HORT SNACKS

Welcome to another edition of Hort Snacks. My allergies are suggesting that spring has arrived (with a vengeance), maybe more forcefully than normal, what with the transition from late winter to summer being compressed into a few weeks. The plants seem to be flying out of the ground, almost as fast as the seeds are planted. Hopefully a timely rain or two will be interspersed with the nice, sunny weather, free from severe storms.

In this fairly short edition (in respect of the fact that no one has time to read much at the moment), you'll find a few tidbits of information, including programs, events, calls for research collaborators, items for sale, and a bit of information on various pests. There are a couple of other articles and pieces that you might find giving some attention to, as a heads up.

As you move through the busy planting time and into growing, maintenance, management and then harvest, if you have questions, thoughts, ideas, or just need some help, send an email or call and I'll be happy to try and help.

Rob Spencer
Commercial Horticulture Specialist
Alberta Ag-Info Centre
Alberta Agriculture and Forestry
310-FARM (3276)

FEATURED WEBSITES

Pivot & Grow – Green Manure Toolkit

CFIA – Invasive Species website

In this edition of Hort Snacks

THINGS TO DO / THINGS TO THINK ABOUT THIS MONTH

Strawberries

- Maintain good straw cover on all strawberries, as this reduces the incidence of disease
- 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
- 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/Poleci) and fungicides (Topas / Mission / Jade / Fitness / Prozol / Propi / Propi Express / Pristine / Switch / Kumulus / Cyproflu, etc.) at later bloom stages (petal drop, green fruit) – depending on development of crop – *see Saskatoon berry Bloom/Bud Stage FAQ*
- 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

- Automation is coming…and 9 other things you need to know about indoor farming – UrbanAgNews article
- What is swimming around your roots? – E-Gro Edible alert
- What's the best way to compare lighting efficiency? – Hort Americas article
- What to Consider When Upgrading Your Environmental Control System – Greenhouse Grower article
- Identifying and controlling early-season pathogens – Rutgers University article
- Controlled Environments: The Future of Small-Scale Agriculture – Growlink article
- Why plants are so sensitive to gravity: the lowdown – INRA article
- Biostimulants: How Can I Make Them Work for My Farm? – Growing Produce article
- Biostimulants Gaining Ground With More Growers – Growing Produce article

DUTCH ELM DISEASE AWARENESS WEEK

June 18-24, 2018

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

www.stopded.org

Upcoming Conferences / Workshops

June 2018

- U of S Fruit Program Annual Plant Sale
  June 1, 2018 – Horticulture Field Lab – Saskatoon, SK
  www.fruit.usask.ca/extension.html
- Haskap Alberta – Southern Alberta Growers Day
  June 9, 2018 – Picture Butte, AB
- 15th International Conference of the European Industrial Hemp Association (EIHA)
  June 12-13, 2018 – Maternushaus – Cologne, Germany
  http://www.eiha-conference.org/
- Greenhouse Canada Grower Day 2018
  June 20, 2018 – Holiday Inn – St. Catherines, ON
  http://www.greenhousecanada.com/grower-day/
- International Floriculture Expo
  June 25-27, 2018 – McCormick Place, Chicago, Illinois, USA
  http://www.floriexpo.com/

July 2018

- Haskap School at the U of Saskatchewan
  July 5, 2018 – U of S Campus – Saskatoon, SK
  www.fruit.usask.ca/extension.html
- Haskap Field Day at the U of Saskatchewan
  July 6, 2018 – U of S Hort Field Lab – Saskatoon, SK
  www.fruit.usask.ca/extension.html
- Cultivate 18 (Formerly OFA Short Course)
  July 14-17, 2018 – Greater Columbus Convention Centre – Columbus, OH
  http://www.cultivate18.org/
- 102nd Potato Association of America (PAA) Conference
  July 22-26, 2018 – Boise Center – Boise, Idaho, USA
  www.potatoassociation.org

August 2018

- North American Strawberry Growers Association (NASGA) Summer Tour
  Aug 14-15, 2018 – Watsonville, California, USA area
  www.nasga.org
- Farwest Show
  Aug 22-24, 2018 – Oregon Convention Centre – Portland, OR
  http://www.farwestshow.com/

FOR SALE: Six John Deere 71 Flexiplanters (for vegetables) with discs and sprockets complete

- For mounting on a tool bar with 3 point hitch
- In very good condition
- Asking $250 each; can purchase 1 or more

For more information:
Contact Peter Hofer 403-641-2463 ext. 120

MENTAL SNACKTIME – Balance

- "Life is like riding a bicycle. To keep your balance, you must keep moving." – Albert Einstein
- "Letting go helps us to live in a more peaceful state of mind and helps restore our balance. It allows others to be responsible for themselves and for us to take our hands off situations that do not belong to us. This frees us from unnecessary stress." – Melody Beattie
- "Happiness is not a matter of intensity but of balance, order, rhythm and harmony." – Thomas Merton
- "There is a fine balance between honoring the past and losing yourself in it. For example, you can acknowledge and learn from mistakes you made, and then move on and refocus on the now. It is called forgiving yourself." – Eckhart Tolle
- "Balance, peace, and joy are the fruit of a successful life. It starts with recognizing your talents and finding ways to serve others by using them." – Thomas Kinkade
- "A well-developed sense of humor is the pole that adds balance to your steps as you walk the tightrope of life." – William Arthur Ward

Call for Research Project Collaborators

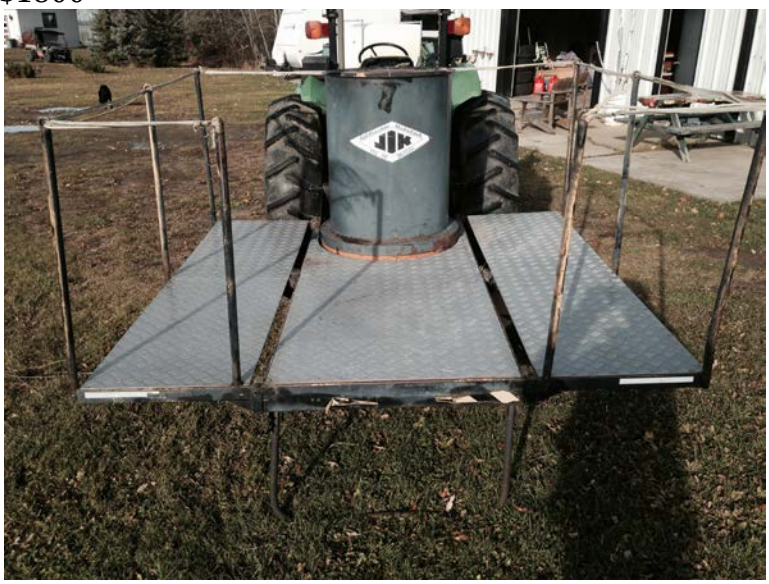
A researcher from the Pest Management Centre of Agriculture Canada is looking to secure the paid cooperation of some Alberta commercial chokecherry producers in PMRA cropping zones 7 and 14 to carry out a fungicide field trial study (not a currently registered product). Zone 14 is most of Alberta, except the irrigated parts of southern Alberta, whereas Zone 7 is the extreme southeast corner/edge of Alberta.

For the study, the contracted research group will carry out the study on approximately 10 shrubs (4 untreated, 6 treated), in either separate or same rows, but with buffer zones between treatments. All treated fruit would be removed and destroyed, as the test product is not registered. Participating growers would be compensated for the loss of the crop as a part of the land rental agreement.

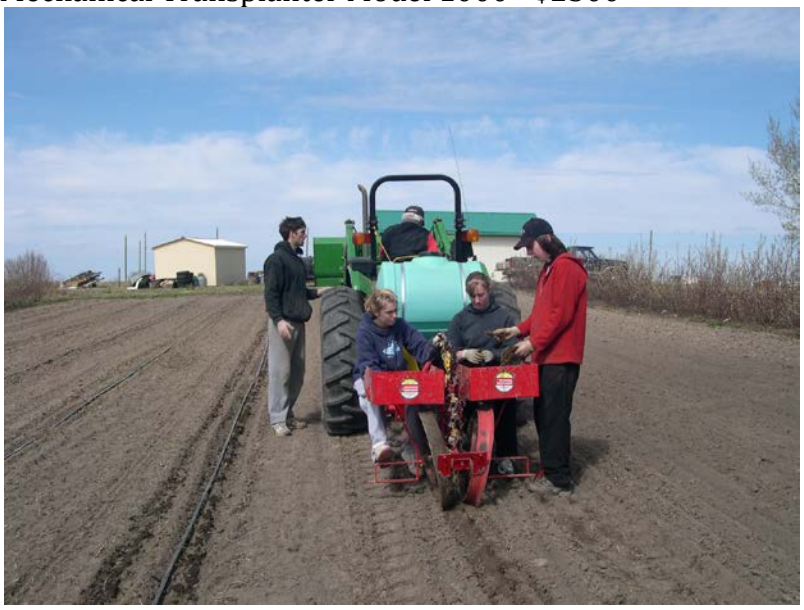
If you have producing commercial chokecherries (in a paid situation) and you would be willing to participate, please contact Robert Spencer, who will pass on your contact information to the researcher. Please Indicate by June 29.

For sale – Strawberry farming equipment:

1) Square bale straw buster – spread the straw precisely where you want it - $1800



2) Mechanical Transplanter Model 1000 - $2500



3) Row cover fabric – 60 ft. x 450 ft. – covers app. ½ acre – provides frost protection - $1200

Contact – Lorne/Iva Moen – skiberry.moen@gmail.com
780-623-4571

Canadian Agricultural Partnership (CAP) PROGRAMS

Have a look at the new Canadian Agricultural Partnership (CAP) Program website (www.cap.alberta.ca). CAP is a five-year, $3 billion federal-provincial-territorial investment in the agriculture, agri-food and agri-based products sector. It is the successor of the 2013-18 Growing Forward 2 (GF2) partnership.

In Alberta, CAP represents a federal - provincial investment of $406 million in strategic programs and initiatives for the agricultural sector. The roll-out of the CAP program suite in Alberta began in April, 2018, and will consist of a phased roll-out of 15 programs over the spring, summer and fall of 2018. Applications and program details consisting of cost-shares and eligible activities and/or items will be released with the opening of each program. The criteria for eligibility will be made available along with the program details.

Please note, there are some differences between CAP and GF2 programs, including many of the programs being merit-based (as opposed to 1st come/1st served), with specific intake periods staged throughout the year. Check each program for specifics.

In Alberta, CAP will deliver programs developed in consultation with stakeholders, and is organized under five themes: Environmental Sustainability and Climate Change; Products, Market Growth and Diversification; Science and Research; Risk Management; and Public Trust.

If you had subscribed to receive updates from the GF2 website, you will have to re-subscribe for updates from CAP. Click on the ORANGE button in the upper right, to subscribe.

www.cap.alberta.ca

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 in past years. 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 2018, 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

Q: What benefits have you observed from having a crop rotation?

A: Better disease and insect control. And better weed control. For some insects, it is only control because of resistance

A: None. I don't bother and haven't noticed anything that would make me try.

A: Less disease and weed pressure

A: We only have berries, so this does not apply to us now. Before this we were a dairy farm and crop rotation cut down on gophers and weeds.

A: I rotate my whole garden all the time. We have never had any major disease or pest issues.

A: Decreases pathogenic organisms (e.g. insects, diseases, weeds, etc.), reduces chemical pesticide use, reduces soil erosion, increases soil fertility, increases yield.

A: Less disease

A: I am not a big producer but do grow a fairly large garden. I rotate my garden usually by flipping it. One side is potatoes, opposite side are my pea rows, then the next year they will be flipped and in between the plants that like each other accordingly. Supposedly the peas put good nitrogen in the soil and this helps potatoes the following year. Now I have not tested the soil to see if that is the case, however my garden seems to produce very well each year.

A: Increased soil health, decreased disease problems. Lower maintenance requirements and less expenses result in greater efficiency.

A: Better soil tilth, and organic matter

Next Month's ? → What is your favorite (and/or most effective) way of reaching your customers?

The Value of a Crop Rotation

One of the most fundamental agronomic recommendations that is applied to any crop is to ensure that an adequate crop rotation is followed. A crop rotation is defined as "the practice of growing different crops in succession on the same land…" To dive deeper into that definition, it means that you ensure that the crops you are growing potentially contribute something to, or don't negatively impact, the other crops within the rotation. It means that not only are you growing different crops one after the other, but they are sufficiently different so as to have little or no common pests, as well as different rooting depths and fertility requirements. The overall goal of crop rotation is to ensure that the health of the soil (and the crops growing in it) is maintained, and preferably enhanced and improved over time. And rotation also means having some amount of separation between cropping areas, to prevent transfer of a problem from one area to another.

The length of a rotation can vary quite a bit and is, of course, subject to a number of factors. The general recommendation for a rotation is 3 to 4 years, with rotations sometimes stretching as much as 7 or more years. The number of years doesn't merely represent a change in the calendar, but the separation of entire growing seasons. One of my personal pet peeves is seeing what is referred to by some as a "canola:snow" rotation, which is NOT a rotation at all, and leads to a whole host of problems (more on that later).

Over the decades, there have been countless studies that have highlighted and demonstrated the benefits of following a crop rotation. Despite the overwhelming evidence in favour of crop rotations, you might be justified in asking why some people still don't follow this practice (see previous example "canola:snow"). The following are some reasons why agronomists recommend rotations (when at all possible), just to keep you convinced.

1) Give the soil a taste of something different
   Rotations are made up of a range of different crops, although you might only be interested in a particular crop, and the rest are just filler. Regardless, each of those rotation crops brings something different, whether it is the amount of organic matter it contributes at the end of the season, nutrients (e.g. legumes), associated microorganisms, etc. Mixing up the crops helps to diversity things a bit and shakes up the soil ecosystem, in a good way.
2) Mix up that soil profile
   Just as different crops contribute different nutrients and amounts of organic matter to the soil, rotational crops also typically have different rooting profiles and habits. Cereals tend to be prolific rooters, which can push organic matter deep into the profile, beyond the shallow area in which vegetable crops mainly function. Legumes might not root all that deep, but they charge up the nitrogen levels a bit. Cover crops can also stir things up by penetrating through hardpan layers, which improves water penetration and drainage, at a minimum. It is also important to not underestimate the impact of how each crop is managed, after harvest, as the required cultivation and/or soil preparations for the next crop can alter the soil profile, often to the overall benefit of the soil.
3) Interrupt those disease/pest life cycles
   In order for diseases and pests to really get going and get a foothold in a crop, they need a susceptible host and suitable conditions for them to grow and develop. By interrupting disease and pest life cycles, and by removing the susceptible host, you encourage the reduction in the amount of surviving critters and disease inoculum. The longer the rotation, the more chance there is that overwintering spores and resting insect stages will be starved out, meaning you have less of an issue to deal with when you come back in with the crop later in the rotation.
4) Expand your pest management toolbox
   If you are using pest management tools to control your pests, sometimes you come out ahead by controlling issues in other crops. By growing other crops, you open up your management options, and can collectively bring down the pest problems for all of the crops in the rotation. For example, you might have issues with grasshoppers, but haven't got a lot of options in veggies, but you can control them in cereals.
5) Build up the soil – give a little back
   Including nitrogen fixing legumes in a rotation has long been common practice. The use of other crops, which encourage a diverse soil microbiology, can also improve things. And mixing up the crops means that you have a chance to put different textured crop residues into the soil. All in all, a win:win outcome.

Sometimes rotating can be challenging to plan, but once you commit to it, it should flow pretty smoothly. And no one says that you have to farm all of the rotational crops; they can be farmed out to a renter. The end message is that rotating between crops should be of more benefit to you than not rotating, other than maybe simplicity or rough economics. Give it a try.

INSECT OF THE MONTH

Woolly Elm Aphid / Woolly Apple Aphid

Eriosoma americanum / E. lanigerum

Crops Affected:

Saskatoon berries (WEA/WAA), elm (WEA/WAA), apple (WAA), hawthorn (WAA), mountain ash (WAA)

Life Cycle:

- Overwinters as an egg in bark crevices on elm
- 1st generation (wing-less) feeds on elm leaves
- Winged generation produced in mid-June to mid-July
- Migrate to Saskatoon plants (about 2 weeks after purple lilac blooms) throughout month of July
- Nymphs born upon landing on plants; migrate to roots; rapid population increase
- Colonies found on roots July through October
- Winged generation produced in September and returns to Elm (do not overwinter on roots of Saskatoon)
- Younger, more succulent roots = most susceptible to infestation; 2nd & 3rd growing season

Symptoms:

- Above ground
  - Lack of vigour in young plants
  - Failure to leaf out or partial leafing out, followed by early season plant death
  - Early/premature fall colour change (late July/early August)
- Below ground
  - White, woolly masses on plant roots
    - Typically found late in the year of infestation or in the following year
  - Infected roots may have a purplish / blue to whitish discolouration
  - Roots may be swollen and puffy
- Presence and damage may not be noticed until after infestation (too late?)
- Symptoms on elm
  - Causes curling of elm leaves
  - Produce copious quantities of honeydew and secrete a powdery white wax

Curled elm leaf, with Woolly Elm Aphid & their honeydew & waxy flocculence evident

Monitoring:

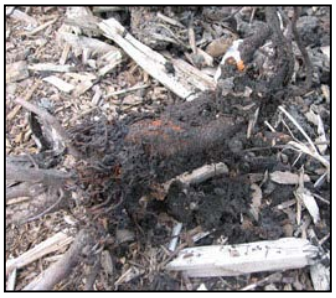
- Watch for development of above-ground symptoms in spring
- Inspect roots of symptomatic plants by digging a 15cm (6 inch) trench 30cm (12 inches) away from the base of the plant, removing soil from the outside of the trench towards the base of the plant.
- Yellow sticky traps can be used to monitor aphid migration.

Photos by Robert Spencer

Management:

- Orthene 75%SP (acephate) application (soil injection) can be made to bearing and non-bearing plants (11 month PHI on bearing plants)
  - Apply mid-July to early August (better as early as possible) – after harvest for bearing plants
- Admire 240F / Alias 240SC (imidacloprid) – soil drench spray application to bearing and non-bearing plants (14 day PHI on bearing plants)
  - Apply early to mid-July – when 75-100% of aphids have migrated
- Avoid planting near American Elm stands

Swollen roots & fluffy/woolly residues – indicates a past/present WEA infestation



Apple Scab

Causal Organism: *Venturia inaequalis*

Crops Affected: apples, crab apples, mountain ash

Disease Cycle:

- Fungal pathogen
- Overwinters in infected leaves on the ground underneath orchard plants
- Fungal spore-producing bodies (pseudothecia) are produced over winter and in early spring, with spores (ascospores) being released as the new growth appears in spring.
    - Initial spores are released during rainy periods and are carried on wind currents to infect leaves, blossoms and fruit
    - Moisture is a critical requirement for infection to take place
- Lesions develop on the plant, with the disease increasing rapidly if conditions are suitable
    - Conidia are produced and may spread without the need for precipitation (as is the case with spring ascospore release)
    - Short distance spread and pathogen transfer results in secondary infections when lesions develop and rain splashing and wind transfers conidia within the plant canopy and between adjacent trees
- Lesions may "reactivate" at different times, increasing inoculum levels

Symptoms:

- Leaves
    - Lesions are circular or irregularly-shaped, brown to olive-green spots, with feathery/indistinct margins
        - Lesions on older leaves are often raised and have more distinct margins
    - Lesions may develop on both upper and lower leaf surfaces, however lesions usually develop on the lower surface first
    - Severe infections may results in leaves that curl, shrivel and fall prematurely
    -
- Fruit
    - Lesions are circular and brown to black in colour
    - The skin around lesions may rupture to reveal dark layers of spores
    - Lesions look more corky as they age
- Earlier infections result in large fruit lesions and fruit that is severely cracked and deformed

Lesions on both fruit and leaves, with cracks forming on fruit

Photo by OMAFRA

Conditions Favouring Disease Development

- Moisture (precipitation or dew), and the duration of wetness, is a critical factor determining spore germination and infection levels
- Temperature is a factor in determining the required wetness period for infection to take place
    - Generally, cooler temperatures result in an increase in the required wetness period, for both ascospores and conidia
        - Peak infection occurs at temperatures between 12°C and 25°C
    - Conidia normally need a slightly longer wetness period than ascospores, at all temperatures
- Leaves are susceptible to infection from emergence to full expansion, then again as they approach the end of the season
    - Fruit are less susceptible to infection as they mature, requiring longer wetness periods for infection to occur

Management:

- Most commercial apple varieties are susceptible to scab to some extent
- If possible, isolate orchards from sources of inoculum
    - If planting resistant varieties, avoid planting near susceptible varieties, to avoid loss of resistance
- Water trees at the soil surface, to avoid triggering ascospore release and to reduce wetness periods
    - Avoid irrigating when precipitation is expected
- Ensure orchards have good air flow, both inside the orchard, and within the plant canopy, as this will speed up drying of the foliage
- Reduce inoculum by reducing the amount of leaf litter in the orchard
    - This may be done through raking, vacuuming or blowing
    - Some methods have been tried to accelerate the decomposition of leaf litter, including a small urea application just prior to leaf drop in the fall, or an application of dolomitic lime to leaf litter
    - Chopping or shredding leaves in spring or fall can be effective
- Protective applications of registered fungicides to new growth during or in advance of rainy periods can help to reduce infection and disease
    - Fungicides may also be applied on a schedule, starting as leaf buds break and emerge, repeating regularly, as required
        - This would be more important in high pressure areas (high moisture, lots of disease inoculum)

OMAFRA "Apple Scab" factsheet

BC Ministry of Ag "Apple Scab Management in BC" factsheet