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Welcome to "ON Organic"

Evan Elford, New Crop Development Specialist, OMAFRA

Recently the Canadian Organic Office (COO) released an updated operating manual which includes information on policies relating to the Canada Organic Regime (COR). If you are interested in obtaining an updated version please contact the Canadian Food Inspection Agency (CFIA) at 613.773.6222 or you can request a copy through their website at <http://www.inspection.gc.ca/english/fssa/orgbio/man/orgbiomane.shtml>.

Also, the Canada Standards Interpretation Committee (SIC) is currently accepting comments on their latest round of proposed answers to questions resulting from the Canadian Organic Standard. You can provide feedback to the committee during the comment period running from July 16 to Sept 17, 2012. Please contact the committee at OPR.RPB@inspection.gc.ca. To view the full document with questions and proposed answers please visit the Organic Federation of Canada (OFC) website at www.organicfederation.ca and follow the links to current Q&A's under the 'Standards Interpretation' tab.

As always we welcome your comments and any suggestions for topics in the newsletter.

Thank you once again to our contributing authors and to EFAO, OCO and others who pass along our newsletter on a regular basis.

Subscription to this newsletter is easy and no cost. For details go to the webpage: <http://www.omafra.gov.on.ca/english/subscribe/index.html#organic>

The newsletter is also posted on the OMAFRA website at: <http://www.omafra.gov.on.ca/english/crops/organic/news/news-organic.html>

The French version of these newsletters is available at: <http://www.omafra.gov.on.ca/french/crops/organic/news/news-organic.html>

The OMAFRA Organic pages are linked from: <http://www.ontario.ca/organic> and <http://www.ontario.ca/biologique>

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What a Summer...Forage-ing Ahead

Mario Mongeon, Livestock Specialist, OMAFRA

What a strange summer. So far, it's been warm, it's been dry and forages were not growing all that well. Pastures were also suffering as the lack of precipitation delayed and impeded re-growth. In many cases, harvested forages needed to be offered to cows in order to maintain production.

Although not over yet, we can say that it has been a strange summer. In the days to come, taking the time to assess the inventory of forages on hand will help you define the next steps. Having a plan to address issues is always a good way to reduce the level of stress.

If it is felt that the farm's forage inventory may not be adequate this year, sourcing and securing supplemental forages should be the priority of the next few weeks. Taking care of this matter in a timely fashion will not only allow one to benefit from a better choice but will also reduce the amount of stress associated with the uncertainties. Another option to minimize forage shortfall might be to plan for a late season cut to increase forage supplies.

The shorter days ahead will also impact pasture growth. The progressive decline of forage dry matter coming from the pasture will mean that the amount of harvested forages offered to the cows will increase. Furthermore, the concentrate type and amount fed might need to be revised. You may want to discuss this aspect of your feeding program with your nutritionist.

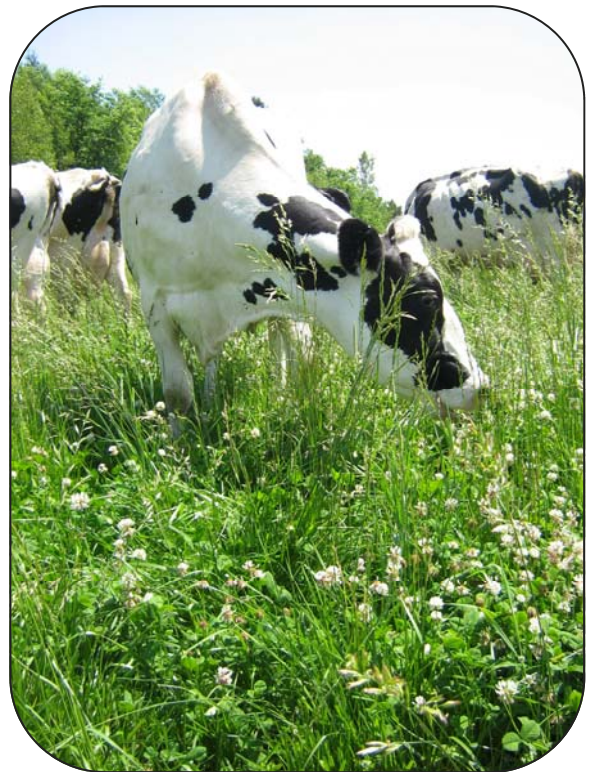
This year, the laboratory testing of forages and other feed will be very important. Because of the potential variability of the crops and the unusual weather patterns, the analysis of your forages might be quite different compared to a 'normal' year. A good habit is to sample forages as soon as possible, throughout the summer so that when the time to use them comes, you will have all the information on hand to make a wise decision.

Once you have the complete picture of the amount and quality of feed available to build the ration, one needs to consider which forages will be offered to each group of animals. Obviously, some forage systems will allow a lot more flexibility when it comes to choosing the right forages. Round bales for example can easily be marked individually with a number that will indicate their field of origin and date of cut. Generally, the best forages available on the dairy farm should be used to prepare the ration for lactating animals. This is true for silage as well as for hay. The best quality forages should be set aside for the cows in early lactation since their nutrient requirements are the greatest. Even if the dairy herd is small, grouping cows according to their milk production and stage of lactation could help

optimize the nutrient allocation in the herd. Having a complete analysis of the hay and silage which cows are eating will also help to identify the best protein and energy concentrate to match the requirements of the ration.

A word of caution if your ration includes corn silage: dry weather stressed corn that receives rain shortly before harvest may contain elevated levels of nitrates that can be toxic to ruminants. Although the fermentation process will reduce the amount of nitrates present, the residual levels may still be a problem. For this reason, the silage fermentation should be completed before testing for nitrates.

Although the availability of certified organic feed ingredients can be limited, it could be worthwhile this fall to identify and source ingredients that could be used to stretch forage and fibre levels in the ration. Of course, when formulating the dairy ration, we need to keep in mind that the Canadian Organic Standards state that a minimum of 25% of the forage portion must be in the form of dry hay and no more than 40% of the ration's dry matter should come from concentrates.



Cover Crops for Fall Planting

Anne Verhallen, Soil Management Specialist (Horticultural Crops), OMAFRA

August is a great time to plant cover crops. There are so many to choose from. However, as summer winds down and we move into September, the options for cover crops start to shrink a bit. Basically you need at least 6 weeks of good growing weather (for that particular cover crop) to really justify the cost for many cover crops. When choosing a cover crop for fall planting, consider your goals – do you want erosion protection over the winter or to grow some nitrogen for next years crop or just to build some soil biodiversity and extend the biological activity a little longer in the fall. Another consideration – terminating the cover crop – will it die over winter or will you need to use tillage to control spring growth?

Erosion protection – fast growing grasses like oats, barley, rye, triticale and wheat are good options for quick ground cover in the fall. The fine, fibrous root systems will help to build soil structure while protecting the soil surface. Choose oats, barley or the spring varieties of wheat and triticale if you need the cover crop to die before spring.

Grow some nitrogen – clovers like Crimson clover are an option, if planted in August. This is a relatively fast growing clover that is inconsistent in overwintering. Another option is peas. Ontario research has shown that there is little nitrogen transfer to the succeeding crop in conventional systems from pea cover crops. However, peas planted in August and September can put on some good growth under the right conditions and when combined with a grass, can make a useful green manure crop or if necessary emergency feed.

Building biodiversity – cover crops do more than just cover the ground, the roots and the root exudates provide food and habitat for a multitude of soil organisms. Planting a cover crop mixture can assist by creating more diversity, creating a “more natural cover”. The thought is that multiple cover crop species will have more resilience. The cover crop will recover or respond better to stress and be more productive across the variability of a field. There has been some suggestion from research in the US Midwest that mixtures of 6 or more species are optimal. Many of these mixtures are based upon the concept of warm season versus cool season and grasses/legumes and other broadleaves to create mixtures of four or more species.

You will notice that oilseed radish has not been included in the suggestions above. This “rock star” of the cover crop world has a number of roles where it is an excellent cover crop choice, however limited growth potential after early September make it less suitable, except as part of a cover crop mixture.

To help you make cover crop decisions for this fall – check out the new Cover Crop Decision Tool for Ontario – on the Midwest Cover Crop Council website at <http://www.mccc.msu.edu/selector/INTRO.html> .



Figure 1: Fall growth of Crimson clover planted after wheat harvest 2011



Figure 1: Six years of constant cover cropping with intensive cash cropping/livestock has built soil structure and supported soil life.

Interpretation Corner

Evan Elford, New Crop Development Specialist, OMAFRA

From time to time I receive questions from organic producers across the province that are not clearly defined under the Canada Organic Standard. In an ongoing effort to better understand how to apply the organic standard within your farming operation, we will be including questions from previous rounds of the Organic Standards Interpretation Committee (SIC) and their accepted answers. The Organic SIC is an advisory body set up by the Canadian Organic Office (COO) with representatives from the organic sector in Canada. A full listing of Q & A's posed to the SIC are available on the Canadian Food Inspection Agency's (CFIA) website (www.inspection.gc.ca) and on the Organic Federation of Canada's (OFA) website (www.organicfederation.ca). Please note that some certification bodies may have additional requirements to the Canada Organic Standard and you should always contact your certification body for clarification.

Livestock Production

Section 5.2: Feed, Feed Additives and Feed Supplements

Question: Is L-Lysine allowed in the feed for organic birds? (80)

Answer: Yes. Table 5.2 allows for the use of non-synthetic amino acids such as L-Lysine. L-lysine is terminology which does not distinguish whether the substance is synthetic or not. Synthetic lysine, such as L-Lysine HCL, is not permitted.

Crop Production

Section 5.6: Crop pest, disease and weed management

Question: Can a farmer irrigate land from an irrigation system that uses Magnicide? (19)

Answer: Active substances included in Magnicide are not allowed for application to organic production units. If equipment that has been in contact with prohibited substances is thoroughly cleaned and can be shown to be free from such substances, it may be used to irrigate organic farms. Although irrigation equipment is not specifically mentioned in the standard, the principle outlined in 5.6.3 should apply.

OMAFRA Articles and Updates

Adverse Weather and Ontario Agriculture

OMAFRA has developed a list of resources for farmers concerned about the effect of the current dry weather and other adverse environmental conditions on their operations. Information on the OMAFRA website covers dry weather conditions as it relates to agricultural businesses, impact to crops and animal welfare. Please visit the website at: www.omafra.gov.on.ca/english/crops/weather/adverseweather.html#dry

Horticulture

Spotted Wing Drosophila Pest Alert

Hannah Fraser, Entomology Program Lead (Horticulture), OMAFRA

The spotted wing drosophila (SWD) is an invasive vinegar fly from Asia that was first identified in California in 2008. Since then, it has rapidly spread throughout most fruit producing regions of North America and several European countries. Surveys coordinated by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) in 2011 and 2012 have detected this pest across southern Ontario. Environmental conditions including a mild winter have favoured the survival and seasonal

population build-up of SWD in 2012.

Unlike most vinegar (aka small fruit) flies that lay their eggs in damaged or decaying fruit, SWD females attack healthy immature fruit that is beginning to ripen. As a result, affected fruit contain eggs or larvae at harvest. Injury to fruit caused from oviposition of eggs under the skin of fruit also allows the entry of plant pathogens that can promote rapid breakdown. Crops at risk include tender fruit (cherry, peach, nectarine, plum, apricot, other), berry crops (raspberry, blackberry, blueberry, strawberry, sea buckthorn, other) and some grape varieties (primarily table grapes). While early crops may escape injury due to lower population pressure, SWD numbers build as the season progresses, making late harvested crops such as fall raspberries, blueberries, blackberries and day-neutral strawberries at high risk. ***Growers in southern Ontario should assume SWD is present in their area and should be using several management techniques to reduce economic injury.***

SWD is a manageable pest. Important practices include harvesting early, clean and often, as well as cull pile management. Wild raspberry, blackberry, blueberry, mulberry, honeysuckle, dogwood and other non-crop hosts near field borders act as reservoirs of SWD, and their management may be warranted to limit migration into crops. OMAFRA has developed web-based

OMAFRA Articles and Updates (Cont'd)

resources where growers can obtain more information on SWD including a real-time map of pest activity. Please be aware that the information has both organic and conventional control products. For more information visit www.ontario.ca/spottedwing.

2012 Trap Catch Data (interactive map) <http://www.omafra.gov.on.ca/english/crops/facts/swd-catches2012.htm>

Monitoring for SWD <http://www.omafra.gov.on.ca/english/crops/facts/swd-monitor.htm>

Management <http://www.omafra.gov.on.ca/english/crops/facts/swd-management.htm>

Emergency Use Registrations <http://www.omafra.gov.on.ca/english/crops/facts/swd-registrations.htm>

Spotted Wing Drosophila Update – August 9, 2012

We continue to find SWD at new locations through our survey network. Numbers are starting to increase at a number of sites. Visit our website for more information www.ontario.ca/spottedwing.

Interested in learning more about SWD? OMAFRA staff will be making presentations at the following events:

1. Canada's Outdoor Farm Show (September 11, 12 and 13th, 2012, Woodstock)
2. Grape Research Tailgate Tour (August 21st, 2012, Niagara)
3. Ontario Berry Growers Association Twilight (September 13th, 2012 Simcoe)
4. Tender Fruit Twilight meeting (September 26th Niagara)

Check our Coming Events in Hort Matters for more information.

NEW: Pyganic is now available for organic management of SWD on some crops. Product must be ordered from Terralink Horticulture Inc., located in BC. There are no Ontario dealers 604-864-9044 or www.store.tlhort.com. Confirm with your certification body that Pyganic is permitted for use on your crop.

Another potentially acceptable organic pest control product is Entrust 80W (spinosad).

New Finds this Week:

Oxford (1 site); Niagara (5 sites); Halton (1 site)*

New Reports from LAST week

Niagara (1 site); Durham (1 site)*; Elgin (1 site); Essex (1 site); Norfolk (1 site); Simcoe (1 site); York (2 sites)

*First find in Halton Region this week.

Summary of counties where SWD has been found 2012

County/region	# sites monitored	# sites positive in 2012
519: southwestern Ontario		
Essex	15	5
Kent	10	5
Lambton	2	1
Elgin	4	2
Middlesex	3	3
Perth -	1	1
Oxford	4	4
Norfolk	11	10
Brant	3	2
Waterloo	4	2
Grey	2	1
Huron	1	1
705: northern and central Ontario		
Simcoe	4	3
Temiskaming	1	0
905: south central Ontario		
Haldimand	2	2
Niagara	25	19
Hamilton-Wentworth	2	2
York	3	3
Halton	1	1
Durham	3	1
613: eastern Ontario		
Prince Edward	3	1
Northumberland	1	0
Frontenac	1	1
Lennox and Addington	1	1
Ottawa-Carlton	4	1
TOTAL:		72 sites in 23 counties

*First find in Durham region last week

OMAFRA Articles and Updates (Cont'd)

Total SWD Finds per Weed

Week Ending	# sites positive this week	# sites positive to date	# flies total this week
June 29	5	5	12
July 6	7	9	11
July 13	11	15	29
July 20	36	39	100
July 27	34	56	105
Aug 3	40	64	330
Aug 10*	22	72	736

- Samples still being processed for this week

(From OMAFRA newsletter HortMatters)

Basil Downy Mildew Confirmed Near Simcoe, Ontario Melanie Filotas, Specialty Crops IPM Specialist, OMAFRA

Basil downy mildew was confirmed in a number of varieties of sweet basil in a Simcoe, Ontario field yesterday. Downy mildew is a relatively new disease of field and greenhouse basil in North America and is caused by the water mould *Peronospora elbahrii*. This species is not the same as the downy mildew pathogen affecting Ontario cucumber crops, or any other downy mildew known in the province, and is specific to basil. Although not toxic to humans, this disease renders basil plants unsightly and unmarketable.

This disease can spread on contaminated seed, by marketing infected leaves and by wind. Once infected, leaves produce large numbers of spores which can be spread great distances on wind. Like other downy mildews, this disease can be very aggressive, spreads rapidly and can cause significant crop loss. Ontario basil growers are reminded to scout their fields regularly for symptoms of this disease.

Look for signs of general leaf chlorosis (Figure 1) and stunting. Symptoms may superficially resemble a nutritional problem; however plants infected with basil downy mildew typically have a characteristic sporulation of the fungus on the lower leaf surface (Figure 2). Also, the leaf chlorosis, or yellowing, of infected leaves is initially confined to sections of the leaf bounded by the veins, whereas a nutritional disorder would typically affect the entire leaf. Check the underside of leaves for the production of purplish grey spores, which can appear as a fuzzy, granular growth to the naked eye.

There are no organically acceptable pest control products registered in Canada for management of basil downy mildew. Researchers at the University of Guelph are currently conducting trials to evaluate a variety of organic and conventional products against basil downy mildew. Results for 2012 will be reported when they become available.

Several cultural management strategies may help to reduce or delay the development of basil downy mildew. These include:

- Planting in an open site, exposed to prevailing winds, can sometimes delay onset of the disease
- Use of wider plant spacing will promote airflow around the plants, provided that weeds are controlled between the plants.
- Avoid overhead irrigation, especially after the middle of July.
- Do not collect seeds from basil fields where downy mildew has occurred.
- In research trials at the University of Guelph, all varieties of sweet basil have been found to be susceptible to basil downy mildew, however in a University of Guelph trial disease development was slower on the variety Medinette.
- Spice type basils are the only varieties that did not develop symptoms in Ontario trials, however their culinary properties are very different from sweet basil varieties, and they likely will not be an acceptable alternative for most growers.
- Consider harvesting basil shortly after downy mildew symptoms are observed, because the crop will likely be unmarketable within a few weeks. However, remember that it can take a week for symptoms to develop, so seemingly healthy leaves at harvest may develop symptoms post-harvest. This should not be an issue for dried basil as long as drying occurs as soon as possible after harvest.



Figure 1 - Upper surface of basil leaf affected by downy mildew. Note the yellowing between the leaf veins.



Figure 2 – Purplish grey downy mildew spores on the lower surface of infected basil leaves.

(From OMAFRA newsletter HortMatters)

OMAFRA Articles and Updates (Cont'd)

Leek Moth Update - 1 August 2012

Marion Paibomesai, Vegetable Crops Specialist, OMAFRA

In 2011, leek moth pheromone traps were installed in Allium growing areas across southwestern and central Ontario. This pest was found in York Region, Simcoe County and Waterloo Region.

In 2012, a similar monitoring program has been set-up in garlic and leeks in various counties/regions across southwestern and central Ontario. From mid-April to the beginning of May, a total of 4 leek moth from the first flight were caught in the traps in Waterloo Region. We saw 2 leek moth in the traps during the first week of July at this site. During the second week of July, a single leek moth was captured in Brant County. Although these numbers are 'low' relative to other areas, it is important to learn more about this pest as it spreads.

Most of the garlic in this region is harvested; however, keep an eye out for 'exit' holes from the bulbs (Fig 1). Green Allium crops that are still in the ground are susceptible to this pest, so also keep an eye out for damage, larvae and pupae. Remember that pheromone traps attract the adult male leek moths; however, it is the larval stages of this pest that causes the damage.



Figure 1: Two leek moth exit holes

Management Options

Pheromone traps can be used to time organic pest control products with applications timed 7-10 days after the peak flight (See Table below). Entrust (organic spinosad) is registered on crop subgroup 3-07B for suppression of leek moth; however, this product is not currently registered on crop subgroup 3-07A. Crop subgroup 3-07A includes garlic and dry bulb onions and we are still awaiting the registration of Entrust on this crop subgroup. Refer to the label for directions for use.

Product Active ingredient	Crops	PHI (pre-harvest interval)	Pest on Label	Notes
Entrust 80 W <i>spinosad</i>	Crop subgroup 3-07B (green onions, leeks, chives [fresh leaves], shallots [fresh leaves], bunching onion, tree on- ion [tops], welsh onion [tops])	3	Suppression of leek moth larvae	Group 5 - spinosyn Apply one week after peak pheromone trap captures for leek moth. Evening applications provide better control. Entrust 80 W is organic. Check with certification body before use. Max of 3 applications/season.

Cultural control methods include crop rotation, use of floating row covers (sides of cover anchored to ground), avoiding planting near infested areas, delayed planting, removal of old/infested leaves, early harvesting to avoid damage by populations that have been building up through the season and destruction of plant debris (burn or bury, if possible!).

Floating row covers have been used with success in the Eastern parts of the province to protect the plants from leek moth. It is important to anchor down the sides to prevent leek moth from entering the covered row (Fig 2).

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Figure 2: Floating row cover on some garlic plots. Note that the sides of the row cover are anchored down. (Photo: Andrea Brauner, AAFC)

More on Leek Moth

The leek moth, *Acrolepiopsis assectella*, is an invasive species of European origin that attacks *Allium* spp., including garlic, onions and leeks. Since its detection in 1993 in the Ottawa Region, the leek moth has been a problem for commercial *Allium* growers and particularly to organic market garden producers in the region. Research by Peter Mason's group from Agriculture and Agri-Food Canada suggests that this pest will likely spread further south and west from regions where it is currently found. Since 2009, leek moth has been detected in a few counties of northern New York State and in Vermont.

If you suspect leek moth, please call Marion Paibomesai, Vegetable Crops Specialist, OMAFRA at 519-826-4963.

Related links:

- Ontario CropIPM
- Leek Moth-A Pest of Allium Crops, OMAFRA factsheet Order No. 08-009
- Leek moth update from 2011 season

Some Like it Hot: Summer Monitoring for Mites

Hannah Fraser, Entomology Program Lead (Hort); Wendy McFadden-Smith, Tender Fruit & Grape IPM Specialist; Pam Fisher, Berry Specialist; Janice LeBoeuf, Vegetable Specialist, OMAFRA

Two common mite species affecting fruit and vegetable crops include the European red mite (ERM) (Figure 1) and the two-spotted spider mite (TSSM) (Figure 2). Both thrive in hot, dry weather, although temperatures above 30°C can negatively affect ERM egg laying and development. TSSM have an upper developmental threshold of 40°C. Mites pierce plant tissue with their mouth-parts and remove plant fluids. Affected leaves have mild chlorotic spots (stippling) and become bronzed

if populations are sufficiently high. (Figures 3 & 4) Severe infestations may result in necrosis, deformations and defoliation. If you are starting to notice discoloured or bronzed leaves during scouting activities, make sure to check plants for the presence of mites.



Figure 1. Adult European red mite



Figure 2. Two spotted spider mite



Figure 3. European red mite damage



Figure 4. Bronzed strawberry leaf

OMAFRA Articles and Updates (Cont'd)

Mites are tiny, so unless you are actively looking for them, you may mistake the earlier signs of damage they cause with environmental stress (hot, dry conditions). Sampling protocols vary by the crop, but in general, you should be checking for eggs, nymphs and adult mites on the underside of leaves. In some cases, tapping leaves over a light-coloured dish can be used to detect mobiles. Because mite numbers can increase very rapidly, it is necessary to monitor frequently during hot weather. Populations are often higher along dusty roadways and field edges.

(From OMAFRA newsletter HortMatters)

Two-spotted spider mite damaging Ontario hops Melanie Filotas, IPM Specialist for Specialty Crops, OMAFRA

It's a good news/bad news situation in hops right now. The good news is, in Simcoe at least, leafhopper activity seems to be dying down a little bit. The bad news is that, amongst all the hopper damage, we are seeing signs that mites are becoming more active (Figure 1). The two-spotted spider mite, *Tetranychus urticae*, is a well known pest of hops and many other crops, and often becomes problematic when conditions are hot and dry.

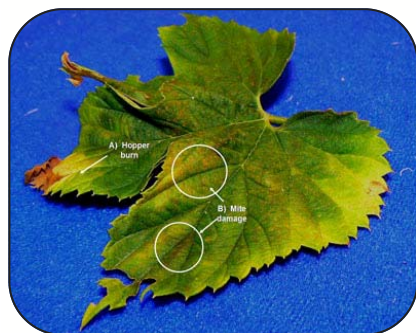


Figure 1. Hop leaf with both hopper burn (A) and mite damage (B). Hopper burn tends to begin along the leaf margin, while bronzing caused by mites can occur anywhere on the leaf.

Spider
mites

are extremely small (0.5-1 mm) relatives of spiders. They have eight legs, with the exception of the first instar, which has only 6. Mites have two body segments (head and abdomen) which are a translucent yellow colour, with a distinct, dark reddish-brown spot on each side of the abdomen (Figure 2). Mite eggs are spherical and a translucent yellow in colour (Figure 2). They are often suspended in a fine network of silk

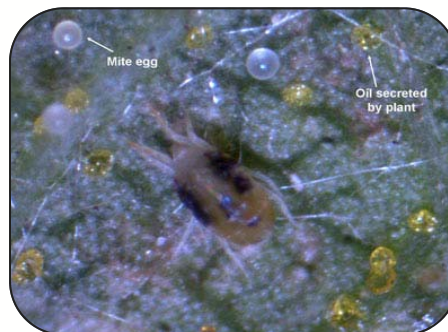


Figure 2. Two spotted spider mite and eggs on a hops leaf. Note the different colour of the eggs as compared to the oil droplets secreted by the leaf.

webbing (Figure 3), with the mites themselves located on the lower leaf surface. On hops, the eggs are similar in size and shape to the yellow oil droplets excreted by the plant's trichomes, however the oil is not located on webbing and is a brighter yellow in colour than the mite eggs.

Spider mites use sucking mouth parts to remove the contents of individual plant cells, causing a stippled bronzing on the surface of leaves (Figure 4). Severe infestations can result in leaf necrosis and defoliation. Spider mites can also damage hop cones, causing a dry, brittle, reddish discolouration. Economic damage from this pest results from reduction in both yield and quality of the cones.

Two-spotted spider mites overwinter as adult females in crop residue (e.g. hop crowns), in cracks in poles or in other sheltered areas in or adjacent to hop yards. In early spring, females emerge and lay eggs on young hop shoots, or on grassy weeds, in fence rows or wheat fields. Each female can lay up to 100 eggs. Mites pass through three immature stages (or instars) before becoming adults. Development from egg to adult can take three weeks to as few as 6 days (under hot dry conditions), and consequently there are numerous mite generations per year.

Because they may overwinter in hop yards, mites may be present from the beginning of the growing season. However additional mites can move onto hop plants as wheat fields and other grasses begin to dry down, and population development is favoured by hot, dry and dusty conditions. Consequently we often see mite populations begin to increase in hops yards from late June through July.

OMAFRA Articles and Updates (Cont'd)



Figure 3. Spider mite webbing on hops leaf.



Figure 4. Bronzing of hop foliage caused by spider mite feeding.

To monitor for mites on hops, sample hop leaves beginning in late May and continuing throughout the season. Collect several leaves from 10 to thirty plants, depending on the size of the hops yard, and ensure that you are collecting leaves from different heights on the plant (a pole pruner may be required to collect leaves near trellis wires). Inspect the leaves for bronzing and stippling, and the leaf undersides for the presence of mites, eggs and webbing. Spider mites and their eggs are very difficult to see with the naked eye, and webbing may not be immediately visible until infestations are severe. A dissecting microscope or hand lens with a magnification of 25-40X may be required to properly see them, and distinguish them from predatory mites.

A formal economic threshold has not been established for two-spotted spider mites on hops. Low numbers of mites on hop foliage can be tolerated if conditions are mild, natural enemies are present in the yard and cones are not infested. However if conditions become hot, dry and dusty populations can build rapidly.

Spider mite populations on hops are often kept in check naturally by a complex of natural enemies, including predatory mites, lady beetles, predatory midges and

others. Avoiding removal of basal foliage can help preserve natural enemies, but this would have to be balanced by the impact of retaining foliage on other hops pests. There have been some suggestions that introducing natural enemies such as predatory mites or lady beetle larvae early in the season may help limit mite population build up in hop yards, however this would have to be further studied, as these natural enemies often do not stay where they are released. A better strategy may be to plant ground cover or other plants which provide habitat to promote natural enemy development. Use well managed cover crops between rows to limit dusty conditions that favour a build up of pest mites. If ground cover dries, pest mites may move into crops.

Spider mite development in hops is favoured by both dust and excessive nitrogen, so minimizing dust in and around hop yards (e.g. by covering or watering dirt roads, planting ground covers, etc.) and ensuring sufficient, but not excessive, soil fertility may help in reducing mite populations. Neusodan commercial and Opal Insecticidal Soap are possible organic solutions that are registered on hops and may have some impact on mite populations. Check with your certifying body on acceptability of these products.

(From OMAFRA newsletter HortMatters)

Tips for cover crop planting under dry conditions

Anne Verhallen, Soil Management Specialist (Hort), OMAFRA

Cover crops - plant early and often. Yes most soils are dry and seeds will not get started. However if you wait for rain, then you will have to wait after rain, making the seeding that much later. There are a few things to consider that may help establish cover crops better under dry soil conditions.

1. Increase the seeding rate - by about 10% to increase the chance of some seed getting started and also making a thick enough stand to hold back weeds.
2. Choose smaller seeded cover crops. Small seeds like mustard, kale, annual ryegrass even oats take less moisture to get started than peas, beans, corn etc.
3. Seed a mixture - chances are one or two cover crop types within the mixture will be more successful. Common mixtures include oats or rye and oilseed radish, vetch and rye. There are more complicated mixtures that may include 6-15 species. Watch seed costs on the mixtures though.
4. Use a no-till drill or planter to plant the seed for less disturbance of the soil surface and less loss of soil moisture.

OMAFRA Articles and Updates (Cont'd)



Small seed such as kale and other mustards will get a faster start under low soil moisture conditions while putting out a deep tap root rapidly.

(From OMAFRA newsletter HortMatters)

Powdery Mildew in Cucurbits

Elaine Roddy, Vegetable Specialist, OMAFRA

Powdery mildew appears to have made an early appearance in Ontario this year. We typically look for this disease in late-summer. However, I am already seeing symptoms in our research plots in pumpkins, squash and cantaloupe.

Powdery mildew first appears as a dense, white (powdery) fungal mass on the lower leaf surface of the older leaves. There is often a light yellow patch on the corresponding upper leaf surface. If left unchecked, it will completely cover and kill the infected leaves and petioles. Premature death of the canopy results in lower sugar content and early-ripening of infected fruit, before it properly sizes. Infected stems also become brittle and break off the fruit during harvest. This is a particular problem in jack-o-lanterns and decorative pumpkins or gourds.

For organic growers, potassium bicarbonate (MilStop) will provide suppression of this disease. Always consult with your organic certifier before applying any crop protection product. In order to be effective, product applications must start at the first sign of infection. Once the symptoms are readily visible in the crop canopy, they will have little (if any) impact on the spread of the disease. Scout all cucurbit fields regularly and take preventative action before the levels of powdery mildew in the canopy exceed 2% of the leaves with one lesion.

Powdery mildew is an airborne pathogen and, unlike many crop diseases, it is able to infect plants at a comparatively low relative humidity. Dry weather conditions will not necessarily stop the spread of this disease. Fortunately, it does not grow well at temperatures above 30 C. For more information on the biology and management of powdery mildew, visit the Ontario CropIPM website at: <http://www.omafr.gov.on.ca/IPM/english/cucurbits/diseases-and-disorders/powdery-mildew.html>



Figure 1. Early Powdery Mildew Infection on Lower Leaf Surface



Figure 2. Established Powdery Mildew Infection

(From OMAFRA newsletter HortMatters)

Flower buds for next year's crop

Leslie Huffman, Apple Specialist, OMAFRA

It's that time of year again - your apple trees have been busy setting terminal buds on this year's extension growth, at the same time as they are getting ready for next year's crop. The annual process to initiate flower buds is now underway, which is the critical first step for a successful crop next year.

Usually trees are initiating flower buds at the same time as they are dividing and filling cells in the fruit, and moving storage carbohydrates to the roots as the beginning of the hardening off process. While some trees are not carrying much crop this year, there is still a high energy demand on them. This is why we encouraged all growers to maintain good tree health by adequately managing pests, weeds and irrigation where necessary.

Flower bud initiation is just the first step in a long and complicated process that results in a complex flower structure opening next spring, ready for pollination. With high power microscopes, plant physiologists have photographed tiny groups of cells that look like tiny volcanoes growing on fruit spurs (Figure 1). The differentiation process continues each week, and advances in tissue development can be observed through a microscope. The king bloom can usually be seen by the end of August, and all the secondary flowers by the end of September. The bud scales form shortly after that and the bud prepares for winter.

It is a truly amazing process that is not yet fully understood. Of special interest is what makes the process begin (or in the case of biennial bearing, what stops the process from beginning). Researchers are studying plant hormones, especially from the developing seeds, but more remains to be learned. For now, just appreciate what your trees are doing now, and look forward to a new crop of blooms next spring.



Figure 1. Five-leaf primordial in a differentiated apple bud.

(From OMAFRA newsletter HortMatters)

Root Rot of Lavender: Scouting is the Key to Prevention Sean Westerveld, Ginseng and Medicinal Herbs Specialist, OMAFRA

The pests of lavender observed to date (four-lined plant bug, Septoria leaf spot, etc.) have caused mostly aesthetic damage to plants, affecting marketability but not killing the plant. More aggressive diseases are known to occur in other lavender production areas like Europe and Oregon, but have not yet been reported from Ontario.

In late June an aggressive fungal root disease of lavender showed up on an Ontario lavender farm. The plants appeared to sprout as normal in early spring, but soon wilted, turned brown and died within a matter of weeks or even days sometime in June. The exact timing of disease progression is unknown, but after symptoms appeared on the first plant the disease quickly spread down the row in both directions, affecting three neighbouring plants.

Three main pathogens have been associated with this root rot: *Fusarium*, *Pythium* and *Phytophthora*. *Fusarium* is a common soil fungus that can cause disease on a wide range of plants with symptoms ranging from root rots to vascular wilts. *Pythium* is also a common soil pathogen, usually causing damping-off of seedlings and

less aggressive diseases on roots and crowns. *Phytophthora* is usually a very aggressive soil pathogen that can spread rapidly under wet conditions. A plant weakened by one pathogen can be easily colonized by other pathogens. More research is required to determine which pathogen(s) are primarily responsible, and to develop more detailed strategies for preventing the disease.

In this case, the disease did not spread beyond the initial four plants because the disease was observed early enough to remove affected material before it could spread throughout the field. However, it is important to note that had the grower not constantly been monitoring the field, the disease could have progressed to a point where it could not have been controlled.

There are no pest control products registered on lavender that could control any of the more serious diseases known to affect lavender. It is therefore essential to watch for and stop this type of pest in its initial stages long before it becomes too widespread for cultural control measures to be effective, potentially leading to long-term loss of a field for cultivation of lavender. The following cultural practices can help in preventing these types of problems:

1. If ordering new plants, always ensure that they were collected from healthy plant material. Keep newly purchased plants in an isolated place on your farm away from established plantings for a week or two and examine closely for signs of pest issues. Do not plant any lavender with symptoms of pest damage.
2. Regularly scout lavender fields throughout the growing season, looking for any pest issues, but especially plants that completely die during the season. Overwintering issues can result in dead plants, but a healthy plant that dies mid-season is usually a sign of a root or crown disease.
3. Once a plant with disease has been found, it should be dug up and sent to a reputable lab for diagnosis.
4. Flag the area where the plant was removed and continue to monitor regularly for signs of spread to the neighbouring plants. If a neighbouring plant begins to develop symptoms, all affected plants should be removed, and at least one and preferably two healthy plants on either side of the diseased plants should also be removed. This may prevent the pathogen from moving from plant to plant down the row. Any grass or weeds next to the plant should also be removed, because it is unknown at this time whether these could also be hosts to the root pathogens.
5. Clean and sanitize any tools used to remove the affected plants before using them elsewhere on the

farm. Also, prevent spread of soil from the affected area to other areas of the farm by minimizing walking or driving machinery through the affected area. For farms open to the public, it is very important to block this area off from customers, since they may then travel to other fields on your farm and could carry spores on their shoes. The area could be covered in a mulch to reduce the chance of soil being picked up on boots or machinery.

6. Do not re-plant lavender in the affected area or any other plants in the mint family (e.g. mint, thyme, oregano, basil, sage, numerous ornamentals). For farms open to the public, this may be unsightly. However, these protocols will hopefully prevent the spread of disease, which could cause numerous dead patches in the future. Use the opportunity to add a focal point to the middle of the field, such as a sculpture or un-related ornamental plant.



Figure 1: A root disease of lavender. The plant at the bottom of the photo was killed first and the disease quickly spread down the row.

(From OMAFRA newsletter HortMatters)

FIELD CROPS & FORAGES

Using Corn Damaged by Dry Weather for Silage Joel Bagg, Forage Specialist, OMAFRA

Dry weather during corn silking and pollination can significantly reduce grain yield expectations. Inadequate moisture can result in poor ear fill or even corn plants without any ear or grain. In extended dry weather situations, farmers can also face the immediate problem of providing adequate forage inventories to feed their livestock. Damaged corn crops with low grain yield potential may be available for salvaging as corn silage for livestock producers that are short of forage. Silage piles and silage bags provide flexible storage. Farmers attempting to salvage corn fields damaged by dry weather by harvesting them as forage should be aware of some of the harvesting and nutrition implications.

Evaluate Yield Potential

Tremendous variation can occur in corn fields stressed by lack of rain. Development of the ears is critical to grain and silage yield, and also silage quality. Some fields may have short plant height with fairly normal ears. Yields will be reduced, but forage quality will be close to normal. Other fields will be more normal in height but have very small ears or no ears. Grain yields will be dramatically reduced, but there may still be some potential to provide some forage for livestock.

Inspect corn fields to evaluate yield potential. If pollination has occurred, there will be small, white blisters visible a week to 10 days after pollination. Detecting successful pollination without waiting for the kernel blisters to appear, can be done by carefully removing the husks, turning the ear upside down and gently tapping it. The majority of silks should fall off indicating successful pollination. Silks that remain attached indicate kernels that have not been pollinated.

Contact Agricorn at 1-888-247-4999 to determine how using this corn as silage will impact a Crop Insurance claim.



Figure 1. Dry weather stressed corn

Digestible Energy Levels

Digestible energy levels of corn silage without any grain content are reduced. Quality will likely be inadequate for high producing dairy cows or feedlot animals. In areas with low forage yields and a need for emergency feed, quality may be adequate for livestock with low to moderate energy requirements. Starch content will be reduced, but there is likely a higher level of soluble sugars. Crude protein may be slightly higher. Fibre levels will be higher, and the lignin content can also be increased. Because 45 percent of the energy in normal corn silage comes from the starch fraction, the relative energy value of corn with no ears may be as low as 65 to 85 percent of well-eared corn silage. In the rumen, the residual sugars will be more rapidly available than starch.

Feeds should be sampled and analyzed, rations should be balanced and a nutritionist consulted. Energy predictions of Total Digestible Nutrients (TDN) using Acid Detergent Fibre (ADF) and Neutral Detergent Fibre (NDF) will not be very accurate. Analyzing for starch, NDF and NDF digestibility will give much better estimates of digestible energy than fibre alone. Wet chemistry analysis rather than near infrared spectroscopy (NIRS) should be used.

Harvest At Correct Moisture

Ensiling at the correct whole plant moisture is critical. Without a normal cob, it can be difficult to correctly estimate whole plant moisture from visual clues. Corn silage damaged by dry weather conditions tends to look drier than it actually is. Harvesting at moistures that are too low will result in poor packing, inadequate air exclusion, poor fermentation and greater spoilage. Harvesting at moisture levels above 70 percent will result in seepage and a very undesirable clostridia fermentation. This silage will have high levels of foul smelling butyric acid, with poor feed quality and palatability. (Silage Fermentation Problems www.omafra.gov.on.ca/english/crops/field/news/croptalk/2010/ct-0910a6.htm)

Recommended moisture contents for corn silage are as follows:

Horizontal bunker silos: **65 – 70 %**

Bag silos: **60 – 68 %**

Upright concrete stave silos: **62 – 67 %**

("Harvesting Corn Silage At The Right Moisture" <http://www.omafra.gov.on.ca/english/crops/facts/07-047.htm>)

It is very difficult to accurately estimate the moisture of earless corn silage without measuring it. There are no milk-lines to use as guides. Leaves may look dry, but the stalk will contain more moisture. A common problem is harvesting corn silage from these damaged fields too soon, resulting in run-off and a poor fermentation. If you are in doubt about the whole-plant moisture, chop a sample using a harvester or yard chipper. Use a Koster Tester, microwave or laboratory to determine percent dry matter. Sample at least 10 plants from the field, avoiding the headlands. Watch for moisture variability within fields. Be aware that samples have residual moisture that is not removed when dried with a Koster Tester or microwave without burning it. Dry matter determined by oven drying at a laboratory is the most accurate. (This can be done by using overnight courier service.) Koster Testers and microwaves typically under estimate moisture by about 3 %. A 68 % moisture sample reading is actually about 71 % (too wet). If using a Koster or microwave, taking the time to carefully dry the sample is important. The finer that the sample is chopped, the easier it will be to dry, and the more accurate the result.

Nitrate Poisoning

Be aware of the potential for nitrate poisoning, as well as silo gas. Nitrates accumulate in the corn plants when there is a large amount of soil nitrates, and a lack of moisture that interferes with normal plant growth. Nitrate accumulation is often greatest following a rain that ends a dry period. Following rainfall, the conversion of nitrates to plant protein resumes and nitrate levels return to more normal levels in a few days. Wait at least 5 to 7 days following a rainfall before harvesting. Weeds such as lamb's-quarters and pigweed can also be high nitrate accumulators. Long, sustained dry periods are less likely than brief, intense dry periods to accumulate high nitrate levels.

The bottom third of the stalk contains a much higher level of nitrates. If nitrates are a potential concern, the cutter bar could be raised to leave more of the stalk in the field, but this will also further reduce yields in a year when feed is needed. Analyzing fermented silage samples for nitrates and managing dietary levels is recommended. A few other considerations to manage high nitrate potential include:

- **Fermentation Reduces Nitrates**

Nitrates can be reduced 25 – 65 percent during a proper silage fermentation. Typical reductions are in the 40 percent range. Allow at least 3 – 5 weeks of fermentation before feeding. Corn silage that is harvested too wet or too dry will not ferment properly and dissipate the nitrates. The addition of non-protein nitrogen (NPN), such as urea or anhydrous ammonia, to this corn silage is not recommended.

- **Don't Graze Or Green Chop**

Green chopping or grazing corn stressed by dry weather should be avoided due to the potential of high nitrate levels and poisoning. Green chop that is not fed immediately undergoes respiration that converts nitrate to nitrite, so the risk is increased.

- **Nitrate Toxicity Symptoms**

In the rumen, nitrates are normally converted to nitrites, which are converted to ammonia and then amino acids. High levels of nitrites are absorbed in the blood and tie up hemoglobin so that it cannot transport oxygen. Symptoms of nitrate toxicity include a rapid pulse, difficult breathing, muscle tremors and weakness. A blue mucous membrane may develop. Animals typically go down and die suddenly, within 3 hours of the initial symptoms. If you suspect nitrate poisoning, keep the animals quiet and comfortable and call your veterinarian immediately. Subacute or chronic poisoning can cause reproductive problems, including abortion.

- **Nitrate Analysis**

Testing at harvest will provide a general idea of the relative nitrate levels, but not the concentration of nitrates in the silage being fed. The best time to test for nitrate concentration is after fermentation is complete. Obtain a representative sample. Keep the samples refrigerated and send to the lab as quickly as possible. If high levels are reported, water and other feeds should also be tested.

- **Feeding Management**

As a general rule, nitrate ion (NO₃) levels should be less than 0.44%, or 1,000 ppm nitrate-nitrogen to be without risk. Levels greater than 1.76 % NO₃, or 4,000 ppm nitrate-nitrogen should not be fed. Feeding forages with nitrate content between these levels is associated with risks relative to the amount fed and the type of livestock. Careful management is required. Young, nursing and pregnant animals are higher risk. Introduce higher nitrate feeds slowly. Adequate energy in the rumen assists the nitrate to ammonia conversion, which reduces the potential for poisoning. Adequate levels of nonstructural carbohydrates (NSC) should also be fed.

- **Silo Gas**

The increased nitrate potential increases the risk of silo gas. Nitrogen dioxide, NO₂, is a dangerous chemical asphyxiant and is produced almost immediately after plant material is placed into a silo. Even short-term human exposure can result in severely injured lung tissue and sudden death. It has a characteristic bleach-like odour and may be visible as a reddish-brown haze. It is heavier than air, therefore it will tend to be located just above the silage surface. It may also flow down silo chutes and into feed rooms. Use the silo gas precautions and procedures outlined in "Hazardous Gases" (OMAFRA Factsheet #04-087) at www.omafra.gov.on.ca/english/engineer/facts/04-087.pdf. Refer to the Ontario Farm Safety Association at http://www.farmsafety.ca/public/factsheets/silo_gas_dangers.pdf.

Corn damaged by extended dry weather conditions can be used as corn silage to supplement forage needs, but extra care is required in ration balancing, harvesting at the correct moisture, and managing the nitrate and silo gas risks. Information on harvest and storage of corn silage, including "Pricing Corn Silage", "Silage Fermentation Problems", and "Grazing Corn Stover" is available on the OMAFRA Crop Website at <http://www.omafra.gov.on.ca/english/crops/field/forages.html>.

My Soybeans are Wilting

Albert Tenuta, Pathology Field Crops Program Lead, OMAFRA

In Ontario there are many root/stem diseases which cause wilting symptoms in soybeans. With the hot, dry conditions this year over much of the province some of these diseases such as stem canker, Fusarium wilt, and charcoal rot have taken advantage of the additional stress.

Fusarium wilt or blight of soybeans can affect soybeans at any stage of development and is very apparent in southwest. It is caused by the very common soil-borne fungus, *Fusarium oxysporum* which is different to *Fusarium virguliforme* which is responsible for Sudden Death Syndrome (SDS). *Fusarium oxysporum* causes a wilting of the soybean plant and is often misdiagnosed as *Phytophthora* root rot or stem canker as well. Affected plants have a wilting of the stem tips and the upper leaves are scorched. The middle and lower leaves can turn yellow or have pale (dull) yellow spots. In severe cases the leaves will dry up and drop prematurely leaving the petiole behind. The leaf symptoms are different from SDS or brown stem rot where distinct yellow speckling or spotting between the veins (interveinal chlorosis) occurs and as the disease progresses these areas become larger and in severe cases the entire area between the veins becomes brown (necrotic) and dry. Unlike *Phytophthora* there also is no evidence of a stem lesion or external decay that goes above the soil line. Cutting the roots and stems lengthwise will reveal a browning of the vascular tissue and pith. This may be confused with early-season brown stem rot. *Fusarium* infested roots often have red, orange or white mycelium visible.

Stem Canker symptoms are often described as a general yellowing of the top leaves of the plant with dark reddish-brown sunken cankers at the nodes. The lesion may extend several inches, often on one side but does not usually extend down as far as the soil line (different than *Phytophthora* wilt). In severe cases however the lesion may cover the entire length of the stem but in most cases there will be a green section of stem remaining at the soil line. A cross section of the stem will reveal a slight browning at the nodes at first followed by complete disintegration of the stem in severely infected plants. The sudden wilting of the plants and the stem canker can be confused with *Phytophthora* root rot as well as *Fusarium* wilt.

Besides the yellowing of the leaves and stem lesion, stem canker can cause a "top dieback" especially later in the season. In this case, the upper four to six internodes or branches of the plant become dark brown and as the name implies the top dies (wilts). Soybean plants may

OMAFRA Articles and Updates (Cont'd)

become more susceptible as the plants go through physiological changes due to flowering.



Figure 1. Stem canker lesion. Note lesion can girdle stem or be found on one side.

The fungus responsible for northern stem canker (*Diaporthe phaseolorum* var. *caulivora*) survives in crop residues and is therefore, influenced by not only rotation but tillage management practices. It is suspected the re-emergence of stem canker in the northern U.S. and Ontario is due not only to more soybeans and less tillage but possibly an increase in susceptible varieties being grown.

Charcoal rot is one disease which you may not be aware of since it only really shows up when the weather is very hot and dry and occurs predominantly in southwestern Ontario. Although the fungus responsible for charcoal rot (*Macrophomina phaseolina*) infects early it is not usually until late July or August for symptoms to become obvious but with an early start this year symptoms started early.



Figure 2. Grey discoloration and black streaking of stems is typical of charcoal rot infection (Photo by XB Yang)

Look for tiny, round black structures (microsclerotia) produced inside and on the surface of the taproot and l

lower stems which often have a grayish appearance. If you split the lower stem/root, you will find black/dark streaks or staining of the tap root. Infected plants will wilt and are often stunted with yellow leaves which can be confused with drought or other wilt diseases.

Why this year? The wilt and other root rot diseases are most problematic when soybeans are under water, heat and root stress. In addition, soybean cyst nematode can further stress an already compromised plant and allow easy access for many soil-borne root pathogens. Stress can interfere with the normal activity of the plant's root system and therefore, will affect growth and potentially increase root diseases. Stunting, overall poor growth and wilting are all symptoms of root stress. Root stress will also often resemble nutrient deficiencies.



Figure 3. Wilt symptoms of soybeans in field can be caused by a number of different pathogens.

It is important to remember every field is different and many of these diseases can occur in the same field. For example Dr. Terry Anderson (retired AAFC Pant Pathologist in Harrow) who has been graciously helping with a new GFO and CAAP funded seedling disease project found the following breakdown of fungi from two fields showing wilt symptoms in Essex County. The percentage of plants infected in field one was – *Fusarium* (93%) and charcoal rot (36%) and in field two Terry found *Fusarium* (25%), charcoal rot (25%), *Phytophthora* (25%), stem canker (8%) and *Pythium* (8%).

It is important for producers to scout their fields and identify problem fields now and to harvest. This will assist in the selection of resistant varieties if available as well as other management options. Crop rotation with non-hosts such as corn and wheat (small grains) can reduce these wilt pathogens but only to a degree since some can infect other crops and weeds as well. Reducing the amount of infested soybean residue on the soil surface is another management tool to consider. We can't change the weather but we can minimize risk of these and other diseases from occurring in the future.

(From OMAFRA newsletter CropPest Ontario)

General Topics

Irrigation Uniformity and Efficiency - How to Track What Gets to the Crop

John Warbick, Water Quality Engineer, OMAFRA

How do you know how much irrigation water your crop is receiving and is it the same everywhere? Are you wetting the entire root zone every time you irrigate or just part of it? This article will explain the concepts of uniformity and efficiency and explain how you can test your irrigation system for each.

Irrigation Uniformity

Ideally your irrigation system should be applying the same amount of water uniformly everywhere. However, there are factors which may influence your systems ability to distribute the water evenly. The table below lists some of the factors for two common types of systems.

Sprinkler System	Drip System
1. sprinklers not properly spaced	1. variable line pressures
2. wind causing drifting of spray	2. clogging of emitters
3. worn sprinkler nozzles	3. poor design

To test the uniformity of your sprinkler system randomly place small catch cans in the field before you begin your next irrigation cycle. Once the cycle is complete, check the amount of water in each. The levels should be fairly close. Are you putting on what you expected everywhere? If the levels vary between the cans consider some the factors in the above table to make improvements.

To test the uniformity of your drip system place small catch cans under emitters randomly throughout your system. Be sure to place cans at the beginning and end of long runs of pipe. Once again, run your system for one irrigation cycle and check the amount of water in each can. If the levels vary between the cans consider some of the factors in the above table.

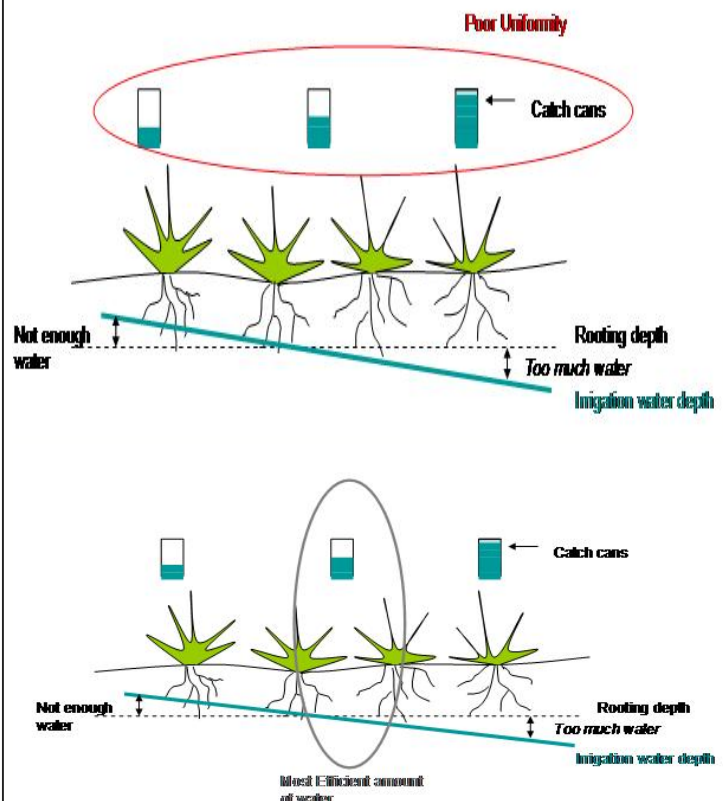
Irrigation Efficiency

When we talk about efficiency we are talking about getting irrigation water from our irrigation system to the entire root zone of our crop. Ideally we would like to wet the entire root zone depth each time we irrigate. If we irrigate too much and some of the water passes down past the root zone or not enough, partial wetting of the root zone, then we are not irrigating efficiently. We may be wasting water or stressing the crop.

Historically farmers in Ontario have based their irrigation amount and timing on touching and feeling the soil at different depths, the crop stage and over time developed a rule of thumb such as apply 1 inch of water each week during dry periods.

Today there is number of soil moisture monitoring instruments available to assist farmers in determining the soil moisture at various depths under their crop. The costs of these devices range form \$100 to \$3000+ depending on the type and number of instruments. The instruments allow a farmer to determine not only the moisture level below the crop but how deep they are irrigating during each irrigation cycle and if they need to apply more or less water to just fill the root zone. For more detailed information please see the [OMAFRA Factsheet Monitoring Soil Moisture to Improve Irrigation Decisions](#) and [Best Management Practices book Irrigation Management, BMP 08](#).

(From OMAFRA newsletter HortMatters)



(From OMAFRA newsletter HortMatters)

On Farm Food Safety: Your Business Advantage Training Workers on Food Safety

Training workers on Worker Policies is an important part of each growing season, especially when you have new workers. Remember: “if they don’t know it they won’t do it”. Worker Policies cover *worker practices, hand washing, clothing and footwear, and injuries and illness*.

Worker practices require:

- Workers to make use of designated areas for eating, drinking and storing food.
- Workers to refrain from smoking, chewing tobacco, chewing gum and spitting in or around food handling and storage areas.
- Workers to avoid wearing jewellery, nail polish, badges and pins.

Food safety practices keep agri-food businesses competitive, productive and sustainable. For more information, visit the Ontario Ministry of Agriculture, Food and Rural Affairs website at www.ontario.ca/goodagpractices or call us at 1-877-424-1300.

On Farm Food Safety: Your Business Advantage Water Quality

Water quality varies depending on the water source. While a best practice is to always test your water, it is especially important to test your irrigation water if you are sourcing from a pond or other open water source. The most accurate way to take a sample is directly from the irrigation system. Allow the system to run for a few minutes then collect the sample from the end of the drip line or emitter using a sterile container provided by a laboratory accredited to perform microbial water testing. Refrigerate the sample and have it tested within 24 hours. Make sure the lab knows that your sample is irrigation water and not drinking water because there are different standards/guidelines for each!

Food safety practices contribute to competitive, productive and sustainable agri-food business. For more information on this fact sheet visit the Ontario Ministry of Agriculture, Food and Rural Affairs website: www.ontario.ca/goodagpractices, click “factsheets/infosheet”, or call us at 1-877-424-1300.

New Publications

The following **free OMAFRA Factsheets** are now available from www.serviceontario.ca/publications:

12-029: Understanding and Reducing Noise Nuisance from Stationary Farm Equipment

12-033: Growing Medicinal Herbs in Ontario, New.

12-035: Feeder Management in the Grower-Finisher Barn, New.

12-018: *Loi de 2002 sur la gestion des éléments nutritifs*, Déterminer les catégories d'odeur des matières de source non agricole (MSNA), New.

12-022: Choisir des races pour produire des agneaux de marché rentables, New.

12-024: Sélection génomique chez les vaches laitières, New.

12-026: *Loi de 2002 sur la gestion des éléments nutritifs*, Systèmes de transfert d'éléments nutritifs liquides à la ferme, New.

12-028: Les pratiques agricoles et la loi

The following **free web-only Factsheets** will be offered online (on the OMAFRA site):

12-031W: Understanding Lamb Mortality, New.

12-032W: Comprendre la mortalité des agneaux, New.

For a complete listing of OMAFRA products, see our online catalogue at: <http://www.omafra.gov.on.ca/english/products/index.html>

Funding Opportunities

Limited Time for New Cost-Share Opportunities with the Canada-Ontario

Environmental Farm Plan

New cost-share opportunities exist under the Best Management Practices (BMPs) category of the Canada-Ontario Environmental Farm Plan. The funding is available to commercial greenhouse, landscape nursery and vegetable farms and must meet the following eligibility requirements:

- Be a legal farm entity with a unique Farm Business Registration Number (FBRN) or equivalent;
- Have a Third Edition Environmental Farm Plan (EFP) deemed appropriate through peer review;
- Have selected a BMP from the eligible list in this brochure that relates directly to an action identified in their EFP, and effectively moves a "1" or "2" rating towards a "3" or "4" (best) rating; and
- Will authorize a declaration stating that the farm business in the 2011 year included a commercial greenhouse floriculture farm, commercial greenhouse vegetable farm, commercial landscape nursery farm or commercial vegetable farm, involved in the production of a horticultural crop(s)

Cost-shares are set at either 30 per cent or 50 per cent, up to the BMPs category caps during the 2012 cropping year. **Applications are being accepted beginning July 19, 2012 on a first come, first served basis** with a Growing Forward maximum contribution per legal farm entity of \$30,000. Invoices dated September 15, 2011 or later will be accepted with a project claim submission deadline of December 15, 2012.

For more information contact the Ontario Soil and Crop Improvement Association by mail at 1 Stone Road West, Guelph, Ontario N1G 4Y2, telephone: 1.800.265.9751 or visit their website at www.ontariosoilcrop.org.

Agricultural Management Institute (AMI) Event and Speaker Funding

The AMI currently has funding for speakers and events related to farm business management. Registered organizations, associations, and groups located in Ontario can apply for up to \$5000. For more information on the funding program and to download an application form, please visit the AMI website at www.takeanewap3proach.ca/

Organic Science Cluster II – Call for Letters of Intent

The Organic Science Cluster II is currently accepting Letters of Intent (LOI) from researchers to participate in, and have proposals screened for relevance for, the anticipated second round of science clusters under Canada's Growing Forward II policy framework, a Federal-Provincial-Territorial funding initiative.

The Organic Science Cluster is an initiative by the Organic Agriculture Centre of Canada (OACC) and the Organic Federation of Canada (OFC) and works to address research needs in the organic sector. The deadline for LOI submission is September 30, 2012. For more information and updates, please visit the Organic Science Cluster II website at www.oacc.info/osc2.

Learning Opportunities

Multi-Disciplinary Advising Workshop for Farm Business Advisors

Sauder School of Business, Business Families Centre (UBC) has developed a unique program for CAFA members to be launched in Ontario this summer, thanks to AMI support.

Dates & Locations (8:30 am - 4:30 pm):
Monday, August 27 in Kemptville.

Cost: \$200 for CAFA members. Space is restricted to 30 participants per session. (If there is any space left, non-CAFA members can participate at cost: \$425). Earns 8 CAFA Continuing Professional Development credits.

This workshop will teach advisors how to avoid giving advice that conflicts with counsel from advisors in other fields while learning to build and function within a team.

The fundamental principles of knowing when and how to build multi-disciplinary advising teams that benefit both their clients and their business will be discussed. Advisors will explore the dynamics associated with working as part of a multi-disciplinary team and learn how to apply the concepts to work more effectively with their business family clients.

Weed Control in Organic Agriculture

A 13 week online course provided by the University of Saskatchewan's Centre for Continuing Education & Distance Education. The course will focus on weed biology, principles for organic weed management in field crops, and various practical weed management techniques for organic production systems.

Learning Opportunities (Cont'd)

Cost: \$399 +GST and materials

For more information please visit their website at ccde.usask.ca/weedcontrol or contact Jill Turner by email at jill.turner@usask.ca or telephone at 1.306.966.1382.

Sustainable Urban Agriculture

Several courses in sustainable urban agriculture are available at the University of Guelph during the Fall 2012 semester. Courses include theories and principles of sustainable urban agriculture, sustainable urban crop production, naturalising and restoring urban gardens and many more. For more information please visit the Sustainable Urban Agriculture website at www.urbanhort.ca or through the University of Guelph main page at www.uoguelph.ca.

Conferences and Events

Feast of Fields

Date: September 9, 2012

Location: Cold Creek Conservation Area

The annual outdoor food event hosted by Organic Advocates brings together farmers, chefs, and the public to raise awareness of organics. A number of celebrity chefs will be attending this year including Michael Smith, Emerie Brine, Ted Reader and more!

Cost: Early Bird Tickets \$75.00

For more information or to purchase tickets please call 905.859.3609 or email tickets@feastoffields.org

Canada's Outdoor Farm Show

Date: September 11-13, 2012

Location: Woodstock, Ontario

For more information please visit the website www.outdoorfarmshow.com or call 519.822.2890
Toll free: 1.800.563.5441

International Plowing Match and Rural Expo

Date: September 18-22, 2012

Location: Roseville, Ontario

For more information please visit www.plowingmatch.org or call 519.631.1234 Toll free: 1.800.661.7569
Email eventadmin@plowingmatch.org

BioFach America - All Things Organic

Date: September 20-22, 2012

Location: Baltimore, Maryland, USA

For more information please visit www.biofach-america.com

Organic Week

Date: September 22-29, 2012

Organic Week is a national celebration of organics in Canada. Events will be held across the country to highlight the benefits of organic agriculture.

For more information and a listing of events in your area please visit the website at www.organicweek.ca

Journée d'Atelier Agricole -2012- Agricultural Workshop Day

Date: September 27, 2012

Location: Campus d'Alfred, University of Guelph

The Ontario Ministry of Agriculture, Food and Rural Affairs, in collaboration with Université de Guelph-Campus d'Alfred is organizing the first edition of the 2012 Agricultural Workshop Day. This bilingual event is organized for agricultural producers in Eastern Ontario. This day is scheduled to be held on Thursday, September 27th on the farm of Campus d'Alfred. All presentations and workshops will be presented in French and/or English with simultaneous translation.

Program agenda includes:

Exhibition Space

Exhibition space and presentation hall will allow participants to meet and discuss with stakeholders and agricultural suppliers from Eastern Ontario. Exhibitors are invited to present their new product lines. Outdoor exhibition space will also be made available.

Presentations

Dr. Trevor DeVries (University of Guelph) will present information on new concepts in heifer management.

Dr. Tom Wright (OMAFRA) will speak about those challenges facing dairy producers caused by the dry climatic conditions experienced during the summer.

Conferences and Events (Cont'd)

Dr. Elsa Vasseur (University of Guelph) will discuss the Canadian Code of Practice and a recent study related to dairy cow comfort.

Lunch

A BBQ lunch will be served. This meal will include hamburgers, salads, desserts and refreshments.

Practical Workshops

In addition to the above, a series of practical workshops will be held during the course of the day on the farm of the University of Guelph – Alfred Campus. These workshops will include:

- Tips and Tricks to reduce somatic cell counts (Guy Seguin, DFO);
- Pasture Management: Why and How? (Jack Kyle, OMAFRA);
- Dairy manure analysis for ration adjustment (Renée Bergeron, University of Guelph and Mario Mongeon, OMAFRA);
- Milkhouse Waste Water Treatment Solutions (Anna Crolla and Chris Kingsley, University of Guelph);
- What's New in Dairy Heifer Management (Viviane Bielman, University of Guelph).

Project Research Summaries

During the course of the day, participants will have to opportunity to meet with dairy researchers and learn about their work. They will also have the chance to ask questions on the latest research in dairy production. Participants stand to benefit from the most recent research results and have information which they may be able to apply on their farms.

- Effects of Tanniferous Forages and Harvest Time on Feeding Behaviour of Dairy Cattle
- Winter outdoor access: cow preferences, environmental and economical constraints
- Effects of pest flies on the behaviour, stress and productivity of dairy cows on pasture
- Treatment of Dairy Farm Washwaters using Horizontal Sub-surface Flow Constructed Wetlands
- Biogas Production from the Dry Fermentation of Poultry Manure with Co-substrates
- Decentralized Wastewater Treatment of Nitrogen and BOD through Hybrid Constructed Wetlands
- Associations between herd-level feeding management practices, feed sorting and milk production in free-stall dairy farms
- Effect of milking and feed delivery frequency on the feeding behaviour of dairy cattle
- Effect of early management factors on development of feeding behaviour in calves
Associations of herd- and cow-level factors, cow lying and standing behaviour, and risk of elevated somatic

cell count in free-stall housed lactating dairy cows

For more information concerning sponsorship of this event or registration, do not hesitate to contact Mario Mongeon at 613.679.4288 or via email at mario.mongeon@ontario.ca.

CanBio Annual National Conference and Trade Show

Date: October 12-13, 2012

Location: Delta Chelsea Hotel, Toronto, Ontario

For more information please visit www.cdea.ca/event/canbio-annual-national-conference-and-trade-show

2012 Eastern Ontario Local Food Conference

Date: November 22, 2012

Location: University of Guelph, Kemptville Campus.

This year's theme is "**Collaborating for Success**". A keynote address will be given by Terry Ackerman entitled "**Collaborating for Success – the Value Chain Model and Profitability**". This address will provide a practical guide to creating and building profitable value chains based on real life examples of successful value chains in Canada.

The purpose of this event is:

- To provide a forum for Eastern Ontario local food practitioners to network
- To address challenges to local food that are specific to Eastern Ontario
- To share technical information that will help to build the local food sector in Eastern Ontario

20th Annual Southwest Agricultural Conference

Date: January 3-4, 2013

Location: Ridgetown Campus, University of Guelph

For further information, please visit the website at www.southwestagconference.ca

32nd Annual Guelph Organic Conference Organics...What's The Buzz?

Date: January 31-Feb 3, 2013

Location: University of Guelph

For further information, please visit the website at www.guelphorganicconf.ca

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Conferences and Events (Cont'd)

Foodland Ontario Organic

A Foodland Ontario marketing survey conducted in 2011 indicated that more than one-quarter of shoppers surveyed would buy organic more often if they knew it was from Ontario. To appeal to Ontario consumers who shop for organic products and help them to choose Ontario organic foods first, Foodland Ontario has a resource for producers and processors to identify their food as both certified organic and local.

Producers and processors who want to use the logo on their promotional and marketing materials will need to verify that their products are certified to the Canadian Organic Standard as well as meet the Ontario food definitions found on the Foodland Ontario website: www.foodland.gov.on.ca/english/industry/ind-definitions.html

For more information on how to get the Foodland Ontario Organic logo, contact OMAFRA's Agricultural Information Contact Centre at ag.info.omafra@ontario.ca or call toll free 1-877-424-1300.



Links to Organic Agriculture Information

Organic Council of Ontario (OCO)

<http://www.organiccouncil.ca>

Canadian Organic Growers (COG)

<http://www.cog.ca>

OMAFRA Organic Agriculture

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

Ecological Farmers of Ontario (EFO)

<http://www.efao.ca>

Organic Agricultural Centre of Canada (OACC)

<http://www.oacc.info>

FarmStart

<http://www.farmstart.ca/contact/>

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

E-mail: ag.info.omafra@ontario.ca

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

www.ontario.ca/omafra