



# HORT MATTERS

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## Downy Mildew Spores Trapped in Michigan

Elaine Roddy, Vegetable Crop Specialist

The June 10<sup>th</sup> edition of Michigan State University's IPM News reports that significant numbers of downy mildew spores were caught in Munroe County last week. Munroe County is in the south-eastern corner of Michigan. These spore traps are part of the research program conducted by Dr. Mary Hausbeck at MSU. Dr. Hausbeck's article is available at: <http://www.ipmnews.msu.edu/vegetable/vegetable/tabid/151/articleType/ArticleView/articleId/487/High-number-of-downy-mildew-sporangia-detected-in-Monroe-County.aspx>

Ontario growers should be actively monitoring all cucumber fields for signs of downy mildew and following a preventative fungicide spray program. Targeted downy mildew fungicides (listed below) provide a higher level of control in the unsettled weather conditions we are currently experiencing.

**Table 1. Recommended Fungicides for Cucurbit Downy Mildew Control**

Fungicide	Chemical Family	Rate	PHI	Notes
<b>Targeted Downy Mildew Fungicides</b>				
<i>cyazofamid</i> Ranman 400SC	21	150-200 mL/ha (40-80 mL/acre)	1	12 hour re-entry interval. Maximum 6 applications per year. Use the high rate on a dense canopy or under high risk conditions. Use 150 mL/ha (62 mL/ac) of Sylgard 309 as a surfactant.
<i>propamocarb</i> / <i>chlorothalonil</i> Tattoo C	28/M5	1.2-2.7 L/ha (0.72-1.1 L/acre)	2	Use the high rate on a dense canopy or under high risk conditions. Maximum 5 Applications per year.
<b>Broad Spectrum Downy Mildew Fungicides</b>				
<i>mancozeb</i> Dithane DG <i>or</i> Manzate DF <i>or</i> Penncozeb 80 WP	M2	1.1-3.25 kg/ha (0.44-1.3 kg/ acre)	14	Ensure thorough spray coverage.
<i>chlorothalonil</i> Bravo 500	M5	4.8 kg/ha (1.9 L/acre)	1	Ensure thorough spray coverage. Maximum 7 applications per year.

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## Downy Mildew Status

Elaine Roddy, Vegetable Crop Specialist

There has been considerable downy mildew activity in the Southern States lately. Over the past week, new infections have been identified in Florida, Georgia, Texas, California and North Carolina.

Much of the continent has been experiencing unsettled weather recently. This trend is expected to continue up to the weekend. The risk of long distance transport of the spores is currently low. The prevailing winds are generally moving west to east, with very little south-to-north activity. However, it is well worth keeping an eye on the radar to watch for a change in the wind patterns. Be mindful of weather patterns that move quickly from infected areas into the Great Lakes region.

Downy mildew forecast predictions are posted every Monday, Wednesday and Friday on the Cucurbit ipmPIPE website at: <http://www.ces.ncsu.edu/depts/pp/cucurbit/>

If these unsettled weather patterns continue, it may be prudent to start a preventative fungicide program before the plants begin to vine.

### Frequently Asked Questions

- Q *If I start spraying early, will I reach the maximum number of fungicide applications before I have finished harvest?*
- A Tattoo C has a maximum of 5 applications per year and Ranman has a maximum of 6 applications per year. Based on a 7-day spray interval, the combined 11 applications will be more than sufficient to protect the field for the full harvest season. It is better to start early and keep the crop clean, than to miss an early infection and spend the rest of the season trying to keep ahead of the disease.
- Q *How rainfast are the downy mildew fungicides?*
- A Most fungicides available today are rainfast when dry. This will usually take approximately one hour. However under humid conditions or a dense canopy it could take longer. Exceptionally heavy rainfalls may result in a need to shorten the spray interval.
- Q *Is it better to apply a downy mildew fungicide before or after a rainfall?*
- A All downy mildew fungicides should be used preventatively. Wherever possible apply them before a rainfall or irrigation event. While some products do offer a limited amount of kick-back, they are not curative. If the leaf is not adequately covered for the period of leaf wetness during and immediately following the rain, there is a high risk that an infection will occur **if** spores are present in the air.
- Q *High water volumes add a lot to the application costs. How low can I go?*
- A All downy mildew fungicides rely on thorough leaf coverage to fully protect the plant. One of the most effective ways to penetrate a dense cucumber canopy is with a high water volume. Even air assist nozzles work better with increased water volumes. Aim for at least 30 gal of water per acre.
- Q *If I turn up the pressure on the sprayer, will it force the droplets deeper into the canopy?*
- A Not necessarily. The pressure is used to create the droplet size. There is no downward force associated with the spray pressure. Depending on the nozzle used, a very high pressure will create a fine mist of droplets. These fine droplets may actually drift away or evaporate before they hit the leaf surface, offering very little protection for the crop. Select the pressure required to create a medium-sized droplet based on your nozzle type. These medium droplets will hit the target and offer a good uniform coverage of the crop.
- Q *Is a banded application really worth the effort?*
- A When the plants are small, a banded application covers only the leaf surface and saves valuable spray from being sprayed on bare ground. This can cut fungicide costs by 60 to 75%. Banding does not change the concentration of the spray mixture. It does allow you to cover more area with the same amount of product.

When banding, use the following formula to calculate the amount of product required:

$$\text{Total Field Acreage} \times \frac{\text{Band Width}}{\text{Row Spacing}} = \text{Treated Acreage}$$

Q *The downy mildew targeted fungicides are expensive. Is there a less costly option?*

A Tattoo C and Ranman have been proven effective in downy mildew trials across North America. Broad spectrum fungicides such as Bravo and mancozeb may offer a limited amount of downy mildew suppression. However, under moderate or high disease pressure these products will not fully control or limit the spread of cucurbit downy mildew. Cucumber growers should only use broad spectrum fungicides under low risk conditions, before downy mildew is identified in the Great Lakes region.

## Ontario sugarbeet producers receive urgently needed emergency use registration for cercospora leaf spot

J. Chaput, Minor Use Coordinator

The Pest Management Regulatory Agency (PMRA) recently announced the approval of an emergency use registration for **PROLINE 480 SC Fungicide** (prothioconazole) for control of **Cercospora leaf spot on sugarbeets** in Ontario. Proline 480 SC Fungicide was already labeled in Canada for control of several diseases on cereal grains, oilseeds, lentils and chickpeas. Furthermore a complete minor use submission was prepared in 2008 to seek eventual, full registration of Proline 480 SC for Cercospora leaf spot control on sugarbeets in Canada.

Ontario sugarbeet producers have identified Cercospora leaf spot as a top disease priority for several years. Resistance to currently registered fungicides was confirmed in Ontario in 2007 and in contrast to US sugarbeet producers; Canadian sugarbeet producers do not have access to any of the triazole fungicides labeled to control resistant populations of Cercospora leaf spot. 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 Proline 480 SC Fungicide, the Ontario sugarbeet industry faced the risk of very serious losses to Cercospora leaf spot in 2009.

The emergency use registration of Proline 480 SC Fungicide will help in the interim to manage resistant Cercospora leaf spot populations; however management of Cercospora leaf spot 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 Proline 480 SC Fungicide.

Proline 480 SC Fungicide can be used for control of Cercospora leaf spot in Ontario until December 31, 2009 only. Proline 480 SC can be applied at a rate of 315 to 415 mL product per hectare in 100 to 200 L water per hectare at the 1<sup>st</sup> sign of disease. Use the higher rate and shorter intervals when conditions are favourable for disease and/or when growing less disease-resistant varieties. A maximum of three (3) applications per year can be made at a 14 – 21 day interval. A 7 day pre-harvest interval is permitted.

Follow all other precautions and directions for use on the Proline 480 SC Fungicide label carefully.

Proline 480 SC Fungicide should be used in an IPM program and in rotation with other management strategies to adequately manage resistance.

We wish to thank Janice LeBoeuf (OMAFRA) and the Ontario Sugarbeet Growers Association for preparing the rationale documents on behalf of Ontario sugarbeet producers. We also wish to thank the personnel of the Ontario Ministry of the Environment and **Bayer CropScience 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 Janice LeBoeuf, OMAFRA Vegetable Crop specialist at Ridgeway (519) 674-1699, Jim Chaput, OMAFRA, Guelph (519) 826-3539 or visit the Bayer CropScience Inc website at [www.bayercropscience.ca](http://www.bayercropscience.ca)

## Codling moth controls

Kathryn Carter, Pome Fruit IPM Specialist and Hannah Fraser, Entomology Program Lead (Hort)

Codling moth adults are now flying in most areas of the province. Just a reminder to everyone that OMAFRA has now adopted the degree day model for codling moth that is being used in the US and elsewhere in the Northeast. By adopting this model it will allow growers to adapt their timings of products for ovicides and larvicides. The following is some useful information on the timing of products using this new model degree base (10 °C):

**Table 1 Optimal timing for Codling moth sprays**

Compound Trade Name	Chemical Class	Life-stage Activity	Optimal Spray Timing for Codling moth (base 10° C)	Mite Flaring Potential
Guthion, Imidan	organophosphates	Eggs, Larvae, Adults	Biofix + 139 DDC	L - M
Delegate	spinosyn	Larvae	Biofix + 139 DDC	
Altacor	anthranilic diamide	Eggs, Larvae	Biofix + 139 DDC	
Assail, Calypso	neonicotinoid	Eggs, Larvae, Adults (limited)	Biofix + 111-139 DDC Residue over eggs	M
Intrepid	IGR (MAC)	Eggs, Larvae, Adults (sub-lethal)	Biofix + 83-111 DDC Residue over eggs	L
Rimon	IGR (chitin inhibitor)	Eggs, Larvae	Biofix + 55 DDC Petal fall (and repeat application 10-14 days later). Residue under eggs	M
Granulovirus	biopesticide	Eggs, Larvae	Biofix + 139 DD Residue over eggs. Repeat 3-4 sprays at 7 day intervals	none
Isomate C Plus*	pheromone (mating disruption)	Adult males	bloom	none

Table adapted from MSU

\* May require supplemental insecticides. Contact us for more information

**Also – why we use these timings:**

**Table 2. Codling moth GDD model and insecticide timings for larval control**

GDD base 10 C (Post Biofix)	Event	Action
Pink bud	Development of overwintering larvae	Set traps
0 GDD	1 <sup>st</sup> sustained moth captures	Set GDD equals 0
139 GDD	Start of 1 <sup>st</sup> generation <b>egg hatch</b>	Timing for 1 <sup>st</sup> treatment if over threshold (for larva targeted materials)
194 GDD	1 <sup>st</sup> generation <b>egg laying &amp; hatch</b>	Delayed timing for 1 <sup>st</sup> treatment if pest pressure is low, or for 2 <sup>nd</sup> treatment if an ovicide was applied at 55 GDD)
278-361 GDD	Peak of 1 <sup>st</sup> generation <b>egg hatch</b>	Timing for additional larvicide if monitoring of codling moth activity indicates a treatment is needed
555 GDD	Expected end of 1 <sup>st</sup> generation activity	
667-694 GDD	Start of 2 <sup>nd</sup> generation egg hatch	Timing for treatment if over threshold (for larva targeted materials)
1167 GDD	Expected end of 2 <sup>nd</sup> generation activity	

# Minor use label expansion granted for gf-120 naturallyte fruit fly bait for suppression of apple maggot on apples

J. Chaput, Minor Use Coordinator

The Pest Management Regulatory Agency (PMRA) recently announced the approval of a minor use label expansion for **GF-120 Naturallyte Fruit Fly Bait (spinosad)** for suppression of apple maggot (AM) on apples in Canada. **GF-120 Naturallyte Fruit Fly Bait** was already labeled for control of cherry fruit flies in cherries and blueberry maggot on blueberries and was the subject of an emergency use for organic apples in 2008 in several provinces.

The apple maggot (*Rhagoletis pomonella*) is indigenous to North America and has been found in all Canadian provinces with the exception of Newfoundland. It is a quarantine pest in Canada, especially widespread throughout eastern Canada, causing fruit damage and significant economic losses.

This registration will provide both organic and conventional apple producers with a much needed pest management tool to manage one of their most important pest problems. This project was co-sponsored in early 2008 by the minor use office of OMAFRA and 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 GF-120:

For the suppression of apple maggot, apply 1.5 litres of GF-120 NF Naturallyte Fruit Fly Bait in 6 litres of water per hectare. Begin applications as soon as monitoring traps indicate flies are present in the orchard and continue coverage until flights stop. Repeat applications every 7 days, reapplying sooner if rain washes off the deposit. Do not apply more than 10 applications per season. Proper application techniques help ensure adequate coverage and correct dosage necessary to obtain optimum control of apple maggot. A large spray droplet size of 4000 to 6000  $\mu$  (4-6 mm) is recommended to optimize length of bait attraction.

Follow all other directions for use and precautions on the GF-120 Fruit Fly Bait label carefully.

GF-120 Fruit Fly Bait should be used in an IPM program and in rotation with other management strategies to adequately manage resistance.

We wish to thank AAFC-PMC for co-sponsoring this minor use submission in collaboration with OMAFRA. Dr. Julia Reekie and Eric Specht of Agriculture and Agri-Food Canada's research team in Kentville, Nova Scotia conducted efficacy studies for GF-120 in collaboration with OMAFRA personnel and grower cooperators in 2007. This work funded by the Agriculture & Agri-Food Canada, Pest Management Centre, Pesticide Risk Reduction Program demonstrated that GF-120 is an effective and viable option for management of apple maggot in Canada.

We also wish to thank the **Ontario** Apple Growers, Ken Wilson and Lindsay Pink for their contributions to the funding and data development of GF-120 for apples. Furthermore we wish to thank the personnel of **Dow AgroSciences 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 Kathryn Carter, OMAFRA, Simcoe (519) 426-4322, Leslie Huffman, OMAFRA, Harrow (519) 738-1256 or visit <http://www.dowagro.com/ca>

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