HORT SNACKS

As the close of the year looms, there are lots of folks that think it can't come soon enough, mostly because this was such a rough year, in so many ways. Regardless, here is the 12th and final edition of Hort Snacks 2018 (Year 10). Year 11 has already been roughed out, but there is always time to provide some suggestions, if the fancy takes you (hint, hint).

In this edition, you'll find it full to bursting with a range of different items. There is a bit more than the usual bits and pieces, with more and more events showing up (since we are entering "extension season"), plus insights from your peers, some quotes, links and information on programs, and a few other articles. There is a bit of information on a few different programs, as well as some pests, including comparisons of a couple of different insect families (for those closet entomologists out there).

In case I don't get a chance to communicate it to you before it, I wish you a restful and recuperative holiday season, filled with food, fun, family/friends and festivities (and/or several naps, depending on what you need). Personally, I look forward to some extended time of to spend with family, a semi-annual Skype call with a kid that is far away, and pie. Lots of pie.

As always, feel free to send in thoughts, ideas, comments, questions, or whatever you might need to help you to be successful, and I'll work to make it happen.

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

FEATURED WEBSITE

The Do More Agriculture Foundation

(Championing mental health in the agriculture industry)

www.domore.ag

NEWSLETTER USE RESTRICTIONS

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

In this edition of Hort Snacks

THINGS TO DO / THINGS TO THINK ABOUT THIS MONTH

- Take advantage of this "slower time" opportunity and visit with fellow producers
- Reflect on how the past season went
  - What worked?
  - What didn't?
  - What could have been done?
  - How will you improve next year?
  - What is one thing that you will add next year?
  - What is one thing that you will drop next year?
- Reflection sets the course for the future. Take the time to reflect on those who've assisted in making your business what it is today (e.g. family, suppliers, advertisers, customers, etc.)
  - CALL THEM / EMAIL THEM / Let them know
- Ensure your plant / seed orders are in
- Renew your annual association memberships

Mental Snacktime – Education / Training

- "Education is the most powerful weapon which you can use to change the world." – Nelson Mandela
- "It is the mark of an educated mind to be able to entertain a thought without accepting it." – Aristotle
- "An investment in knowledge pays the best interest." – Benjamin Franklin
- "I have no special talent. I am only passionately curious." – Albert Einstein
- "Knowledge is power. Information is liberating. Education is the premise of progress, in every society, in every family." – Kofi Annan
- "The function of education is to teach one to think intensively and to think critically. Intelligence plus character - that is the goal of true education." – Martin Luther King, Jr.
- "The goal of education is not to increase the amount of knowledge but to create the possibilities for a child to invent and discover, to create men who are capable of doing new things." – Jean Piaget
- "The purpose of training is to tighten up the slack, toughen the body, and polish the spirit." – Morihei Ueshiba
- "Training is everything. The peach was once a bitter almond; cauliflower is nothing but cabbage with a college education." – Mark Twain

Q&A

Q: What is the BEST training event you have EVER participated in?

A: Not an event, but, training/employ under a mentor that let me succeed and fail

A: Best training ever was to dispense with the use of diapers! How's that? Second was to retain a sense of humour

A: Some of the CDC north workshops Dr. Mirza did on specific Greenhouse Topics. Also the bus trips, (e.g. Two Day Trip to SK a couple years ago), lots of good discussions between participants.

A: Woodland Trainers Association Chainsaw course

A: It seems all training events are useful but the best seems to be real life. Every session as offered ideas that can be used in my growing and marketing endeavors

A: Potato workshop was great!

A: Train the trainer course that I attended when I worked for the Alberta Gov.

A: The Alberta Science Network had a training last spring to help all of us delivering presentations in their "Scientists and Engineers in the Classroom" program. We had to come prepared with our material. The morning was about best practices and successes they have seen and the afternoon was about us each getting up and doing 5-10mins of material. The rest of us got to act like the age of the class they were presenting to (usually elementary schools age) which made it a lot of fun! After we helped them work on ways to improve and talk what we liked. What I liked about it was it was a small group (8 people) who were really dedicated to what they were doing so everyone put in a lot of effort.

A: Attending the Olds College Horticulture program. Attending intensive two day Berry Schools which covered all aspects of growing strawberries, raspberries and Saskatoons

Next Month's ? → What are your business (or work)-related New Year's Resolutions?

Upcoming Conferences / Workshops

December 2018

- Great Lakes EXPO Farm Market Bus Tour
  Dec 3, 2018 – Grand Rapids, Michigan, USA
  http://bustour.greatamericanmediaservices.com/
- Great Lakes Fruit, Vegetable and Farm Market Expo
  Dec 4-6, 2018 – DeVos Place Convention Centre – Grand Rapids, Michigan, USA
  www.glexpo.com

January 2019

- Potato Expo 2019
  Jan 9-10, 2019 – Austin Convention Centre – Austin, Texas, USA
  www.potato-expo.com
- Agronomy Update 2019
  Jan 15-16, 2019 – Sandman Signature Lethbridge Lodge – Lethbridge, AB
  Ropin' the Web (www.agriculture.alberta.ca) – Coming Events
- 21st Annual Pacific Agricultural Show
  Jan 24-26, 2019 – Tradex Exhibition Centre – Abbotsford, BC
  www.agricultureshow.net
- 38thAnnual Guelph Organic Conference & Expo
  Jan 24-27, 2019 – Guelph University Centre, Guelph, ON
  www.guelphorganicconf.ca
- Organic Alberta Conference – *Growing Health Farmers, Fields and Food*
  Jan 25-26, 2019 – Dow Centennial Centre – Fort Saskatchewan, AB
  http://organicalberta.org/news/2019-central-conference/
- Scotia Horticultural Congress 2019 – "Farming's Impact from Soil to Sales"
  Jan 28-29, 2019 – Old Orchard Inn Convention Centre – Greenwich, NS
  http://horticulturens.ca/scotia-horticultural-congress/
- Manitoba Potato Production Days
  Jan 29-31, 2019 – Keystone Centre – Brandon, MB
  http://www.mbpotatodays.ca/
- FarmTech 2019
  Jan 29-31, 2019 – Edmonton Expo Centre at Northlands – Edmonton, AB
  www.farmtechconference.com
- 50th Annual Northwest Agricultural Show
  Jan 29-31, 2019 – Portland Expo Centre – Portland, Oregon, USA
  www.nwagshow.com

Upcoming Conferences / Workshops

February 2019

- 34th Annual North American Farm Direct Marketing Association (NAFDMA) Convention
  Feb 1-7, 2019 – Indianapolis, Indiana, USA
  http://www.farmersinspired.com/Convention/
- 9th North American Strawberry Symposium
  Feb 3-6, 2019 - Wyndham Orlando Resort – Orlando, Florida
  www.nasga.org
- Fruit Logistica 2019
  Feb 6-8, 2019 - Berlin ExpoCenter City & CityCube Berlin – Berlin, Germany
  https://www.fruitlogistica.com/
- Ontario Fruit & Vegetable Convention
  Feb 20-21, 2019 – Scotiabank Convention Centre – Niagara Falls, ON
  www.ofvc.ca
- (Tentative) Pre-Conference Workshop – Introductory Berry Production
  Feb 27, 2019 – Nisku Inn – Nisku, AB
- Alberta Farm Fresh School 2019 – Farm to Market to Table
  Feb 28 – Mar 1, 2019 – Nisku Inn – Nisku, AB
  www.albertafarmfresh.com

SAVE THE DATE

The Alberta Farm Fresh School "From Farm to Market to Table" is tentatively set for February 28-March 1, 2019 at the Nisku Inn in Nisku, AB. This conference is offered by Alberta Farm Fresh Producers Association (AFFPA) and Alberta Farms Market Association, in supported partnership with Leduc County and Leduc Regional Chamber of Commerce.
Watch www.albertafarmfresh.com for details.

FARM to MARKET to TABLE

Canadian Agricultural Partnership (CAP) PROGRAMS – "The Partnership"

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 consisted 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 are released with the opening of each program. The criteria for eligibility are 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 of the CAP homepage, to subscribe.
www.cap.alberta.ca

As of December 1, 2018, details on most parts of the 5 themes of programs have been released and a number of programs are open. Programs will open and close at different times, depending on intake periods, program capacities, etc. The following programs are included:

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Environmental Sustainability & Climate Change Theme

- Environmental Stewardship and Climate Change - Group
- Environmental Stewardship and Climate Change - Producer
- Farm Water Supply
- Irrigation Efficiency

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Products, Market Growth and Diversification Theme

- Products to Market (*not accepting applications*)
- Value-added Products to Market (*not accepting applications*)
- Emerging Opportunities in Food and Agri-Processing *(not accepting applications)*

Science and Research Theme

- Accelerating the Advancement of Agricultural Innovation
- Adapting Innovative Solutions in Agriculture

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Public Trust Theme

- Agriculture and Food Sustainability Assurance Initiatives
- Public Agriculture Literacy
- Youth Agriculture Education

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Risk Management Theme

- Risk Mitigation
  - Animal Health Biosecurity
  - Animal Health Traceability
  - Animal Welfare Humane Slaughter
  - Food Safety
  - Irrigation Conveyance Works
  - Farm Safety
  - Plant Health
- Emergency Preparedness (*not accepting applications*)
- Surveillance

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Grant program to support health and safety on farms and ranches

Farm Health and Safety Producer Grant Program

This grant will help eligible agriculture employers comply with new occupational health and safety (OHS) requirements and offset some of the costs employers may incur in complying with OHS regulations for farms and ranches, which take effect Dec. 1, 2018

Program details

- Applications open Oct. 15, 2018 and the program runs until March 2021.
- Farms and ranches with waged, non-family workers and a WCB account may apply for the grant.
- The grant covers up to 50 per cent of eligible safety expenses to a maximum of $5,000 per year or $10,000 over the life of the program per eligible applicant. Expenses going back to Jan. 1, 2018 are eligible under the program.
- Eligible expenses include things like:
  - First aid kits, fire extinguishers and warning signage.
  - Respirators, eye and hearing protection.
  - Health and safety programs, courses, education, training and consultant fees.
  - Seatbelt installation, warning lights and auger guards to improve equipment safety.

Online resources

Visit the program website for more information, the funding list or to apply today: **agriculture.alberta.ca/farmhsgrant.**

Visit **alberta.ca/farm-and-ranch-ohs** for more information on the occupational health and safety requirements that come into effect for some farms and ranches on Dec. 1, 2018.

Visit agriculture.alberta.ca/farmhsgrant to apply today.

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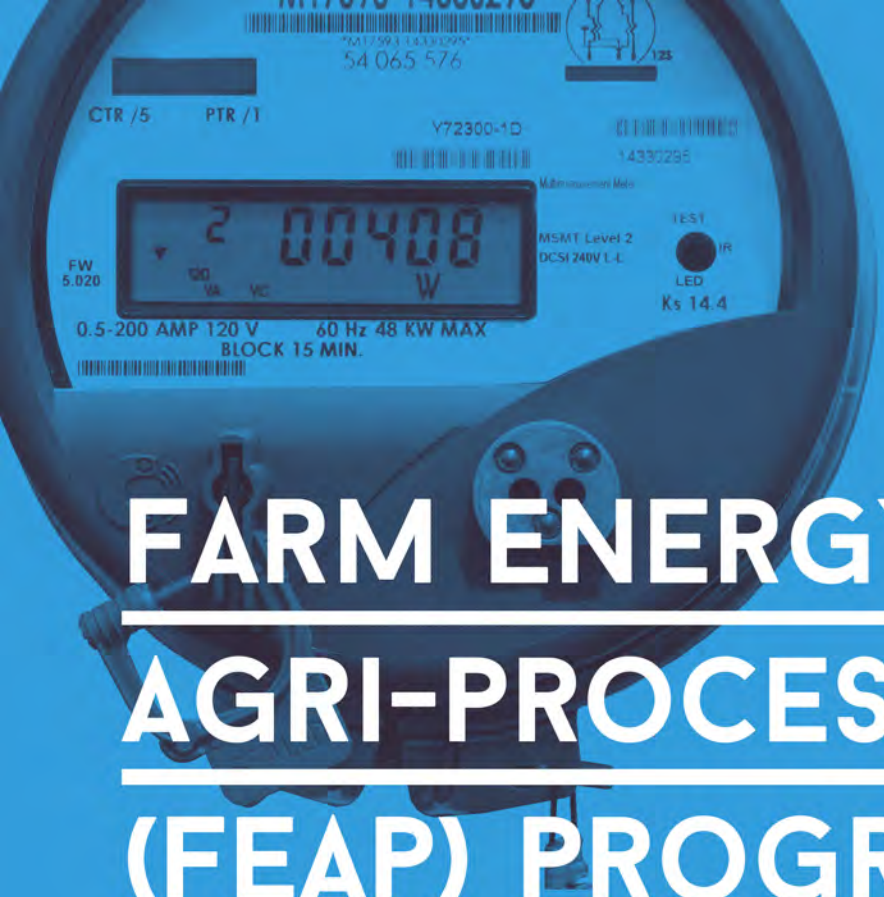
Alberta



FARM ENERGY AND AGRI-PROCESSING (FEAP) PROGRAM

FEAP shares costs with the agriculture and agri-processing sector on energy efficiency investments. The program is designed to encourage energy management which will result in cost savings, energy conservation and ultimately reduced greenhouse gas emissions.
See the full funding list online.

ENERGY EFFICIENCY INCENTIVES FOR:

FARMS
RANCHES
AGRI-PROCESSORS

Ag-Info Centre: 310-FARM (3276)
agriculture.alberta.ca/feap

Canada

Alberta Government

ON-FARM SOLAR PHOTOVOLTAICS (OFSPV) PROGRAM

To be eligible for funding, a Photovoltaic system must be:

- Grid-tied, not off-grid
- Approved under Alberta's Micro-Generation Legislation
- Positioned to optimize sunshine and minimize shading
- Have manufacturer-warranties on: Solar modules, Racking, Inverters and/or Micro-inverters, and
- Installed on a Site ID that has a Distribution Rate Class of Farm, Irrigation, Grain Drying, or equivalent

Retroactive projects that have been completed **AFTER APRIL 15, 2017** are eligible. See website for more details!

Ag-Info Centre: 310-FARM (3276)

agriculture.alberta.ca/solar

Alberta Government

National Farm-level Biosecurity Standards

In 2012, 2015 and then in 2016, the Canadian Food Inspection Agency (CFIA), in collaboration with Agriculture and Agri-Food Canada (AAFC) and relevant sector organizations, released several National Voluntary Farm-Level Biosecurity Standards, including one for the Potato Sector, the Fruit and Tree Nut Sectors and the Greenhouse, Nursery and Floriculture Sectors. Biosecurity Guides for each of the sectors were also released.

The biosecurity guides, in combination with the Standards, assist producers by:

- Raising awareness of biosecurity risks in the sector and the measures that can help reduce the risk of pest introduction and spread
- Promoting a consistent approach across the country for mitigating the risks with clear guidelines for effective biosecurity
- Providing a nationally consistent approach to develop and implement biosecurity plans at the farm level
- Providing guidelines for biosecurity, including prevention and integrated pest management
- Enhancing industry's knowledge of the risks associated with pests and diseases
- Helping to identify potential gaps in current biosecurity measures

A food-for-thought story

An experienced farmer was intimately familiar with his farm. He always walked around it the same way every time. He knew every nook and cranny, bump and hillock on the place. When he pictured it in his mind, he could see all of it clearly. He knew every procedure and practice that he'd ever used and was convinced of their effectiveness and efficiency.

On day, a friend asked him if there were any flaws in his farm. He replied "No, of course not."

The friend suggested that he might find some value in occasionally walking around the farm by a different path.

Because he respected the friend, he gave it a try and discovered that coming at things from a different angle revealed new insights into his farm. Based on those insights, he was able to make slight adjustments and improvements.

The Standards and producer biosecurity guides are voluntary and can be adopted in their entirety or can supplement existing on-farm biosecurity programs.

National Farm-Level Biosecurity Standard for Potato Growers

- Producer Guide to the National Farm-Level Biosecurity Standard for Potato Growers

National Voluntary Farm-Level Biosecurity Standard for the Fruit and Tree Nut Industries

- Fruit and Tree Nut Sector Biosecurity Guide

National Voluntary Farm-level Biosecurity Standard for the Greenhouse, Nursery and Floriculture Sectors

- Greenhouse Vegetable Sector Biosecurity Guide
- Nursery Sector Biosecurity Guide
- Floriculture Sector Biosecurity Guide

Pest Management Regulatory Agency (PMRA) – Electronic Label Search Engine
Search the database for electronic labels

Value – What's in a Price?

Recently, while attending the Green Industry Show and Conference, I sat in on a talk by Dr. Bridget Behe, a professor at Michigan State University. I always enjoy listening to Bridget (I've heard her several different times), as she has a pleasant and easy-to-listen to style of teaching and what she says usually sinks in to my noggin. It is always solidly grounded in solid research and data, but is presented in such a way as to be directly and practically applied.

This time, Bridget was talking about the mechanism of setting prices. Pretty daring to do at 8 o'clock in the morning, in my opinion. However, instead of just focusing entirely on the science-y math side of calculating a price, she introduced the (not necessarily new) idea of considering the mystical art of assigning "value", that hard to pin down, subjective factor (or factors, really). It wasn't exactly earth-shatteringly new and novel, but it bears some review and definitely deserves to be considered some more as you look ahead to setting prices for the next season.

Bridget spent a bit of time on the math of calculating and determining price (what goes into it), but I'd like to share a few of the points that I gleaned from Bridget (not as eloquently as her) relating to other factors that should be considered.

A story to prove my point...

Our home has few (if any) plants growing in it. This has been true for over 20 years. But whenever we have a plant, it usually gets a name and has an emotional attachment to it, beyond the norm.

The other day, on our way through the local department store, a patch of green caught my eye. When I looked more closely, I noticed that it was a bunch of Norfolk Island Pines, which reminded me of one that we'd had years ago, which we called Herman. For a few minutes, we waxed nostalgic about our beloved houseplant.

Minutes later, after passing through the checkout, we noticed a bright and colourful display of Christmas cacti. As a child, my wife had purchased one for her Nana (paternal grandmother). It had grown, thrived and flowered for many years (close to 40) and was a regular reminder of this beloved woman. Did we buy a new one for ourselves that night? You betcha.

That plant didn't cost much, but it has tremendous value.

- NUMBERS don't make decisions. NUMBERS aren't right or wrong until we place a JUDGEMENT on them.
- NEVER price according to size of container
    - "When we price by container size, we communicate to customers that all of the value of the product lies below the soil/media line."
    - If you focus on pricing based on the size of the pot, you lose all of the other VALUE factors
- What else should go into a PRICE? – Consider elements of PERCEIVED VALUE
- FUNCTIONAL value – Features, functions, attributes or characteristics (aesthetics, quality), performance, outcomes or consequences (environmental or other benefits)
- EPISTEMIC value – Novelty or ability to satisfy a desire; sensory value (aesthetics, ambiance, sensory traits) – e.g. scent
- CONDITIONAL value – Symbolism or meaning; may relate to memory, events, tradition
- EMOTIONAL value – Relates to emotions and relationships, as well as the emotions associated with buying and selecting; personal investment in time, effort, energy
- SOCIAL value – Identify with social/cultural group; hip/cool; Increase perception in the eyes of others
- MORE VALUE = HIGHER PRICE; BENEFITS = VALUE; FEATURES = FUNCTION = VALUE

In the end, how can you sell the value of your product, moving beyond the price of producing it, plus some extras?

Tips for getting the most from an education/training event (for yourself)

There is a lot to be said for education. I'm a big fan (I'd better be, given the number of years I've spent in a classroom). We spend the better part of our childhood and youth learning (or being encouraged to do so) and anytime we start out on a job, one of the first things we do is "train". Training and formal/informal education (whether brief or extended/intensive) can be a tremendous benefit to us, to our lives and to our careers and businesses. It is a fairly well-established fact that well-trained individuals (whether owners, employees or other) function at a higher level than their untrained counterparts.

I think that Aristotle summed it up nicely when he said "*Excellence is an art won by training and habituation. We do not act rightly because we have virtue or excellence, but we rather have those because we have acted rightly. We are what we repeatedly do. Excellence, then, is not an act but a habit.*" You can find a selection of other deep thoughts on education and training (see above), but I consider training and education as a way to build our mental and intellectual capacity until our physical experience has a chance to catch up. Think of it as mental muscle memory, until we have actual muscle memory. And, when we've settled comfortably into our experience (rut), training and education works nicely to stir things up.

I know that I (and many others before me) regularly recommend that producers/growers invest time in education and training. But how do you get the most out of what you attend? How do you maximize the value of the time you spend in a classroom, on a tour, walking around a tradeshow or in a field? I don't have all of the answers, but here are some tips.

1) Know why you go and then go with a purpose
   Go into the training with some specific goals, whether for specific things to learn (that is easier if the event has clear outcomes) or even with the goal to just get 2 or 3 new ideas. If you are going, "just because" or "because you have to", you've already stunted your ability to benefit from the experience.
   If you set goals, or go with honest intent, you will be more likely to retain what you are taught and then apply what you learn. You'll also find that you are more likely to be satisfied. I'm not saying that you are lowering the bar in advance, but it shouldn't take as much to see what you are gaining.
2) Keep an open mind
   Sometimes nuggets of learning come unexpectedly and from unusual angles. If you predetermine WHAT you are going to learn, you might miss out on some really valuable stuff. You might see that you could make changes to what you are doing. You might have an "Aha" moment about something. You never know.
3) Be open to inspiration
   Have you ever been thinking about something, and seemingly out of the blue, an unrelated thought pops into your head? Don't fight it. Note it down for chewing on later and just let it flow. The exercise of thinking seems to shake things up, allowing stuff we wouldn't have considered to filter down to our now open mind.
4) Take notes (even if it is just a few bullet points)
   Years ago, I was sitting in a session at a conference, busily scribbling notes on the subject. Someone that knew me, and knew that I'd spoken on that particular topic myself several times previously, questioned why I was taking notes. I responded that it serves several purposes. 1) It keeps me alert and engaged; 2) it helps to push and pull the content more firmly into my brain; 3) it opens up my mind to consider elements that I hadn't previously thought about. The moment that you think that you "know it all", you are hooped.
   Taking notes is also important, because who can remember everything? Jot down the things that seem important to remember. I like to divide up my pages a little, with a ¼ of the page separated off from the main notes. That column is labeled "IDEAS" or something like that. By labeling it, it almost invites my brain to look for ideas on things I can ACT on, later on. Plus, I know where to look for things that I had decided were important to work on.
5) Meet someone new
   I've often found that I learn more from the PEOPLE I meet than from things I attend. Not that speakers aren't great, but I love to "collect" contacts. I often claim that I don't know everything, but I know lots of smart people. So go into events with the intent of making a new friend or at least a useful contact. Collecting brains (which you can access again and again later) beats scribbled notes almost any day.
6) Exit with resolve
   Whatever you learn and retain, don't end your experience without an action plan. Leave with a plan to do something.

"*On the mountains of truth you can never climb in vain: either you will reach a point higher up today, or you will be training your powers so that you will be able to climb higher tomorrow.*" – Friedrich Nietzsche

INSECT OF THE MONTH

True Bugs

The order *Hemiptera* contains about 50,000 to 80,000 different species of insects, all of which have some form of sucking mouthparts. Among the members of this order you'll find many different insect pests which are common to Alberta, including aphids, shield bugs, spittle bugs, leafhoppers, thrips, etc.

Plant bugs and stink bugs are both part of this larger True Bug order. Plant bugs are a part of the Family *Miridae* and stink bugs are in the Family *Pentatomidae*.

Insects in these groups vary in their host ranges, feeding habits and level of pest status. Some are plant pests and others are beneficial predators/parasites.

Plant Bugs (*Miridae*)

These insects are smallish insects, typically being oval or elongate in shape, and often less than a centimetre in length. Many of them have a hunched look, because of the shape of the prothorax, which carries the head bent down. Their mouthparts have four segments. Some are brightly coloured and patterned, while others are drab or dark; most are inconspicuous.

One useful feature in identifying members of the family is the presence of a cuneus, which is a triangular-shaped area at the tip of the horny part of the forewing.

Example insects:
Lygus Bugs (*Lygus lineolaris (& other species)*)

Stink / Shield Bugs (*Pentatomidae*)

Stink and shield bugs are larger insects with broad, flattened, shield-shaped bodies, small, narrow heads and fairly short legs. They range in colour, generally being green to brown. They have long, four to five-segmented antennae and large, compound eyes. They have a three to four-segmented piercing/sucking "beak" for mouthparts. The beak is held below the body when not in use. Their forewings have the front half leathery and the back half membranous. Eggs are laid in clusters. Nymphs (the immature stage) resemble the adults, but have no wings.

The stink bug derives its name from a pungent unpleasant odor from a glandular substance released from the thorax when disturbed or crushed. The smell is used to protect themselves and discourage predators.

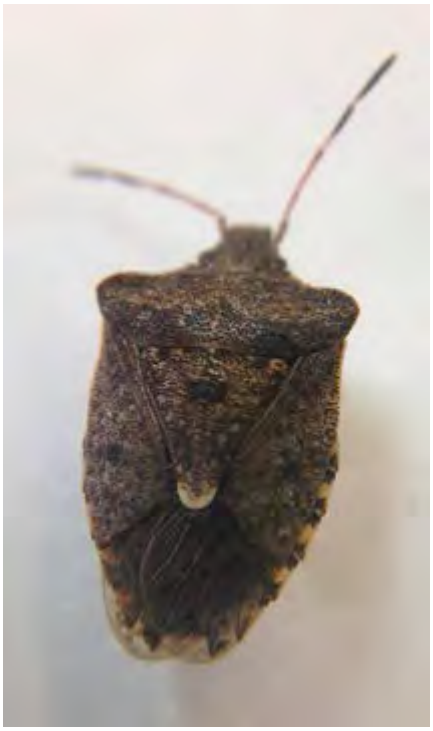
Example insects:
Green stink bug (*Chinavia hilaris*)
Twice-stabbed stink bug (*Cosmopepla lintneriana*)
Brown marmorated stink bug (*Halyomorpha halys*)

Tarnished Plant Bug adult on strawberry – note the distinctive "cuneus" (triangular area) on the upper part of the forewing

Photo by Robert Spencer

Adult Twice-stabbed stink bugs on strawberry – one example of the stink/shield bug group

Photo by Robert Spencer



An adult stink/shield bug of some sort.

Photo by Robert Spencer

Tarnished Plant Bug

Lygus lineolaris (& other species)

Crops Affected: Wide host range – many fruit, vegetable, field and forage crops and weed species

Life Cycle:

- One of the most serious & widespread of strawberry pests
- Sucking insects that pierce flower buds, blossoms, and developing fruits and plant parts
- Adult has distinctive triangle or "V" mark on back; strong fliers
- Overwinter as adults in leaf litter or under debris and migrate into fields in spring or fall to feed on weeds and crops
- Lay eggs in spring in plant tissues
- Young (nymph) resemble aphids without cornicles (tail pipes) and move more quickly; hatch & feed on developing blossoms & fruit
    - Nymphs feed through May and June, maturing in late June to early July
    - Most of damage results from nymphal feeding
- Adults feed on developing fruit
    - Leave with fruiting complete in June or July (strawberries)
    - May have 2-3 generations per year (depending on season length)
- Due to the fact that day neutral strawberries are flowering when TPB numbers are high, damage potential is higher

Symptoms:

- Presence of insect life stages
- Range of damage to vegetables: reduced fruit set in bean, pepper & eggplant; blemishes on tomato fruit; necrotic spots on florets & curd of broccoli, cauliflower and heads of lettuce; dead leaves on potatoes; foliar injury on cucumbers; gummosis on zucchini
- Raspberries (most damage occurs after petal fall)
    - Feeding on flower blossoms & developing fruit = crumbly berry
    - Reduced plant vigour
- Saskatoon berries
    - Yellow, aborting flower buds; droplets of brownish liquid may exude from newly pierced buds
    - Fruit deformation
- Strawberries
    - Feeding by nymphs – Nubbins or deformed fruit / Apical seediness
    - Adult feeding – CATFACING

      NOTE: Catfacing can be caused by other factors, producing identical symptoms
- Feeding also reduces plant vigour due to removal of plant nutrients

Tarnished Plant Bug damage

Monitoring:

- Be aware of neighbouring crops that might be a host or that might release a large number of adults when cut (e.g. alfalfa or canola)
- Crop should be monitored for the number of nymphs in flower blossoms. Sweep nets can determine adult numbers
    - Scout the field perimeter in new fields or entire established fields
    - Start monitoring in overwintered fields when they are uncovered onward
- Blossoms may be sampled from across the field, counting the number of nymphs and adults present
    - Survey the field from pre-bloom until green fruit stage (strawberries)
        - Tap plants or shake fruit clusters over a non-metallic pie plate
        - Count the number of nymphs per 100 clusters
- Strawberry Economic threshold = 1 nymph or adult per 8 blossoms

Tarnished Plant Bug damage - catfacing

Management:

- Careful monitoring of TPB populations
- Remove weeds (especially leguminous species)
- Ensure alternate host crops are not planted too close (e.g. alfalfa)
- Make careful and timely chemical control applications
    - Controls are available with application timing restrictions
    - Chemical control is challenging due to continuous flowering and fruiting of day neutral strawberries
    - Only products with short Pre-Harvest Intervals (PHI) may be used
    - Do not apply products when bees are actively working

Tarnished Plant Bug – A Major Pest of Strawberry – OMAFRA article

Brown Marmorated Stink Bug

Holyomorpha halys

Crops Affected:

Wide host range (over 300 plants) – berry crops, grapes, stone and pome fruit, peppers, tomatoes, corn, ornamental tree and shrub plants, etc.

Life Cycle:

- In northern areas, overwinter in buildings or structures (e.g. houses, woodpiles)
- In some regions where they are established, they can "gather" indoors in fall/winter
- Typically a single generation per year
- Tend to hitchhike from other regions in containers, vehicles, etc.
    - NOTE – BMSB was detected in a shipment of RVs in central Alberta in 2012
- Adults are large insects, 12-17 mm long and 8mm wide
    - Emerge in May to June as it warms up (if overwintered)
    - Marbled brown/grey backs (dorsal) and pale undersides (ventral)
    - Pinkish forewings (when extended) – hidden
        - Distinctive identifying characteristics of BMSB adults
            - Two white bands on antennae
            - Smooth "shoulders" that don't protrude forward
            - Inward-pointing white triangles alternating with dark areas that run along the edge of the abdomen
- Pale-green, barrel-shaped eggs are laid in clusters of 20-30 on leaf undersides from early June until late July / early August
- Multiple (5) instars of nymphs develop
    - Each instar is somewhat different – ranging from red and black early instars to grey/brown later stages
- May move between different host crops – highly mobile

Symptoms:

- Nymphs and adults can cause injury through insertion of piercing/sucking mouthparts
- Feeding results in necrotic spots at the initial site
- Other damage symptoms might include
    - Discoloured/deformed fruit
    - Abortion/abscission of berries
    - Death of buds
    - Stippled leaves
    - Missing, shrivelled or punctured seeds/kernels
    - Sap flow or discoloured bark in trees

Monitoring:

- Regular monitoring for tell-tale signs
- Watch for signs of the insect or symptoms
- Watch for winter aggregations (mass groupings of adults) in/on structures

Management:

- Monitoring for early detection and monitor throughout season into fall/winter
- Ensure clean, pest-free plant material
- Pesticide application (broad-spectrum) can be somewhat effective in the short term
- Most new pesticides are less effective as they don't have long residual times

Brown Marmorated Stink Bug adult
Photo by Jennifer Read - NRCan

Additional Sources of Information

Brown Marmorated Stink Bug - OMAFRA info
BMSB – OMAFRA – ID Postcard
Brown Marmorated Stink Bug – Penn State info
BMSB "Have You Seen This Bug" – British Columbia Ministry of Agriculture

Black Knot of *Prunus*

Causal Organism: *Apiosporina morbosa*

Crops Affected: all plants within the genus *Prunus*, including various species of cherries (chokecherry, Nanking cherry, pin cherry, sand cherry, sour cherry, etc.), plums, almond, etc.

Disease Cycle:

- Ascospores are produced on mature galls in the spring, infecting growing points
- Infection causes an increase in xylem and phloem cells in the stem
- The disease will develop internally and externally
- Galls will grow in size each year, producing spores annually
- Plant structure is affected and branch strength may be reduced
- Eventually, plants may die
- A single infected tree or bush can infect a wide area

Symptoms:

- The most recognizable symptom is the presence of a black tar-like swelling on branches of infected plants
    - Sometimes vulgarly described as resembling “poop-on-a-stick”
- Initial symptoms include a small swelling or gall at a succulent growing point or fruit spur
- Swellings grow in size and eventually become ruptured, hard and black
    - Galls may be 6 or more inches in length
    - Galls may also occur at branch junction points and on scaffold limbs
- Galls may eventually be colonized by secondary fungi, which can reduce sporulation

Management:

- Remove sources of inoculum in adjacent areas
- Prune out infected branches during the dormant season, when plants are dormant and galls are highly visible
    - Galls should be pruned out, with cuts being made at least 6 inches beyond obviously infected materials
        - Pruning cuts should be made to an appropriate point (healthy collar, etc.)
        - If possible, pruning tools may be disinfected between cuts, however this may be difficult or impractical in many situations
- Destroy infected material by burning, burial and/or proper composting, or removal from the site
- Ensure plants are healthy and free from stress
- Ensure adequate canopy ventilation
- Chemical controls are limited, fairly ineffective and expensive
- Consider hiring a certified arborist for complex pruning activities

Photos by Tricia Simon

Swollen tar-like galls of various sizes are visible on branches and branch junctions