crop’s growth stage have a major impact on the reported results. Some nutrient levels can vary considerably with the age and date of the sampled tissue. Results can be difficult to interpret if sampled at other times than those suggested. The reported results may also be affected by weather and crop management practices.

Sampling times and tips for sample collection for perennial fruit crops are outlined in the table below.

Crop	Sampling time	Sample collection
Apple	Last 2 weeks of July	<ul style="list-style-type: none"> <li>• Mature mid-shoot leaves of current season’s growth at shoulder height from all sides of tree</li> <li>• 10 leaves from 10 representative trees</li> </ul>
Blueberry, high bush	Late July-early August	<ul style="list-style-type: none"> <li>• 100 leaves through out sampling area</li> </ul>
Cherry, Montmorency	Last 2 weeks of July	<ul style="list-style-type: none"> <li>• Mature mid-shoot leaves of current season’s growth at shoulder height</li> <li>• 10 leaves from 10 representative trees</li> </ul>
Grape	Early September	<ul style="list-style-type: none"> <li>• Petioles from mature leaves of fruiting canes</li> <li>• Remove leaf blade immediately</li> <li>• 75-200 leaves depending on variety size</li> </ul>
Peach	Last 2 weeks July	<ul style="list-style-type: none"> <li>• Mature mid-shoot leaves of current season’s growth at shoulder height</li> <li>• 10 leaves from 10 representative trees</li> </ul>
Pear	Last 2 weeks July	<ul style="list-style-type: none"> <li>• Mature mid-shoot leaves of current season’s growth at shoulder height</li> <li>• 10 leaves from 10 representative trees</li> </ul>
Raspberry	Late July	<ul style="list-style-type: none"> <li>• Fully expanded mature leaves from fruiting canes</li> <li>• 100 leaves through out sampling area</li> </ul>
Strawberry	Fruiting: June Non-fruiting: Early August	<ul style="list-style-type: none"> <li>• Fully expanded, recently matured leaves</li> <li>• Remove petioles immediately</li> <li>• Sample different varieties and plantings separately Collect at least 50</li> </ul>

*Before you start sampling, here are a few points to review:*

- Sample varieties or blocks separately that require different management practices.
- If variable areas are large enough to fertilizer separately, they should be sampled separately. Match your leaf sampling to your soil sampling program.
- Avoid collecting damaged leaves or leaves from plants that appear abnormal.
- Collect tissue samples in clearly labelled paper bags. Plant tissues will rot if stored in plastic bags.

- Avoid contamination of the sample with soil. Even a small amount will cause the results to be invalid, especially for micronutrients.
- Plants suspected of a nutrient deficiency should be sampled as soon as a problem appears. Take tissue samples from problem areas and submit them separately. Also collect and submit a non-affected plant from adjacent areas. Collect and submit soils sample from both areas as well.
- Fresh samples should be delivered to the laboratory directly. If they cannot be sent immediately, they should be dried to prevent spoilage. Samples may be air dried as long as they are not contaminated by and dust or debris while drying. They can also be dried in an oven at 65°C or less.

*Where to send your samples:*

Several Ontario commercial soil testing laboratories can provide you with leaf analysis. Their contact information can be found at: [www.omafra.gov.on.ca/english/crops/resource/leaf.htm](http://www.omafra.gov.on.ca/english/crops/resource/leaf.htm)

## Minor Use Label Expansion Granted For Tristar 70 WSP Insecticide For Management of Aphids on Greenhouse Peppers and Whiteflies on Greenhouse Tomatoes

J. Chaput, OMAFRA, Minor Use Coordinator

The Pest Management Regulatory Agency (PMRA) recently announced the approval of a minor use label expansion for **TRISTAR 70 WSP Insecticide** for control of aphids on greenhouse peppers and whiteflies on greenhouse tomatoes in Canada. TRISTAR 70 WSP (acetamiprid) was already labeled for management of several insect pests on both outdoor and greenhouse ornamentals in Canada.

This will provide greenhouse pepper and greenhouse tomato growers with a much needed pest management tool to manage some of their important insect problems. The greenhouse tomato project was initiated in late 2001 as a joint project with the US IR-4 program and the Canadian Horticultural Council and the greenhouse pepper project was initiated in 2003 as a prioritized project with the Agriculture and Agri-Food Canada, Pest Management Centre (AAFC-PMC) as a result of minor use priorities put forward by producers, researchers and extension personnel.

The following is provided as a general outline only. Users should consult the complete label before using Tristar insecticide.

**For Aphids on Greenhouse Peppers:** Tristar insecticide can be applied in a spray concentration of 3 water soluble packs per 1000 L of water. Do not exceed 5 water soluble packs (1667 L of spray solution) per hectare. Apply when treatment thresholds have been reached as indicated by crop monitoring. Do not make more than 2 applications of Tristar insecticide per year and do not apply more than once every 7 days. **The preharvest interval is 3 days.**

**For Whiteflies on Greenhouse Tomatoes:** Tristar insecticide can be applied at a rate of 15 water soluble packs per 2 ha (1 pack per 1333 m<sup>2</sup>) in sufficient water to provide adequate distribution to the treated area. Apply through drip irrigation to the growing media. Note that drip irrigation is the only application method approved. Apply when treatment thresholds have been reached as indicated by crop monitoring. Do not make more than 2 applications of Tristar insecticide per year and do not apply more than once every 21 days. **The preharvest interval is 1 day.**

**Tristar insecticide 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 Tristar insecticide label.

We wish to thank AAFC-PMC for sponsoring this minor use submission in response to grower identified needs in 2001 and 2003. We also wish to thank the personnel of **Nippon Soda Co. Ltd.** 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 Gillian Ferguson, OMAFRA, Harrow (519) 738-1258 or Jim Chaput, OMAFRA, Guelph (519) 826-3539. For more technical information please contact Engage Agro at 1.866.613.3336 or visit [www.engageagro.com](http://www.engageagro.com).

Tristar™ is a trademark of Nippon Soda Co. Ltd., Toyko, Japan. Tristar™ 70 WSP insecticide is marketed by Engage Agro Corp.