



Another month has come and gone (like greased lightning) and here is another edition of Hort Snacks for you. This May has probably one of the nicer Mays we've had in terms of spring temperature for a number of years, although the associated dryness is not a welcome feature. Reports are generally dry across the province, although there are a few pockets that have received some decent moisture. Hopefully things will turn around in the near future, providing rain when we need it, but not too much.

In this edition of Hort Snacks, you'll find a few new articles, including one on off-label spraying (a big no-no) and one on Swede Midge, which we (in Alberta) need to keep an eye out for, since with the amount of canola acres we have growing, would be devastating to get. You'll find some early posters/announcements of some workshops, field days and other events that we'll be putting on this summer. If I do a quick count, we've got about 6-8 different extension series that we (Ag-Info Centre Hort guys) will be offering to producers of different types this summer, fall and winter. Each series will typically have multiple locations (for convenience) and in some cases, there'll be several topics to choose from. We've conveniently branded them with the Hort Snacks name, so you'll know who is offering them. Most don't happen until the fall/winter, but there are 3 field days (or rather evenings) in summer. All of the events are being offered so as to potentially allow the target audience to attend, so you'll see more evenings, Saturdays, and shorter distance locations. Also, the Explore Horticulture series is back, focused on potential new entrants to the industry. Stay tuned.

As we enter the summer growing season, feel free to reach out with questions, comments, or anything else you like, since we love to hear from you and we can learn a lot from the contact. We also like to help, so don't hesitate. As I always say, "if we don't know it, we know someone that does!" Happy growing. See you around.

Rob Spencer/Dustin Morton,
Commercial Horticulture Specialists
 Alberta Ag-Info Centre
 Alberta Agriculture and Forestry

FEATURED WEBSITES

- Potato Tuber Blemishes Diagnostic Tool
<https://www.potato-tuber-blemishes.com/potato-tuber-blemishes>
- Berry Diagnostic Tool – Cornell
<http://www.fruit.cornell.edu/berrytool/>
- Forest Pests of North America – Pest ID tools
http://www.forestpests.org/pest_id_tools.html
- Ontario CropIPM
<http://www.omafra.gov.on.ca/IPM/english/index.html>

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THINGS TO DO / THINGS TO THINK ABOUT THIS MONTH

Strawberries

- Apply 3-5 cm (1 –2 inches) of straw to newly planted Day-neutrals
 - 3 – 5 cm (1 – 2 inches) = 40 small square or 3-4 large round bales per acre
- Maintain good straw cover on all strawberries, as this reduces the incidence of disease
- Initiate applications of nitrogen to Day-neutrals → 10-20 lbs actual N/ac/month → may be split into weekly or bi-monthly applications

Raspberries

- Consider trellising options for primocane types

Saskatoon Berries

- Application of nitrogen and phosphorus (2nd of 2 – split application) → 15-25 lbs actual N/acre; 10-20 lbs P/acre → adjust rate when banding
- Arrange harvesting, refrigeration and sales outlets of Saskatoon berries

Vegetables

- Transplanting of most warm season plants should / be completed in the first part of the month (if it wasn't done late last month)
- Complete any additional staggered-date plantings of crops

General / Other

- Ensure that irrigation and spray equipment is ready to go
- Monitor and maintain optimum soil moisture conditions in all crops (pay close attention to critical moisture stages – see [Water Requirements in Horticulture Crops - FAQ](#))
- Maintain good weed control in field and headlands
- Final arrangements for marketing of crops, e.g. pails, buckets, training of field personnel, advertising, etc.
- Put honeybee colonies in field at start of flowering (~2 hives per acre)

Pest Monitoring / Management

- Continue regular and thorough scouting / monitoring of fields for disease and insect pest problems
- Remove diseased plant material
- Use appropriate control measures if necessary
- Adhere to “Days to Harvest / Pre-Harvest Interval” and “Re-entry Intervals” (for worker and customer safety)
- Strawberries
 - Monitor strawberry fields for aphids, Tarnished Plant Bug, bud/clipper weevils, root weevils, leaf rollers
 - Botrytis fruit rot control sprays at bloom stages are most effective; apply at 5-7 day intervals
- Saskatoon berries
 - Application of insecticides (Decis) and fungicides (Topas / Mission / Jade / Pristine / Switch / Kumulus / Cyproflu) at later bloom stages (petal drop, green fruit) – depending on development of crop
- Black Currants
 - Monitoring (and control if necessary) of aphids, sawfly (imported currant worm or currant fruit worm)

REMEMBER – DO NOT APPLY DISEASE/PEST CONTROL SPRAYS DURING FULL BLOOM (Saskatoon berries, currants, raspberries) – most insecticides are toxic to pollinating insects and some fungicides have repellent qualities

Interesting News / Articles to Read this month

- [Are my PPI and PRE herbicides working?](#) – OMAFRA article
- [Day-neutral Strawberry Season Extension using Low Tunnel Production Systems](#) – Ontario Berry Grower
- [Belgium grower develops 'candy machine' for tomatoes](#) – HortiDaily article
- [How To Prevent Fire Blight](#) – Growing Produce article
- [PotaTom: a potato-tomato plant](#) – HortiDaily article
- [Japan robot can pick strawberry fields forever for farmer](#) – phys.org article
- [Can Urban Agriculture Feed the World's Growing Cities?](#) – takeapart.com article
- [What is phytotoxicity and how do you avoid it in your greenhouse?](#) – MSU article

NEWSLETTER USE RESTRICTIONS

Please feel free to share all or portions of this newsletter with other interested parties.

If you want to use content from this newsletter in other media, please request permission before doing so.

DUTCH ELM DISEASE AWARENESS WEEK

June 22-28, 2015

DED Hotline 1-877-837-ELMS (3567)

www.stopped.org

Upcoming Conferences / Workshops

June 2015

- **University of Saskatchewan Plant Sale Day**
June 5, 2015 – Horticulture Field Lab – Saskatoon, SK
www.fruit.usask.ca/extension.html
- **Haskap Day 2015**
June 26, 2015 – Horticulture Field Lab – Saskatoon, SK
www.fruit.usask.ca/extension.html
- **Greenhouse Canada Grower Day 2015**
June 22, 2015 – Holiday Inn – St. Catharines, ON
www.greenhousecanada.com/grower-day
- **International Floriculture Expo**
June 8-10, 2015 – McCormick Place, Chicago, Illinois, USA
<http://www.floriexpo.com/>

July 2015

- **Cultivate 15 (Formerly OFA Short Course)**
July 11-14, 2015 – Greater Columbus Convention Centre – Columbus, OH
<http://cultivate15.org>
- **Organic Alberta - Healthy Soils Workshop with Jill Clapperton –**
July 16, 2015 – Holborn Hall – Parkland County
- **Hort Snacks in the Field (Vegetable/Storage focus)**
Last 2 weeks of July (evening) – Date TBD
<http://www.albertafarmfresh.com/> or AARD [Coming Events](#)
- **99th Potato Association of America (PAA) Conference**
July 19 -23, 2015 – The Doubletree Hilton – Portland, Maine, USA
www.potatoassociation.org <http://www.paaannualmeeting.org>

August 2015

- **Hort Snacks in the Field (Saskatoon berry/Processing focus)**
August 10, 2015 – Solstice Berry Farm – Crossfield, AB
www.albertafarmfresh.com
- **North American Strawberry Growers Association (NASGA) Summer Tour**
August 11-12, 2015 – Maryland, USA area
www.nasga.org
- **Hort Snacks of Wheels – Greenhouse BusTour**
August 24-25, 2015 – Sherwood Park, AB to Saskatoon, SK and back
- **Farwest Show**
Aug 27-29, 2015 – Oregon Convention Centre – Portland, OR
<http://www.farwestshow.com/>

Fruit & Vegetable Field Days

#1 / #2 / #3

July 20 (Erdmann's) /
August 10 (Solstice) /
September 1 (Hidden Valley)

The plan for this year:

- Evenings (starts at 5:30pm)
- Single farm locations
- Focused / Specific topics

Watch www.albertafarmfresh.com OR
AARD [Coming Events](#) for event details.

MENTAL SNACKTIME - Organization

"An organization, no matter how well designed, is only as good as the people who live and work in it." – Dee Hock

"The achievements of an organization are the results of the combined effort of each individual." – Vince Lombardi

"The bottom line is, when people are crystal clear about the most important priorities of the organization and team they work with and prioritized their work around those top priorities, not only are they many times more productive, they discover they have the time they need to have a whole life." – Stephen Covey

"First comes thought; then organization of that thought, into ideas and plans; then transformation of those plans into reality. The beginning, as you will observe, is in your imagination." – Napoleon Hill

CleanFARMS 2015

CleanFARMS will be running obsolete pesticide & livestock medication collections in October of 2015 as follow:

- Southern Alberta (Red Deer to border)
- Northern Saskatchewan (Davidson north)

The program is free and ag-retail collection locations/dates will be released in early summer. The program is delivered by CleanFARMS and its members in each province/region of the country every three years.

Visit www.cleanfarms.ca for more information.

NOTE: Can you please re-distribute this note to all your organizations and members so it gets as wide a distribution as possible? Thanks!

HortSnacks on Wheels

August 24 and 25, 2015



Cost: \$100 +GST (includes all meals)
Hotel room cost paid for by participant

**Bus leaves at 7:30 AM from
Salisbury Greenhouse in
Sherwood Park on August 24.**

Tour stops include:

**Kathy's Greenhouse, Kitscoty
Solar Gardens, Saskatoon**

**Wilson's Greenhouse and Garden Centre, Saskatoon
Dutch Growers Garden Centre, Saskatoon**

All aboard for a whirlwind tour of four fantastic greenhouses in eastern Alberta and Saskatchewan! This tour will visit four unique ornamental producers to find out what they're doing that sets them apart from the pack in terms of production and marketing. Opportunities for networking and expanding your operation abound on this jam packed tour into our neighbour to the east!

**To register please call 1-800-387-6030
or for more information call Dustin Morton at 403-742-7571**



HortSnacks in the Field



JULY 21

(Rain date July 28)

Erdmann's Gardens and Greenhouses (Vimy, AB)

Ron and Wendy Erdmann and their family have been growing vegetables for over 30 years in Westlock County. Ron will be discussing their Integrated Pest Management (IPM) program and their cooperation with Alberta Agriculture and Forestry's current horticultural pest surveillance project.

AUGUST 10

(Rain date August 17)

Solstice Berry Farm (Crossfield, AB)

Marsha and Rick Gelowitz jumped into saskatoons in 2003 and have become a force to be reckoned with. Their state-of-the-art processing line has enabled them to put their product in a number of different markets and they'll be sharing their successes and failures in this business.

SEPTEMBER 1

(Rain date September 8)

Hidden Valley Garden (Sylvan Lake, AB)

Growing crops since 1994 on their land just outside Sylvan Lake, Jim and Lesley Hill have been working on developing their soil health and quality for 20 years. Jim will be speaking to his cover cropping techniques and his use of tillage radish to decrease erosion and increase soil health on his farm.

To register call 1-800-387-6030

Sessions begin at 5:30 p.m.

Light supper provided.

Growing Forward 2 

A federal-provincial-territorial initiative

Alberta 
Government

Canada 



Explore Horticulture!



Horticulture is a broad and diverse industry full of opportunities! This workshop will look at different methods of production and marketing with Agriculture and Forestry specialists. The workshop(s) will consist of a half-day in the classroom, followed by a tour of local farmers' markets and producer operations.

September 12

(Grande Prairie Provincial Building)

September 19

(Red Deer Recreation Centre,
Sportsmans Room)

September 26

(Lethbridge Exhibition Park,
Saddle Room)

To register call 1-800-387-6030

Cost: \$15 + GST per person (includes lunch)

8:30 a.m. Start

Growing Forward 2 

A federal-provincial-territorial initiative

Alberta 
Government

Canada 

HOW TO MEASURE SOIL HEALTH

FIELD WORKSHOP

with Jill Clapperton Ph.D.



Thursday, July 16, 2015 Holborn Hall AB.

9:00 am Classroom session at Holborn Hall
(51132 RR 13, Parkland County)

Followed by field workshop after lunch

What will be covered?

- What is soil health?
- Why is it important to the health of your agroecosystem?
- How can we benefit from the activities of the soil biota?
- Plant physiology and rooting
- Soil Respiration

Registration fee \$60 including lunch

Contact 780-727-4447

www.westcentralforage.com

Email: info@westcentralforage.com

organic
ALBERTA



Participants are encouraged to bring plants (with the roots, of course) and/or soils.



GROWING FORWARD 2 PROGRAMS

Have a look at the Growing Forward 2 website to see the open programs that have funding available in different areas. There are a number of programs that have funding that is applicable to horticulture producers (small and large; new entrants or established) or groups in the areas of Agri-Processing Product Automation and Efficiency, Agri-Processing Product and Market Development, Business Management Skills and Business Management Opportunity, Food Safety Systems, Irrigation Efficiency, On-Farm Energy Management, On-Farm Water Management, etc. These provide funds for a bunch of areas, including things like training and/or skill development, expansion/succession planning, equipment for increased efficiency, innovative products, increasing competitiveness, etc. Don't be afraid to be creative in your ideas.

Please note, even if programs fill up this year, it is possible that they will repeat in future years, so you would have time to get your ideas and projects straight for the next funding year. Visit the site regularly to see which programs are taking applications.

If you want to apply or have questions of what is in and what is out or on eligibility, contact a New Venture Coach or a business development officer or the contact for the specific program. Applications have to go through staff to be vetted or reviewed.

www.growingforward.alberta.ca/programs

BE ON THE LOOKOUT FOR LATE BLIGHT

Over the last few years, there has been a great deal of concern in Alberta surrounding a serious disease called Late blight that affects mainly potatoes and tomatoes. This disease is caused by a fungal pathogen called *Phytophthora infestans*. The favourable conditions for disease development, combined with the presence of the pathogen, have resulted in multiple outbreaks of Late blight in commercial, market garden and urban potato and tomato crops throughout parts of Alberta. A number of different strains of the pathogen have been identified in different years, each being more or less aggressive on either potatoes or tomatoes. For 2015, this disease continues to be a risk for all Solanaceous crops (potato/tomato family) grown in Alberta.

It is recommended that ALL growers of potatoes and tomatoes be extra vigilant to try and catch any diseased material early on, before a significant outbreak can occur. In the early season, growers should watch for:

- Tomato transplants and newly emerged potato shoots with water-soaked leaf lesions
- Plants that develop lesions early on in the season or as the season progresses, particularly if conditions are moderate and wet/humid

If you find plants showing suspicious lesions, it is recommended that you can contact 310-FARM (3276) to determine if further testing is required and to discuss management. Please do not hesitate to report an incidence, as early awareness will help to prevent and contain an outbreak and can help others to protect their crops.

While undertaking identification, producers should dispose of infected material as quickly as possible, removing disease parts (small scale) or killing out plants so disease cannot develop further. Protective fungicide applications can be made if conditions favour disease (and if disease is known to be present in the province)

Information on Late Blight

[FAQ – Late Blight of Potatoes and Tomatoes](#)

A blue rectangular box containing the white text 'Q&A' in a stylized, bold font.

Q: What is your most significant pest problem (weed, disease, insect)?

A: Dandelions

A: Weeds- all kinds

A: Gophers. Far and away.

A: Thrips

Next Month's ? → [How are you minimizing your risk related to severe weather?](#)

Spraying Off-label: A Lose-Lose Situation

By Dustin Morton

Horticultural chemicals and pesticides often have the dubious distinction of being more expensive than their field crop cousins. In order to reduce costs, growers may sometimes buy and use chemicals which have the same active ingredient, but are not registered for the crop they're being used on. This practice of "off-label" spraying is not only illegal and can result in severe fines, but can also be incredibly dangerous for your clients, your livelihood, and the environment.

Health Canada's Pest Management Regulatory Agency (PMRA) is the sector of the federal government that is responsible for overseeing the registration and regulation of pesticides in Canada. This includes products that producers are more familiar with such as herbicides and fungicides, as well as less thought about products such as animal repellants, rodenticides, and disinfectants. These products are all rigorously tested to compile data on residue, efficacy and long term effects, all of which is reviewed by Health Canada prior to registration. Furthermore, the PMRA is the body in charge of monitoring and enforcing appropriate use of these chemicals to ensure public safety.

When reviewed by Health Canada, all chemicals have specified rates, target pests, and the crops on which they can be applied. 'Off-label' spraying can include spraying above or below the appropriate concentration, spraying the chemical for a pest that it is not registered for or on a crop not on the chemical's label.

Throughout the year, the PMRA randomly selects growers for pesticide use inspections in order to ensure compliance. These inspections could be random ones, arising from increased incorrect spraying because of a label change, the need to update information or a neighbour's complaint. The purpose of inspections is twofold in that they serve as a deterrent to off-label spraying but also as an educational tool to encourage growers to follow labels.

In an inspection, samples of vegetative material or soil are collected and sent away for testing. Should these come back showing incorrect use of chemicals, growers may be subject to increased monitoring, financial penalty or even prosecution under the *Pest Control Products Act*. If somebody producing food is found to be non-compliant, it could even result in the Canadian Food Inspection Agency (CFIA) becoming involved and product being recalled or destroyed.

No grower wants to purposefully put themselves, their clients or the environment at risk, so how to avoid the temptation of spraying off-label? When possible, avoid the need to altogether! Good scouting and appropriate record keeping allows growers to track outbreaks over time and better plan for them in their operating cycle. Furthermore, a good chemical inventory will give producers a better idea of how much they have of needed chemicals and whether they have enough to deal with problems when they come up. Adopting biological controls in their operation may also allow growers to nip some problems in the bud before they become full blown issues.

As with all chemicals, proper storage, labelling and disposal are all part and parcel in running a safe, effective operation. By being aware of the process and how best to handle these chemicals, growers can ensure they grow a safe healthy crop without running afoul of the law.

Swede Midge

Contarinia nasturtii

Crops Affected: cruciferous vegetable (Cole) crops – broccoli, cabbage, cauliflower, Brussels sprouts, kale, kohlrabi, collards, rutabaga, turnip, radishes, ethnic Cole crops; canola, field mustard, Cruciferous weeds

Life Cycle:

- Adults are tiny, light-brown flies, which resembles most other midge species
 - Midges have long, delicate legs and long, beaded antennae, as well as wings with short, fine hairs on them
 - Adults are not strong fliers, preferring areas with low wind movement
- In areas where a population is established, adults emerge in the spring, over a period of approximately 1 month
- After mating, females locate a host and lay eggs in clusters of up to 50 eggs on very young, actively growing vegetative tissues, typically near the growing points
 - Females lay approximately 100 eggs in their 1-4 day lifespan
- Larvae (maggots) emerge within a few days to feed in groups on host tissues
 - Larvae feed and develop for 1-3 weeks, depending on weather conditions
 - Larvae secrete a toxic saliva to break down tissues, resulting in swollen tissues and abnormal growth
 - A moist environment is required, therefore dry conditions can result in short periods of dormancy
 - Larvae are yellow at maturity
 - Mature larvae exit the plant and pupate shallowly in the soil
 - End of season larvae go into diapause, to overwinter into cocoons in the soil, surviving up to 2 years
- In some regions, there can be as many as 4-5 overlapping generations, with each generation lasting 3-5 weeks

Symptoms:

- Tissues infested with larvae are distorted and watery, due to toxic nature of larval saliva
- New tissues are affected by feeding resulting in:
 - Leaf and stem tissues that are swollen, distorted, twisted and scarred
 - Blind heads and/or multi-headed plants can result from the death of a growing point or main shoot
 - Plants that do not form heads
 - Flower buds do not open and become swollen
 - Internal leaves may become crinkled or crumpled
- Transplants are unmarketable
- Plants become less susceptible as they get older, resulting in reduced symptoms in later infections
- Symptoms may resemble nutrient deficiencies, mechanical damage from cultivation, other insect feeding, herbicide injury, etc.



Swede midge adult
Photo by Susan Ellis, USDA APHIS PPQ, Bugwood.org

Monitoring:

- Confirm injury due to Swede midge by observing larvae on or within tissues
 - Depending on the size of the larvae, they can be seen with the naked eye or a hand lens
 - Tissues may also be placed in a black, plastic bag in the sun for several hours, which will cause the larvae to exit the plant, allowing detection
- The use of pheromone traps may be used to detect low levels of a population within a field
 - Adult males are drawn to the trap
 - Place traps along field edges, and/or in sheltered areas
 - Traps are hung on stakes, approximately 30 cm (12in) above the soil
 - About 4 traps are recommended per field, at least 50 m (150-200 feet) apart (fewer can be used in smaller fields)



Swede midge trap
Photo by Robert Spencer

Management:

- Established populations are very difficult to control – avoid introduction
- Ensure that transplants are clean and free from infestation
 - If growing your own transplants, ensure good greenhouse monitoring and sanitation practices are followed
 - Systemic insecticide applications in greenhouses can be effective
- Ensure a good crop rotation is followed, with a minimum of 2 years between host crops
- Crops such as broccoli, ethnic Cole crops, Brussels sprouts and cauliflower are more susceptible, resulting in higher populations
- Ensure at least a 1 km distance between new and previously cropped fields, as males can fly 300m and females further than that
- Good field sanitation
 - Control Cruciferous weeds to reduce out-of-crop host options
 - Avoid deep tillage; clean off equipment and boots when leaving infested fields
- Planting early maturing crops prior to early adult emergence can reduce damage; avoid late maturing crops to reduce overwintering
- The application of registered chemicals based on monitoring may reduce damage and population build up

Botrytis

A.K.A. Grey/Gray Mould, Botrytis blight, Botrytis Grey mould, etc.

Causal Organism: *Botrytis cinerea*

Crops Affected:

Very wide host range – asparagus, lettuce, onion, garlic, leeks, cucurbits (pumpkin, squash, cucumber, melons), beans, potato, tomato, eggplant, pepper, etc.

Disease Cycle:

- Widespread saprophyte of dead or dying plant material
 - Invades wounded and damaged tissues and may invade soft tissues
- Favoured by cool, humid conditions
- Initial infection typically comes from air-borne conidia landing on susceptible tissues in the presence of water
 - Once infection occurs, sporulation occurs rapidly, with a rapid acceleration of growth
 - Spread is more rapid in dead or dying tissues (e.g. senescing or damaged tissues)
- Fungus spreads by breaking down tissues ahead of spread, producing a soft rot
- May spread between plants/produce by mycelium (in storage, etc.)
- Sclerotia may form once tissues are fully colonized and persist in dry soil and become an inoculum source
- Main spread is by conidia

Symptoms:

- May attack wide range of different plant parts, with the disease symptoms related to the death of those tissues
- May attack leaves, stems, floral parts, whole heads, bulbs, fruit, roots, etc.
- Name of disease is often descriptive of the symptoms and plant parts attacked (e.g. onion neck rot)
- Grey coloured mycelium and grey/brown spore-producing bodies are distinctive
 - Spores are produced in vast quantities
 - Water-soaked areas precede the grey mouldy areas
- Sclerotia are hard and black (may not form as readily as *Sclerotinia*)
- Differentiated from White Mould (*Sclerotinia*) by the colour of mycelium

Management:

- Ensure sites are well-drained and have good air movement
- Ensure adequate but not excessive nitrogen applications (excess will result in lush, soft growth)
- Remove trash and debris
- Control weeds to ensure good ventilation and air circulation
- Ensure all fruit and produce are harvested in a timely manner – over ripe fruit is more susceptible
- Irrigate at a time when plants will dry quickly
- Chemical controls are available for **protection** of the various crops. Timely application is critical for maximum success. See labels for application timing and rates. Adhere to appropriate Pre-Harvest Intervals.



Botrytis infection on strawberry fruit
Photo by Robert Spencer

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Alberta Ag-Info Centre

310-FARM (3276)

FAX: 403-742-7527

Botrytis infection on greenhouse tomato stem – resulting in death of the whole top
Photo by Robert Spencer

