

ONvegetables



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CONFINE EXTRA FUNGICIDE LABEL EXPANDED VIA MINOR USE PROGRAM FOR SUPPRESSION OF BACTERIAL SPOT OF LEAF LETTUCE

TRAVIS CRANMER, VEGETABLE CROP SPECIALIST, OMAFRA

The Pest Management Regulatory Agency (PMRA) recently announced the approval of URMULE registrations for Confine Extra fungicide (mono and di-potassium salts of phosphorus acid 53%) for the suppression of bacterial leaf spot (*Xanthomonas campestris* p.v. *vitians*) on leaf lettuce in Canada.

Where possible, rotate the use of Confine Extra (Group 33) with fungicides that have different modes of actions. Apply at a rate of 7 L/ha in a minimum of 100 L of water/hectare. Use a maximum of 6 foliar applications per growing season. Pre-harvest Interval (PHI) is 1 day.

Confine Extra is currently registered for downy mildew of lettuce, endive, radicchio as well as most brassica crops.

Follow all other precautions and directions for use on the Confine Extra label carefully.

For a copy of the new minor use label visit the PMRA label site: <http://pr-rp.hc-sc.gc.ca/lr-re/index-eng.php>

Note: This update is not intended to be an endorsement or recommendation for this particular product, but rather a notice of registration activity.

“In This Issue”

- ◆ Confine Extra fungicide label expanded via minor use program for suppression of bacterial spot of leaf lettuce
- ◆ Talking About the Weather – 2017 vs 10 year average
- ◆ Disease and Insect Update – July 13, 2017
- ◆ Stemphylium is the new Botrytis

TALKING ABOUT THE WEATHER – 2017 VS 10 YEAR AVERAGE

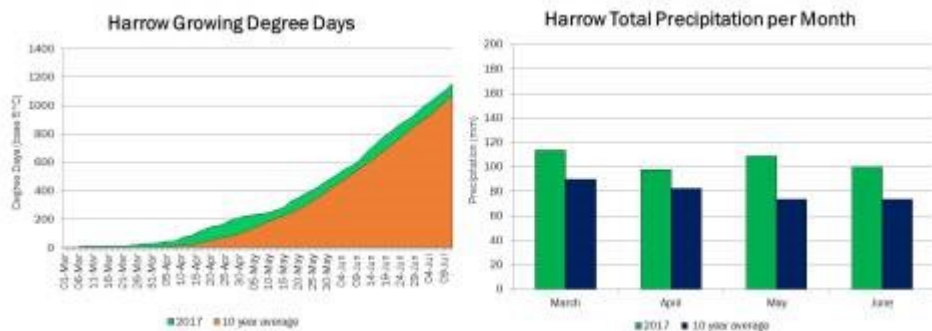
The 2017 growing season has been a wet one seemingly across the province, but just how much rain have we received?

Below you can see that since March, we have received more than the average monthly rainfall in nearly all regions of the province. Many regions have received double the monthly average rainfall and this often falls within just a few days.

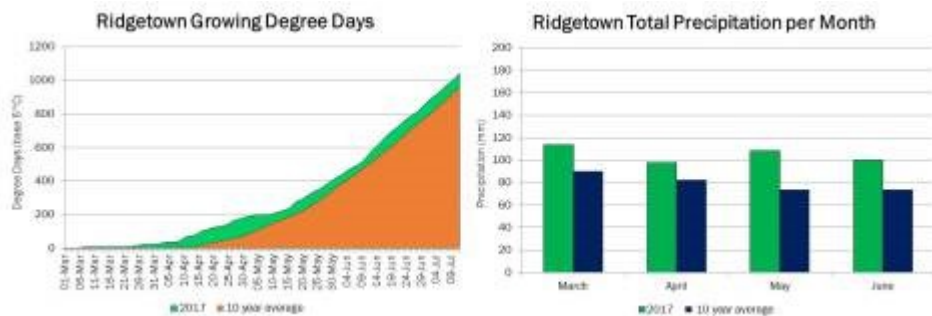
In most growing areas aside from Eastern and Northern Ontario, the daily maximum is within 0.3°C of the 10 year average. However, the daily minimum temperatures are averaging nearly 1°C warmer than the 10-year average. This is accounting for most of the increase in growing degree day accumulation for this year over the average. We haven't had many hot days over 30°C, but our overnight temperatures have been a little warmer.

Here's how different regions across the province compare to their 10-year averages in terms of degree days and rainfall.

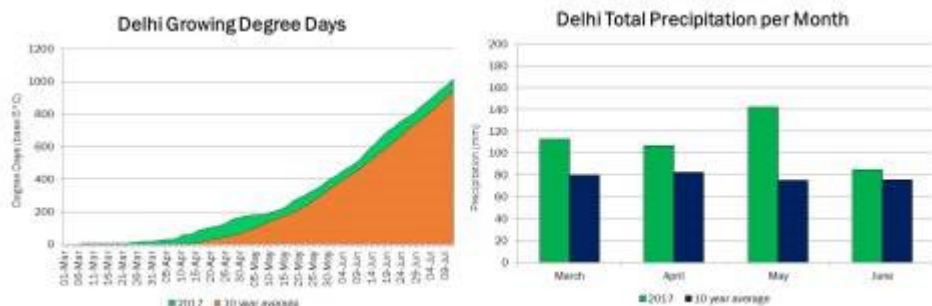
Harrow



Ridgetown

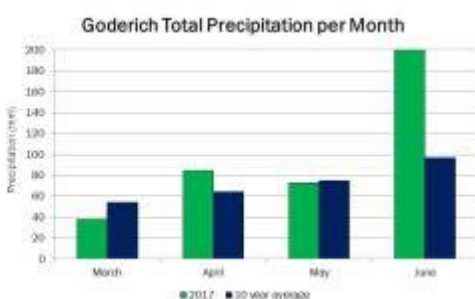


Delhi

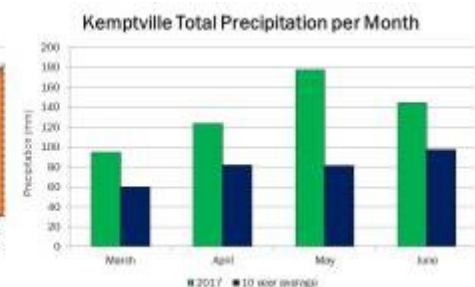
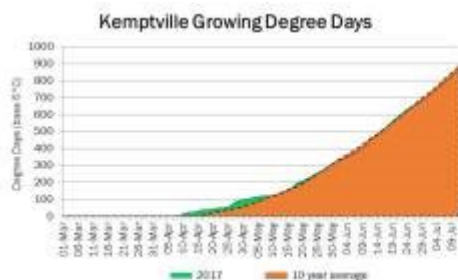


TALKING ABOUT THE WEATHER – 2017 VS 10 YEAR AVERAGE...CON'T

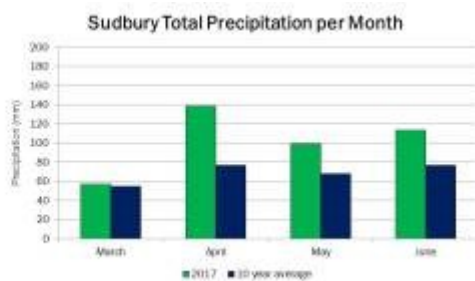
Goderich



Kemptville



Sudbury



DISEASE AND INSECT UPDATE – JULY 13, 2017

Insect Degree Days

Weather Station Location	Onion Maggot	Seedcorn Maggot	Cabbage Maggot	Carrot Weevil	Carrot Rust Fly	Aster Leafhopper
	(base 4°C)	(base 4°C)	(base 6°C)	(base 7°C)	(base 3°C)	(base 9°C)
Harrow	1265	1265	1044	938	1380	746
Ridgetown	1153	1153	937	838	1268	660
Delhi	1125	1125	910	813	1237	636
Goderich	973	973	775	684	1076	533
Guelph	928	928	735	646	1034	492
Bradford*	987	987	795	708	1086	547
Kemptville	969	969	786	700	1069	544
Sudbury	754	754	597	525	845	394

*Bradford weather, degree day data and information courtesy of the University of Guelph – Muck Crops Research Station

Summary

Cabbage, onion and seedcorn maggot fly activity should be beginning to increase from Norfolk across to Lambton and south. Most of the province is in-between generations currently but should start seeing the next generation emerge in the next few weeks depending on weather.

For carrot weevil we are now well past the degree day threshold for 90% oviposition across the province. This year we will be monitoring for the presence of a possible 2nd generation of carrot weevils. If you think you are having late season carrot weevil issues, please contact Dennis (dennis.vandyk@ontario.ca).

We have reached the DD threshold for carrot rust fly in Harrow only. The rest of the province should be between generations currently.

Aster leafhoppers adults are now present across the province.

Disease Forecasting

Onion Downy Mildew (DOWNCAST disease forecasting model):

In Bradford, conditions have not been conducive to sporulation so risk of downy mildew is low to moderate.

In Lambton county, sporulation infection periods (SIP) have been accumulated from July 2-5 and then again on July 12 meaning conditions and risk is high in transplant onions and moderate to high in seeded onions.

Late Blight:

Late blight DSVs are accumulating quickly in most areas of the province.

Late blight on potatoes has been confirmed in the Simcoe/Durham county region but the risk remains high across the province. Growers should be applying late blight specific fungicides along with a broad-spectrum fungicide like chlorothalonil (Bravo, Echo), metiram (Polyram) or mancozeb (Manzate, Penncozeb, Dithane).

Check OnPotatoes(<http://www.onpotatoes.ca/dsv.cfm?map=daily>) for up to date late blight risk information and USAblight(<https://usablight.org/map>) for currently reported late blight incidence in the Great Lakes region.

DISEASE AND INSECT UPDATE – JULY 13, 2017...CON'T

Crop Updates

Onions: Earliest direct seeded onions have six true leaves while the majority are at the four to five leaf stage. Stemphylium leaf blight, purple blotch, onion smut and Botrytis leaf blight has been detected in Ontario. See the Stemphylium leaf blight article in a previous OnVegetables post for more information.

Garlic: Leaf dieback has been seen in multiple areas with *Fusarium* basal rot and bulb and stem nematode. Carefully inspect the basal plate and look for fungal growth or rot on the stem. For confirmation, send suspect cloves to a certified pest diagnostic clinic for bulb and stem nematode extraction. Leek moth has been identified in pockets of Southwestern Ontario.

Brassica: Cabbage maggot is active and severely infested plants may wilt in hot weather. Wilt can also be caused by clubroot, a soil-borne pathogen infecting the roots and causing club-like symptoms. A clubroot survey is underway; please contact travis.cranmer@ontario.ca for more information if you find clubroot in your field. Swede midge has also been reported throughout Southwestern Ontario and is affecting the meristems later seeding dates of multiple brassica crops. Continue to scout for flea beetles, diamondback moth, cabbageworm, aphids, thrips and tarnished plant bugs.

Celery: Tarnished plant bugs have been detected in Thedford and the Holland Marsh. Scout for damage from carrot weevils laying eggs.

Below are the various insect DD thresholds for reference.

Thresholds

Use these thresholds as a guide, always confirm insect activity with actual field scouting and trap counts.

	Degree Days		
	1st generation	2nd generation	3rd generation
Onion Maggot	210	1025	1772
Seedcorn Maggot	200	600	1000
Cabbage Maggot	314-398	847-960	1446-1604
Carrot Rust Fly	329 – 395	1399-1711	n/a
Carrot Weevil	138 – 156	Egg laying (oviposition) begins	
	455	90% of the egg-laying (oviposition) is complete	
Aster Leafhopper	128	Overwintering eggs hatch	
	390	Local adult emergence	

DISEASE AND INSECT UPDATE – JULY 13, 2017...CON'T



STEMPHYLIUM IS THE NEW BOTRYTIS **TRAVIS CRANMER, VEGETABLE CROP SPECIALIST, OMAFRA**

Stemphylium leaf blight (*Stemphylium vesicarium*) of onion starts as yellow-tan, water-soaked lesions developing into elongated spots. As these spots cover the entire leaves, onions prematurely defoliate thereby reducing the yield and causing the crop to be more susceptible to other pathogens. Stemphylium was first identified in Ontario in 2008 and has since spread throughout the Holland Marsh and other onion growing areas in southwestern Ontario.

Stemphylium leaf blight can sometimes be misdiagnosed as purple blotch (*Alternaria porri*), as they both have very similar symptoms initially. Purple blotch has sunken tan to white lesions with purple centers while Stemphylium tends to have tan lesions without the purple centers.



Figure 1. Stemphylium Leaf Blight (A) and purple blotch (B) on onion.

STEMPHYLIUM IS THE NEW BOTRYTIS...CON'T

Stemphylium spores are dispersed by wind. Spore sampling at the Muck Crops Research Station using a Burkard seven-day spore sampler detected an average of 33 spores/m³ in 2015 and seven spores/m³ in 2016. In ideal conditions, leaf spot symptoms occur six days after initial infection. Stemphylium tends to infect dead tissue or wounds, often as a result of herbicide damage, insect feeding or from extreme weather. Older onion leaves are more susceptible to infection than younger leaves and symptoms are traditionally observed after the plants have reached the three- to four-leaf stage.

Over the last few years, Botrytis leaf blight (*Botrytis squamosa*) has become less of an issue and has been overtaken by Stemphylium as the most important onion disease — other than maybe downy mildew. This may be because the fungicides used to target Stemphylium are likely managing Botrytis as well. Since Stemphylium can be so devastating and hard to control, fungicides are now being applied earlier in the season which may be preventing Botrytis to become established. *Botrytis squamosa* overwinters as sclerotia in the soil and on crop debris left from the previous year and infects onions in mid-June when temperatures and leaf wetness are favourable for infection. In the Holland Marsh, Stemphylium lesions were first observed on June 29th in 2015 and July 7th in 2016.

The primary method of management is through foliar fungicides such as Luna Tranquility, Quadris Top and Sercadis. Keep in mind that Sercadis and Luna Tranquility both contain a group 7 fungicide so remember to rotate and do not make sequential applications. The effectiveness of these fungicides in the future depends on the spray programs you choose today. There are already Stemphylium isolates insensitive to several fungicides in New York so resistance is a real and very serious issue with this disease. Remember to rotate fungicide groups with different modes of actions to reduce the possibility of resistance. A protective fungicide is best applied when the onion crop has reached the three-leaf stage, however it may not be necessary in dry years.

Research is currently being conducted at the Muck Crops Research Station to improve forecasting models to identify the optimal timing for commercial growers to achieve good control. BOTCAST disease forecasting model is available in some areas of Ontario to help growers predict the activity of the disease. Warm, wet weather between 18-26°C is most favourable for disease development. Regular field scouting is still the best method to assess disease levels.

Plant spacing that permits better air movement and irrigation schedules that do not extend leaf wetness periods may be helpful in some areas. Recent work at the Muck Crops Research Station has shown that spores increase two to 72 hours after rainfall with eight hours of leaf wetness to be optimal for the pathogen. Irrigate overnight if possible so by morning the leaves can dry out and you don't prolong that leaf wetness period.

To lower inoculum levels it is crucial to remove or bury cull piles and to bury leaf debris left from the previous year's crop through deep cultivation. Stemphylium of onion has many hosts including leeks, garlic, asparagus and even European pear. Take the time to rogue out volunteer onions or other *Allium* species in other crops nearby and remove unnecessary asparagus or pear trees to lower inoculum levels. As with any other foliar disease of onion, it is beneficial to rotate with non-host crops for three years.

To prevent the development of resistance, it is essential to **always rotate** between different fungicide groups and/or tank mix with a broad spectrum insecticide. Current products registered for Stemphylium leaf blight of onion are listed by fungicide group below:

Group 7

Sercadis

Group 7/9

Luna Tranquility

Group 11/3

Quadris Top