



The New Year is off to an interesting start in Alberta, with fluctuating weather and temperatures. One week it is blisteringly cold, snowy and awful (a.k.a. typical), with a dash of thick fog, and the next it feels like April (only better, since warm, sunny days in January feel amaaaazing). Despite those fluctuations, you can always rely on the arrival of a new edition of Hort Snacks, packed full of a wide range of items for your use.

In this edition, you will find posters for many different extension events, geared to a range of different audiences and industries. You'll also find a number of short articles related to equipment, greenhouse cleanup and sanitation and associated issues. Hopefully you will find them useful.

As always, we always welcome your input, feedback, comments and suggestions, whether it be about the newsletter itself or about other horticulture extension-related activities and work that we undertake to support industry growth. We're just a phone call or email away. Have a great month.

Rob Spencer/Dustin Morton, Commercial Horticulture Specialists
 Alberta Ag-Info Centre, Alberta Agriculture and Forestry
 310-FARM (3276)

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Featured APP

PlantCalc – a calculator that estimates the amount of plant nutrients removed by various crops – by the International Plant Nutrition Institute (IPNI)

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THINGS TO DO / THINGS TO THINK ABOUT THIS MONTH

- Plan to attend winter workshops / courses. At the same time, think about visiting another operation this summer [or attending some field day(s) or workshop(s)]
- Register for Alberta Farm Fresh School (agenda attached) – connect with fellow producers, get answers and ideas and share your own thoughts with others
- Plan field layout of fields to be planted
- Check / Clean / Maintain Equipment
 - irrigation connections, nozzles, filters, pump injectors
 - sprayer nozzles, pumps, filters, lines, etc.
 - planters, seeders, etc.
 - harvesters and tractors
- Check / Update signage
- Finalise plans and dates for advertising during season
- Plan for planting equipment and labour

- Prune Saskatoon berries (as able)
- Prune or mow primocane raspberry plants to the ground (as soon as can get to)
- Continue to monitor strawberry plant winter survival. Order extra if necessary.

- Ensure memberships in organizations are up to date (inclusion in websites, guides, etc.)
- Review production record notebook
 - Fertilizer response?
 - Pesticide response/efficacy?
 - Application dates
 - Pesticide applicator license update?
- Roundtable discussion with everyone involved in your operation
 - Review errors – irrigation, fertilizer, pest management, staffing
 - Collect ideas for improvement, whether it is diversification, streamlined processes, new and interesting ways to reach customers, whatever. Pick a couple to try out and put whoever contributed the idea in charge of it.
- Inventory
 - Pesticide / fertilizer storage – What do you have? Has anything expired? Does everything have the proper labels? Is everything stored correctly?
 - Containers – picking boxes, containers, pails, bags, etc.
- Complete order of fertilizer, pesticides, picking/packing containers, etc.



Keep Alberta Dutch Elm Disease Free

- Do not bring firewood into Alberta
- Elm Pruning Ban is April 1 – September 30
- Elm trees from a DED infected province can not be shipped into Alberta

STOPDED
SOCIETY TO PREVENT DUTCH ELM DISEASE

Alberta

For more information call 310-0000 and ask for 403-782-8613
www.STOPDED.org

Elm Pruning Ban in Alberta

- Pruning and sanitation is an essential part of Dutch Elm Disease prevention
- Pruning of elm trees is legal in Alberta from October 1 to March 31
- The disease vectors (European elm bark beetles) are not active between these dates
- Proper pruning is very important – consult a professional arborist to determine the nature and extent of pruning required

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.

Upcoming Conferences / Workshops

February 2017

- **Human Resource (HR) Essentials**
Feb 1, 2017 – Stony Plain, AB
- **32nd Annual North American Farm Direct Marketing Association (NAFDMA) Convention**
Feb 3-9, 2017 – Mystic, Connecticut, USA
<http://www.farmersinspired.com/Convention/>
- **Getting Into Farmers Markets**
Feb 8, 2017 – Keephills Community Hall – Parkland County, AB
Feb 9, 2017 – Airdrie, AB
- **Explore Local Webinar – Marketing Your Story**
Feb 15, 2017
- **Adding it Up: Getting a Handle on Your Greenhouse Financials**
Feb 15-16, 2017 – Lacombe Agriculture Building - Lacombe, AB
Call 1-800-387-6030 to register
- **Organic Alberta Conference**
Feb 17-18, 2017 – Lacombe, AB
- **Ontario Berry Growers Association Annual Meeting**
Feb 20, 2017 – Niagara Falls, ON
www.ontarioberries.com
- **Ontario Fruit & Vegetable Convention**
Feb 21-22, 2017 – Scotiabank Convention Centre – Niagara Falls, ON
www.ofvc.ca
- **Hort Snacks-to-Go Webinar – Hydroponic Lettuce**
Feb 27, 2017 – [Registration link](#)
- **Agritourism and Farm Direct Marketing Workshop**
Feb 28, 2017 – Agriculture Centre – Lethbridge, AB
Register – 1-800-387-6030

Upcoming Conferences / Workshops

March 2017

- **Strawberry Production for New Growers**
Mar 1, 2017 – Pomeroy Olds – Olds, AB
Call 1-800-387-6030 to register
- **Alberta Farm Fresh School – From Farm to Market**
Mar 2-3, 2017 – Pomeroy Olds – Olds, AB
www.albertafarmfresh.com
- **Potato Post-Harvest Management for Fresh/Seed Potatoes**
Mar 7, 8, 9, 2017 – Coast Lethbridge / Lacombe Memorial Centre / Hazel Bluff Community Hall (Westlock)
Call 1-800-387-6030 to register
- **Adding it Up: Getting a Handle on Your Greenhouse Financials**
Mar 8-9, 2017 – Red Hat Co-op - Redcliff, AB
Call 1-800-387-6030 to register
- **Problem Pests of Horticulture Crops**
Mar 14, 15, 16, 2017 – Airdrie Ag Centre / Lacombe Memorial Centre / Strathcona Community Centre – Sherwood Park, AB
Call 1-800-387-6030 to register
- **2017 Manitoba Direct Farm Marketing Conference**
Mar 10-11, 2017 – Access Event Centre – Morden, MB
www.directfarmmarketing.com
- **2017 Canadian Horticultural Council (CHC) Annual Meeting – “Sustainability = Balance”**
Mar 14-16, 2017 – Fairmont Winnipeg – Winnipeg, MB
www.hortcouncil.ca/
- **Canada Blooms 2017**
Mar 10-19, 2017 – Eneicare Centre – Toronto, ON
www.canadablooms.com
- **Hort Snacks-to-Go Webinar – Biocontrol Update**
Mar 20, 2017 – [Registration link](#)

April 2017

No events listed at this time

Industry Input Requested

CHC Survey on Neonic Use – Deadline February 6, 2017 –
Links to each commodity's online survey

[POTATOES](#) | [GHSE VEG](#) | [FIELD VEG](#) | [BERRY VINE & GRAPE](#) | [TREE FRUIT](#)

[“Safe Food for Canadians” Regulations consultation](#) – until
April 21, 2017

GARLIC FOR SALE

Henry from the Byemoor Hutterite Colony has about 90 pounds of softneck garlic for sale (for seed or other use).

If you are interested, contact him before the end of March 2017 at 587-282-4713

Are you a food or beverage processor?

Or are you a related partner, like a retailer, distributor, supplier or producer?

Would you like to strengthen your company's leadership and your strategic relationships?



Leadership and Strategic Relationships Workshop

About Dr. Brynn Winegard

Brynn is a Canadian award winning professor, consultant, speaker and writer and a director of the Schulich Executive Education Centre of Excellence in Agri-food Business. Brynn has spent over a decade working in companies such as Pfizer Inc., Nestle Inc., and Johnson & Johnson. She has developed successful customized programs with over 75 other companies.

This is a full-day workshop for food processors and their partners.

The workshop will focus on:

- Factors for successful leadership
- The leader's role and core purpose
- Key issues facing leaders
- Developing strategic relationships
- Examining partner relationships

Participants will be encouraged to share their knowledge, ask questions and join the practice activities.

Leave with skills to strengthen your company's leadership and partnerships. Be better prepared to meet the rising demand of customers.

Wednesday, February 22, 2017

8:30 a.m. Registration and Coffee
9 a.m. to 4:30 p.m. Workshop

Agriculture Centre, 97 East Lake Ramp NE, Airdrie, Alberta

The cost is \$30 (Includes GST)

Morning refreshment, snacks and lunch provided

Registration Deadline: February 15, 2017

To register call the Ag-Info Centre registration desk at

1-800-387-6030

For more information contact Lisa Iwanyk at 780-968-3511 or lisa.iwanyk@gov.ab.ca

Adding it Up: Getting a Handle on Your Greenhouse Financials



Cobra GREEN is a financial software developed by Alberta Agriculture to help greenhouse vegetable growers better understand the numbers behind their business. In this workshop, growers will learn how to use this software to help make their business more profitable and better position themselves for lending opportunities.

February 15 and 16, 2017

Agriculture Building

5030 – 50 Street, Lacombe, AB

Registration Deadline: February 10

March 8 and 9, 2017

Red Hat Co-op

809 Broadway Ave NE, Redcliff, AB

Registration Deadline: March 3

Cost: \$10/person + GST (includes lunch)

To Register: 1-800-387-6030

For more information: Dustin Morton, Commercial Horticulture Specialist
780-679-1314

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Agritourism and Farm Direct Marketing Workshop

Featuring

Mark Saunders and Angela Grant of Saunders Farm

9 a.m. - 3:30 p.m.; February 28, 2017

100, 5401 - 1 Avenue South, Lethbridge, Alberta (Agriculture Centre)



Cost: \$25 (plus GST)

(includes lunch and refreshments)

To register call the **Ag-Info Centre** at

1-800-387-6030

Registration Deadline is February 21, 2017.

For further information about the workshop

contact Colin Gosselin at **780-968-3518** or

colin.gosselin@gov.ab.ca

Mark and Angela will guide participants through this hands on agritourism and farm direct marketing workshop. They will help farms leave with tangible ideas and plans for their businesses.

Topics Include

- **Customer Service**
- **Staff Management and Training**
- **Pricing for Profit and Sustainability**
- **Marketing**
- **Products** (farm dinners, events etc.)



Mark and Angela lead the award-winning Saunders Farm near Ottawa, Ontario. Originally a strawberry U-pick operation, the farm has grown and redefined what a family farm can be. They have had over one million guests, and now welcome nearly 60,000 people each year to their Haunting Season. Mark and Angela are also active leaders with the North American Farmers' Direct Marketing Association.

Strawberry Production Workshop

**March 1, 2017 – Pomeroy Inn & Suites at
Olds College (4601 46 Ave) – Olds, AB**



This workshop provides new or potential strawberry producers with a detailed outline of all aspects of strawberry production in Alberta. Sessions include information on the production of June-bearing and day-neutral strawberry types, including establishment, maintenance and harvest of strawberries.

11:30 a.m. – 12:30 p.m. registration

Lunch: 12 – 12:40 p.m.

Sessions run 12:45 to 5:30 p.m.

Register: 1-800-387-6030

Registration deadline:

February 21, 2017

Cost = \$20/person (plus GST)

Lunch and snacks provided



FARM TO MARKET CONFERENCE

presented in partnership by

Alberta Farm Fresh Producers Association

and

Alberta Farmers' Market Association

March 2 & 3, 2017
Pomeroy Inn & Suites
4601-46 Ave, Olds AB

Registration Form:
www.albertafarmfresh.com or
www.albertafarmersmarket.com

Early Bird Registration until February 10

AFFPA/AFMA/4-H MEMBERS

Single Registration – 2 days

\$190.00 (until Feb 10)

\$240.00 (after Feb 10)

Single Registration – 1 day

\$100.00 (until Feb 10)

\$150.00 (after Feb 10)

NON-MEMBERS

Single Registration– 2 days

\$250.00 (until Feb 10)

\$300.00 (after Feb 10)

Single Registration – 1 day

\$135.00 (until Feb 10)

\$185.00 (after Feb 10)

Business Unit Pair

-\$20.00/day on second person

Plenary Speakers:

Christie Pollack (Christie's Greenhouse & Gardens)

Cyndi McLean (Brand Your Genius)

Randy Brososky (Group of Rogues)

Topics include:

Marketing (social media, print, web design, branding)

Protein production & animal care

Predator and pest control

Water and soil

Holistic farm design

Nutritional labelling

Cold climate extension

Small tools

Marketing to chefs

Disaster recovery

Olds College Meat Lab Tour



AFFPA / AFMA presents ... "From Farm to Market" – Tentative Agenda



Thursday, March 2, 2017 – Day 1				BUSINESS / CONVERSATION ROOM	TRADESHOW	NEW VENTURE CONSULTATIONS
Ballroom A	Ballroom B	Ballroom C	Pool Room			
8:00 – 8:30 am REGISTRATION						
8:30 – 9:00 am Welcome & Opening Remarks – acknowledgement of sponsors / Intro by Olds College						
9:05 – 10 am PLENARY – Flying Your Flag – Showcasing Your Unique Self						
10 – 10:30 am – COFFEE BREAK & TRADE SHOW						
10:30 – 11:55 am						
Predator Management – Fruit/Veg – birds, big vertebrates and rodents	Small Farm Tools Panel	Planning Special Events at Farmers’ Markets Panel	DIY Spotted Wing Drosophila – Monitoring/Management	Beyond Bologna: Meat Trends & Meat Lab TOUR (OFF-SITE)		
12 noon – 12:30 pm – LUNCH		12:30 – 1:30 pm – Annual General Meetings (AFFPA / AFMA)				
1:30 – 2:25 pm						
Problem pests of strawberries & how to manage them (Anthracnose & TPB)	Customer Service & Relations	Season Extension Research Project / Olds College Ag Innovation Program	The Benefits of Bees on Your Farm			
2:30 – 3:25 pm						
Simple Shoulder Season Technologies – Cold Climate Extension	Hot and Spicy (Garlic Production)	Labelling - Nutritional	Disaster Recovery Panel	Meeting Customer Requirements discussion		
3:30 – 4:00 pm – COFFEE BREAK & TRADE SHOW						
4:00 – 4:55 pm						
Beyond the Traditional: Alternative Farming Techniques	Beyond the Farmers Market – selling direct to retail	Farmers Market Booth Merchandizing	Strawberry Varieties			
5:00 – 5:30 pm	Networking & Trade Show					

5:30 – 7:30 PM – Dinner & Awards (Cash Bar Available)

7:30+ PM – Informal Mixer / Social – Olds College

AFFPA / AFMA presents ... "From Farm to Market" – Tentative Agenda



Friday, March 3, 2017 – Day 2				BUSINESS / CONVERSATION ROOM	TRADESHOW	NEW VENTURE CONSULTATIONS
Ballroom A	Ballroom B	Ballroom C	Pool Room			
8:00 – 8:30 am REGISTRATION						
8:30 – 9:25 am PLENARY – Brand Your Genius						
9:30 – 10:25 am						
Soil Fertility – testing	Branding & Promotion Using Traditional Media (print)	Predator Control for Livestock	Farmers' Market Managers Meet Up / Networking			
10:30 – 11 am – COFFEE BREAK & TRADE SHOW						
11 am – 12:25 pm						
Packaging Panel (soft, hard, compostable)	The Theory Behind Good Web Design & Marketing	Panel – Marketing Direct to Chefs & Restaurants	DIY Spotted Wing Drosophila – Monitoring/Management	Grapes for the Prairies - TBD		
12:30 – 1:30 pm – LUNCH & TRADE SHOW						
1:30 – 2:25 pm						
Water for Horticulture Crops – how much & when?	Best Practices in Market Management Panel	Pasture Protein	Demanding More From Your Seed Companies			
2:30 – 3:25 pm						
Growing Brassicas in Canola Country	Social Media Marketing	Alberta Farm Animal Care	Holistic Farm Design			
3:30 – 4 pm – COFFEE BREAK & TRADE SHOW						
4 – 4:55 pm PLENARY – Stop Hitting Nails With A Chainsaw, Blindfolded						

5:00 PM – Conference ends

Potato Post-Harvest Management



This workshop will provide fresh and seed potato growers with in-depth information on potato storage design and management, as well as pre-harvest, post-harvest, in-storage and post-storage disease management information. This will increase their capacity for prolonged quality potato storage, as well as reduce losses that occur in storage or in the post-harvest process.

March 7, 2017 – Coast Lethbridge
Hotel & Conference Centre – 526 Mayor
Magrath Drive South – Lethbridge, AB

March 8, 2017 – Lacombe
Memorial Centre – 5214 50 Avenue –
Lacombe, AB

March 9, 2017 – Hazel Bluff
Community Hall (9 km west of Westlock on
HWY 18) – Westlock, AB

8 a.m. registration
Sessions run 8:45 a.m. to 4 p.m.

Register: 1-800-387-6030
Registration deadline: February 28, 2017
Limit of 2 registrants per farm operation

Cost: \$15/person (plus GST)

Lunch and snacks provided

Each farm operation will receive a binder of
resource information.

Problem Pests in Horticulture Crops



This workshop will provide rural landowners, market gardeners, garden centre owners and those that work to support these groups with information on the identification and management of a range of current problem pests (diseases and insect pests) that affect fruit, vegetable, potato and tree/shrub crops in Alberta. Participants will build their knowledge and capacity to pass on this information to others.

March 14, 2017 – Airdrie
Agriculture Centre – 97 East Lake Ramp NE
– Airdrie, AB

March 15, 2017 – Lacombe
Memorial Centre – 5214 50 Avenue –
Lacombe, AB

March 16, 2017 – Strathcona
County Community Centre – 401 Festival
Lane – Sherwood Park, AB

8 a.m. registration
Sessions run 8:45 a.m. to 4:30 p.m.

Register: 1-800-387-6030

Registration deadline: March 6, 2017

Cost = \$10/person (plus GST)

Lunch and snacks provided

Greenhouse & Cold Storage Clean Up: Tips and Pointers

Failure to properly maintain and sanitize greenhouse and long-term cold storage facilities and equipment can result in the development of insect and disease problems. With the increased risk of viruses and other carryover pests, sanitation is even more critical than ever. For greenhouses, sanitation should take place throughout the growing season, as much as possible and intensive cleanup should be conducted between crops. For storages, clean up should take place prior to use in the fall.

The following steps can/may be taken to minimize problem development.

In-Season Greenhouse Sanitation

- Remove ALL infected plant materials
- Remove any weeds
- Control algal build-ups on surfaces
- Fix problems as they arise
- Maintain drip irrigation system
 - Check filters regularly
 - Watch lines for leaks
 - Watch drippers to ensure they are functioning properly (i.e. not plugged or excess flow)
 - Avoid buildup of algae
 - Inject chlorine or biocide at end of each irrigation cycle, as regular cleanup reduces the need for intensive flushes
- Sanitize propagation area regularly

End of Season / Between-Crop Sanitation

- Use Mother Nature to kill off pests, as much as possible
- Turn off heat for a period of time in winter (e.g. 1 week)
 - Allow temperature to build up (sunlight and zero ventilation = potential pasteurization)
 - Flush greenhouse irrigation system to kill accumulated organisms (chlorine/biocide flush) and to remove precipitates (acid flush)
- Repair areas with poor drainage
- Remove all debris and trash from entire facility
 - May include vacuuming
- Remove all used growing media, as well as any remaining crop products
- Clean and then disinfect all surfaces
 - Follow the correct steps in order to achieve the desired results
 - Multiple steps may be required
- Check and/or repair ventilation, heating/cooling and fertilizer injection systems, as applicable
- Additional steps may be required for specific pests

More detailed cleanup procedures can be found at the following links:

[End of Season Cleanup](#)

[Maintenance and Cleaning Drip Irrigation Systems](#)

Benefits of Recordkeeping

It seems like most horticulture producers that I speak with never have enough time, except maybe in that brief time in the early part of winter, when everything is put to bed and conference season hasn't started yet. During the growing season, between prepping and planting fields/orchards, watching for and managing pests, harvesting, managing employees and everything else that needs to be done, there is never enough time. Especially for paperwork. But it is very important for you to make time to keep records of the things that happen on your farm. Not just the big things (such as the planting of fields and the yields of the crop), but also the small stuff that doesn't seem all that important but just happens. It can be a long list.

You might ask, "Why bother?" The simple answer is because you can't remember everything that happens year to year (or lots of times, day to day) and there might come a time when you need to know exactly what you did on your farm. There are lots of possible situations when this might be necessary. It might be because you are trying to adjust your management practices, or you might be trying to repeat something that worked a year or so ago. You might be trying to diagnose a problem and you need to know what happened in that area. A buyer might want to know whether you used a certain product or practice, as this might affect their buying decision. Some buyers won't just take your word for what you said you did. If you have a record of what has been done, you can show to anyone what happens on your farm.

This may seem like a daunting task. The best place to start is to figure out what common practices happen every year and might be worth keeping track of. This might include planting dates, varieties, field plans/maps, plant survival numbers, fertilizer applications (rates, methods, types of fertilizers used), pest control product use (chemicals used, rates, weather conditions during application, efficacy, etc.), harvest dates and yields, equipment maintenance, employee training, etc. You might create forms for you or your employees to fill out when carrying out routine tasks. Standardized forms can be a useful part of your management process and will fit well in some areas of the operation. Then focus on noting the commonplace or unusual observations. It is a simple habit to get into.

10-20 years ago (and maybe you still do) folks would carry a notepad around with them to quickly write down observations and the little things that get done on the farm. Employees were encouraged to do the same. Then, at the end of the day, you'd transfer that information to a daily log. Nowadays, technology has evolved to the point where keeping notes and records (even between multiple people) can be extremely simple. Now, everyone has a smartphone and/or tablet on them most of the time (well, almost everyone) and most people are reasonably familiar with most of the apps on them. Take a few minutes and find an app that can help get you started. You can start with something as simple as an e-notebook, or something along those lines. Then go from there. Really, all you really need is a process to encourage you to make note of specific events. And, if you don't want to write something down, just take a picture.

You might already be keeping records of many of these things. Whether you are or whether you aren't, it never hurts to do a quick assessment. By keeping records, you have something concrete that you can pull out when you need it.

Equipment – Factors for consideration

In any given horticultural operation, you might find at least a half dozen pieces of equipment, ranging from tractors to various attachments and implements. Some have very specific jobs for specific crops. Others are multi-purpose and adaptable. But they all have something in common. They can be expensive, even when purchased new.

Despite the high investment cost of equipment, each is a critical component of any operation, reducing physical man-hours and increasing efficiency. Therefore, it is important to carefully weigh the pros and cons of any equipment purchase. The following are factors that might be considered during the decision-making process.

Purpose

What exactly do you want or need the piece of equipment to do? Will it do what you need it to do, as it is designed and constructed, or will modification and tweaking be required first? If you start using it, will you have to change or adjust any of your processes to compensate for what this machine will accomplish?

Size

Will the piece of equipment meet your current and future needs? In the case of a tractor, is it big enough (or small enough) to do the variety of tasks required? Is it compatible with the various implements that you need it to pull, drive, etc.? Is it compatible with your row spacing and field layouts, or will you have to make adjustments?

Flexibility/Versatility

Can the equipment be adjusted to accomplish more than one task? Can it do more than one thing at once? Does that matter? Can it be added onto, expanded, ganged up? Can it be adjusted to work with more than a single crop?

Availability

How easy is it to get the equipment to you and where you need it? Does it have to be custom built? How far does it have to come and what will it cost to ship it to you?

Efficiency

Will the equipment actually increase your efficiency? In what way? In some cases, even if something isn't exactly more efficient, it might help you to overcome a limiting factor, such as local or seasonal labour availability. In some cases, it will actually get things done faster, safer and will therefore save you a great deal of labour.

Price

Ultimately, the price of a unit of equipment will determine how quickly you can pay for it. The higher the price, the longer (theoretically) it will take to pay it off. While price can be a limiting factor, you should also consider **Affordability**, which, in basic terms, is your ability to pay for the piece of equipment. A high return crop or a piece of equipment that is going to be super-efficient and helpful may pay for itself more quickly than something else.

Maintenance / Availability of Replacement Parts

Once you have a piece of equipment, it will have to be maintained, theoretically for quite some time. How easy is it to get replacement parts? Can you get them quickly and easily, particularly during peak seasons and high demand (a.k.a. high pressure) times? How expensive are the parts and how expensive are they to have shipped to you? How easy is the equipment to repair, either by yourself or by a mechanic in your area?

In the end, all of these factors should be compared when purchasing equipment. Consider both the short term and long term benefits of the equipment and then move ahead accordingly.

Q&A

Q: What criteria do you use when selecting new equipment?

A: In today's world my first consideration is the cost. Can I afford it? But a close second for me is "Can I maintain it myself and are replacements parts easy and affordable to get?" I think I'm skilled enough to do most basic repairs and maintenance, but if even those are so complicated or advanced that I have to hire a pro or send my equipment away to do those basic things, I'm losing time and money.

A: Quality, versatility

Next Month's ? → [What process or steps do you follow to prepare your operation for the "spring rush"?](#)

Google Groups – HORT SNACKS FORUM

Google has all sorts of different features and tools. One that I ran across a couple of years ago is [Google Groups](#).

You can essentially create and join common interest groups or discussion forums and share information and ideas back and forth. You can alter the settings to get forum updates all the time, daily, weekly or whatever.

A couple of years ago, we created a **HortSnacks Forum**, tied to this newsletter. Anyone can submit posts (questions, comments, etc.) via Google or via email. To submit a question (or post), either log into the group using a Google account or simply send an email to hortsnaacks-forum@googlegroups.com and it'll send it to all members. You can reply from email or from Google.

To subscribe to the group, send an email from your email account to subscribe+hortsnaacks-forum@googlegroups.com

Try it out today!

In the News

- [Tiny backpack turns insects into cyborg pollinators](#) – HortiDaily article
- [How GM crops can help us to feed a fast-growing world](#) – Independent.co.uk article
- [Understanding P in Your Soil](#) – SpudSmart article
- [Pesticide use has fallen over the past 50 years](#) – HortiDaily article
- [9 Financial Resolutions to Boost Your Farm's Bottom Line](#) – Growing Produce recorded webcast
- [Will Big Data Yield Big Returns for Farmers?](#) – Growing Produce article
- [The secret to entrepreneurial success: Passion, not Pounds](#) – HortiDaily article
- [PLU codes: this is what the stickers on fruit and vegetables mean](#) – HortiDaily article
- [Can you compete under a carbon tax?](#) – Greenhouse Canada article
- [The Best Crops For Vertical Farming](#) – Brightagrotech.com article

MENTAL SNACKTIME – Investigation

"Uncertainty is a very good thing: it's the beginning of an investigation, and the investigation should never end."
– Tim Crouch

"Investigation may be likened to the long months of pregnancy, and solving a problem to the day of birth. To investigate a problem is, indeed, to solve it." – Mao Zedong

"We live in an age of universal investigation, and of exploration of the sources of all movements." – Alfred de Vigny

"Although nature commences with reason and ends in experience it is necessary for us to do the opposite, that is to commence with experience and from this to proceed to investigate the reason." – Leonardo da Vinci

"In much of society, research means to investigate something you do not know or understand." – Neil Armstrong

"Nothing has such power to broaden the mind as the ability to investigate systematically and truly all that comes under thy observation in life." – Marcus Aurelius

Fungus Gnats

Orfelia spp. and *Bradysia spp.*

Crops Affected: Range of plants may be affected

Life Cycle:

- Small nuisance flies that infest soil, growing medium, as well as other sources of decomposing organic matter
 - Don't typically damage plants unless present in very high numbers
- Adults are dark, delicate flies that resemble mosquitos, somewhat
 - May be attracted to light but often stay near plants or sources of organic matter
 - Weak fliers
 - Typically 1/16 to 1/8 inch long
 - Slender legs
 - Light grey to clear wings
 - *Bradysia spp.* have a Y-shaped wing vein
 - Segmented antennae which are longer than their head; Long antennae distinguish them from shore flies
- Adults lay eggs in moist organic matter, such as potting soil, compost, etc., hatching within about 3 days
- Larvae
 - Shiny black head with long, white to clear coloured, legless body
 - Feed on mulch, leaf mould, grass clippings, compost, root hairs and soil borne fungi
 - Develops for about 10 days before pupating
- Multiple generations might be expected in a season in a greenhouse

Symptoms:

- Adults may be observed flying near windows or running across organic matter
- In moist or humid conditions, with high populations, larval slime trails will be visible on the surface of organic matter
- In some situations, plant wilting or a decline in health may be due to larval root feeding, alone or in combination with other factors

Monitoring:

- Watch for the presence of adults either at rest or flying
- Monitor areas of the greenhouse where moist conditions and high organic matter may occur, specifically watching for evidence of larval activity
- Yellow sticky traps may be used for adults or other attractants for larvae (e.g. potato slices)

Management:

- Control immature larval stages rather than adults
- Focus on reducing excess moisture and organic debris
 - Avoid overwatering, ensure good drainage in all areas of the greenhouse, fix leaks and puddles of water
 - Clean up debris in the greenhouse
- Registered insecticide or biological control agents may be available for use, as required

Shore Flies

Scatella stagnalis

Crops Affected: Greenhouses, but not the plants within them

Life Cycle:

- Feed on algae and are found near places where algae occurs
- Nuisance pests, however they may serve as vectors for various root disease pathogens (e.g. *Pythium*)
- Adults are small, dark grey flies, approximately 1/8 inch long, with a sturdy body
 - Resemble a fruit fly, somewhat
 - Short bristle-like antennae (distinguish them from fungus gnats)
 - Wings have 5 distinctive white spots
- Larvae are small, whitish maggots which feed on algae (not plants)
- Adults lay up to 300 eggs on moist soil, with life cycle completing in less than 2 weeks

Symptoms:

- May cause "fly-specking" on foliage in high population situations
- The presence of pupae or other life stages may be observed in association with seedling diseases, although they may not be connected

Monitoring:

- Yellow sticky traps can help capture adults
 - Traps should be oriented horizontally at the soil surface or vertically just above the plant canopy
- Close examination of algae-fied areas can reveal larvae and pupae

Management:

- Manage algal growth
 - Reduce over-fertilization and over-watering
 - Deal with areas where water accumulates
 - Clean up areas and equipment where algae grow, including walls, benches, floors, etc.
- Insecticides may be used to control populations, but most can be controlled culturally or by using biological control agents



Fungus gnat adult
(*Bradysia spp.*)

– Photo by David Cappaert,
Bugwood.org



Shore fly adult

– Photo by David Cappaert,
Bugwood.org

DISEASE OF THE MONTH

Algae and Biofilms in Greenhouses

Crops Affected: Range of greenhouse crops

Disease Cycle:

Algae

- Primitive plants lacking roots, leaves and stems
 - Contain chlorophyll and photosynthesize
- Grow on walkways, pots, growing media, greenhouse coverings, as well as under benches,
 - Can be a safety hazard, due to slipperiness
 - Compete with plants for nutrients
 - May form a water-impervious layer on the surface of growing media
 - May slow gas exchange in a growing medium, which slows root growth
 - Represent a food source for shore flies and fungus gnats

Biofilms

- A layer or film of microorganisms which adheres to surfaces exposed to moisture (flowing liquids), and includes the formation of a matrix of substances which is resistant to being removed and/or killed by antimicrobial treatments
 - May form on surfaces (e.g. floors, benches) or within pipes, on hose ends, irrigation nozzles and emitters, tank walls, grow bags, etc.
 - May develop over hours and days to years
- Represent a potential source of water-borne pathogens
- Other organisms may attach to a biofilm over time
- Reduce water oxygen levels, clog irrigation systems, potentially introduce pathogens to crops

Management:

Algae

- Sanitize greenhouses regularly to remove debris, weeds or other nutrient sources
- Ensure proper greenhouse ventilation and maintain some horizontal air flow
- Avoid overwatering and standing water/puddling
 - Allow growing media to dry out prior to watering again
 - Design greenhouses (and maintain) to ensure floors drain and puddles do not develop
- Avoid excess fertilization
- Disinfect greenhouse surfaces regularly, using appropriate registered disinfectants and algaecides
 - Irrigation systems, including lines, will need to be cleaned out
- Evaluate water sources and filter/treat accordingly

Biofilms

- Treatments with disinfectants can remove a certain amount of biofilm layers, but may not be effective at completely removing a biofilm
 - Certain oxidation treatments can be more effective in reducing biofilms than things like bleach and acids; this includes ozone and chlorine dioxide
 - Treatments may not be compatible with actively growing plants
- Ensure that water sources are treated properly prior to being introduced into the greenhouse system

An additional resource link:

[Biofilm in the Greenhouse](#) – Dramm.com article