



## **August 2013 NEWSLETTER**

### **Presidents Report**

Summer as finally arrived just in time for fall to usher it out. This summer season certainly was an interesting one with cool and wet weather lingering so long it had people in our area thinking spring had faded directly into autumn. Growing up on the farm, my father Rudy always preached that farming is 60-70% weather dependent. We could do everything right but still relied on Mother Nature for some good weather to make for a good season. This season turned out to be one of those years you learn just how horrible things can get when Mother Nature decides to flex her muscle, and not in a good way.

I want to commend you and everyone else who kept a positive outlook and message all season long. I found countless reports of excellent picking, bumper crops and great berries on social media and no one case to the contrary. The reality for most of us was maybe not quite so rosy but it kept stories like the ones on the East Coast about viruses and crop write offs out of Ontario headlines. For that you are to be commended!

I look forward to hearing how the season went and continues to go on your farms across the province at our upcoming Twilight meeting on September 10th at Brooks Farm. The meeting is always an excellent event and this year's location is central for nearly all of us. I hope you can make it out!

Will Heeman, President

### **From OBGA Headquarters**

It has been another interesting season for growers. 2012 brought heat and drought and 2013 wasn't completely opposite but it sure was wet and cool at times and many of those times were during berry season when we count on the public coming to the farm to pick or purchase fresh fruit.

Once again we were inundated with fruit from out of the province including California strawberries and raspberries and blueberries from BC, New Jersey and Michigan. The pricing on imported fruit always seems to be pretty low and we often wonder how can they grow, pick and ship across North America for so little. In the case of strawberries it is an annual crop for California and the rumour is that the low prices should be corrected by reduced acreage.

Unfortunately blueberry plants are in for the long term so in the case of places like BC volumes are expected to increase as many young plants come into maturity. We will need to work with local buyers to ensure there is a place for Ontario berries on the store shelves in 2014.

Right now we are looking at a pretty good supply of strawberries and fall bearing raspberries. It is nice to see that more Ontario consumers are aware of these fall treasures and are looking for them more each year.

Hope to see a big turnout at the Twilight Meeting at Brooks Farm on September 10<sup>th</sup>.

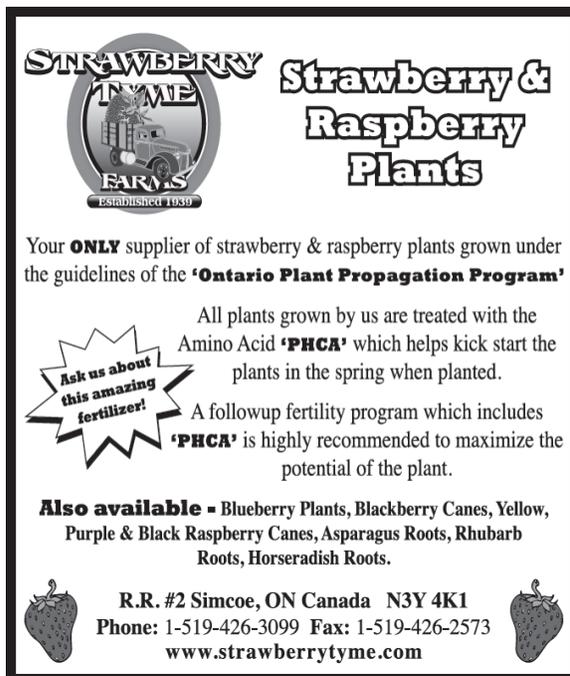
All the best!

Kevin

## Achene Report

The Achene committee has not met since the end of March but there still has been some activity. Verification Trials have been planted at Strawberry Tyme Farms over the past few years and once again a group of dedicated individuals met to look at these planting to ensure that the varieties are true to type and look healthy and free from virus. This group observes both raspberry and strawberry plantings.

As part of our Ontario Plant Propagation Program the OBGA hires a third party inspector to visit propagation fields and screenhouses to ensure the plantings meet the guidelines. We have been fortunate to have Ches Stenclik work with us for several years but this will be the last year for Ches and the Achene committee will begin searching for a replacement. Any suggestions for a new inspector would be greatly appreciated.



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Adam Dale although retired continues to work in the berry industry and he has a number of June bearing strawberry selections that continue to be evaluated.

Pam Fisher coordinated a number of plantings in grower fields across the province to have a closer look at Adam's selections so hopefully you will hear more about these selections after the 2014 berry season.

Your Achene Committee will be meeting on September 10<sup>th</sup> prior to the Twilight Meeting at Brooks Farm. Hopefully we will see many of you there.

Sincerely,  
Paul Watson  
Achene Committee Chair

## Membership

Membership to the OBGA continues to either remain stable or decline slightly. We have had several new members this year but also have lost a number to retirement, selling the farm or getting out of the berry business and then there are others that choose not to join.

Stats Canada reported that there are more than 600 strawberry growers in Ontario. I thought that couldn't be possible but the more I travel across the province and the more I talk to people it appears that this may indeed be a realistic number. There must be a number of small growers out there but I am surprised to find a few reasonably sized growers who are not members. The question is do they know we exist or are they choosing not to belong. The OBGA and its long list of volunteers does a lot of good for the berry industry and even if you are not a member you likely benefit from some of the research we sponsor or the many promotional activities that are coordinated here.

The OBGA will be looking at the possibility of making membership mandatory through some form of marketing board. The goal will not to extract more money out of existing members but to look at getting all those that grow berries to pay their share.

Other provinces already have a mechanism in place to bring all berry growers into the fold.

If you have a neighbour who is not a member let them know we are here working for their best interests and encourage them to become a member.

## National Raspberry and Strawberry Research and Promotion Council Update

There isn't too much new to update you with at this time. The Quebec group continues to forge ahead and plans on submitting the Strawberry proposal this fall. The raspberry proposal has been submitted and commented on and we await word on any next steps.

Some good news was the announcement that a levy has been granted for beef in Canada. This is the first for any commodity in Canada and will pave the way for other commodities and berries seem to be the next in line if the two proposals are accepted by growers and the Farm Products Council of Canada.

Once the growing season wraps up there will be more activity and news regarding these initiatives

If you have any questions feel free to contact Kevin at the OBGAs office.

## OBGA Promotional Items

The OBGA poly bags continue to be very popular. Growers who try them always seem to come back for more and the orders usually get larger. We sold more than 300,000 this year and have none left at this time.

We do however have a good supply of Aprons (lap and bib type) along with a recipe cards and promotional brochures. If you are interested in getting a poster

made over the winter months start sorting through your photos or take a few good shots if you have berries on the farm. If you are attending the Twilight meeting on September 10<sup>th</sup> and would like a few items let me know so I can get them to you with no delivery fees.



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## Gender in Strawberries

By Adam Dale

Most of you know that strawberry varieties are usually hermaphrodite, have both female and male parts in the flowers, and occasionally varieties are released that have no pollen. The last one of these was the Quebec variety 'Harmonie'. This causes severe problems in fields where the variety is vegetatively propagated as the flowers do not get pollinated.

As we have now started to breed dayneutral varieties that can be seed-

propagated, the whole question of gender enters the discussion. Since we are trying to breed F1 hybrids, so that the seeds are genetically the same, we need inbred lines that are female. To obtain an F1 hybrid variety, you need to inbreed selections for at least four generations, and then hybridize two of them.

The seeds can be produced in two ways, hand-pollinated by workers or pollinated by insects. Our estimates indicate that we would need to produce at least 20 million seeds to have enough plants to plant 1000 acres. Since a strawberry flower produces between 50-100 seeds, we would need to pollinate over 200,000 flowers, so to hand-pollinate that many would be extremely expensive.

Since hermaphrodite flowers tend to be self-pollinated, two hermaphrodite inbred lines pollinated by insects would give many selfed seeds – not what we need. So we need at least one inbred line of each pair to be female.

Now the matter starts to get complicated, or fun, depending how you look at it.

The strawberry is a hybrid between the two native species, the Chilean and the Woodland strawberries. Genetically, in the Chilean strawberry, female is dominant over hermaphrodite which is dominant over male. In other words, if you cross a female Chilean strawberry with one that is hermaphrodite, you will end up with half female plants. In the Woodland strawberry, gender gets more complicated. Hermaphrodite plants can range from those that produce an occasional berry, to those on which all the flowers on the truss produce berries. Also, some plants consistently produce only primary berries, and others both primary and secondary berries.

That was the classical story on gender until researchers started breeding F1

hybrid strawberries. Once that happened, researchers in the Netherlands found a recessive type of female plant which when hybridized with a hermaphrodite plant only gave hermaphrodite plants. So now, female is dominant over hermaphrodite, which is dominant over female and male.

In our breeding program we have been using dominant female plants as one inbred line in our F1 hybrids. Here, half of the F1 hybrid plants are female. This has led to discussions about how effective it is. We recently grew an acre of F1 hybrids and found three things out. First, our gender ratio was 1:1. Second, the female plants were on average no more than 70cm from a hermaphrodite plant, and third, no difference in shape and evenness of the fruit could be detected.

However, one thing surprised us. Three F1 hybrid families derived from a female plant that was expected to give us a 1:1 ratio, each only gave us 20% females. We don't understand the underlying genetics yet, but it could be complicated as the strawberry contains eight sets of each gene.

The fun has not ended there. We have been doing a lot of crosses with a hermaphrodite Chilean plant. When this plant has been hybridized with other hermaphrodite plants, we have found many female plants. Not expected when you cross hermaphrodite with hermaphrodite plants. This year we were able to look at the genetic ratios of many families. When the Chilean plant was used as a female plant and crossed with a hermaphrodite plant, at least two-thirds of the offspring were female. But when it was used as a male, and another hermaphrodite plant used as the female partner, all the offspring were hermaphrodite. The answer: we think this is the first reported case of cytoplasmic male sterility in strawberry. Now that we are breeding seed propagated strawberries, we have found

that the expression of gender is not genetically simple. There seem to be at least four different ways gender can be inherited. And this is one of the discoveries that make breeding strawberries so interesting.

## Clean Farms Program

Return your unwanted or obsolete pesticides & food animal medications.

Farmers: safely dispose of your unwanted agricultural pesticides and food animal medications from Oct. 15 to 25. There are several locations across the province that can be found at the Clean Farms website.

Pre-registration

To better manage the obsolete collection program CleanFARMS is asking program participants to pre-register products they will be turning in. Please Call 877-622-4460 or visit [www.cleanfarms.ca](http://www.cleanfarms.ca) to fill out a brief pre-registration form.

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## North American Strawberry Growers Association

The 2014 NASGA Annual Meeting is early! This year the event will be December 3-6, 2013, at the Sheraton Imperial Hotel, Durham, NC. This is a joint meeting of the Southeast Strawberry Expo (which is coordinated by the North Carolina Strawberry Association) with the North American Strawberry Growers Association.

Workshops on Dec. 3, full-day farm tour on Dec. 4, and educational sessions and trade show Dec. 5-6.

For more information, email [info@ncstrawberry.com](mailto:info@ncstrawberry.com), call 919-542-4037, or visit [www.ncstrawberry.com](http://www.ncstrawberry.com) or [www.nasga.org](http://www.nasga.org) or contact Kevin Schooley, NASGA, [info@nasga.org](mailto:info@nasga.org), 613-258-4587. Exhibitor inquiries welcome.

## New resource connects Ontario growers to the information they need

The Ontario Ministry of Agriculture and Food and Ministry of Rural Affairs (OMAF and MRA) have developed a new online tool that helps produce growers understand the regulations and requirements to bring their foods of plant origin to market. Whether they are selling at the farm gate, to local farmers' markets or retailers, this tool, *Marketing Foods of Plant Origin in Ontario: A Guide to Legislative Requirements*, connects producers to the food safety, labeling and packaging requirements for their region.

Producers in the Northern Ontario region were facing a challenge to understanding how they could offer their locally-grown fruits, vegetables and other foods of plant origin through a

variety of channels in their community. Regulations that influence the sale of these products can be from the federal or provincial government as well as the local health unit. Knowing where to go to get the right information was daunting.

The new tool allows growers to go online and answer a series of questions, the answers to which allow them to offer their products while complying with appropriate rules and regulations. Questions include what is being sold, if any minimal processing is required before going to market, where the items are being sold and so on.

Links to the correct information from various sources are then provided (as applicable). These links indicate the regulation that is in place, and can relate to packaging, food labeling or processing. While initiated due to a need identified by growers in Northern Ontario, this tool is available online to all Ontario producers of foods of plant origin. To use the tool online visit [ontario.ca/producesafety](http://ontario.ca/producesafety)

Growers who do not have access to the web-version may contact the Agricultural Information Contact Centre at 1-877-424-1300 for alternate versions. For more information about *Marketing Foods of Plant Origin in Ontario: A Guide to Legislative Requirements*, please visit [ontario.ca/producesafety](http://ontario.ca/producesafety).

## Mark Your Calendars!

**NASGA Annual Meeting  
Southeast Strawberry Expo**  
Raleigh, North Carolina  
December 3-6, 2013  
[www.nasga.org](http://www.nasga.org)

**OBGA Twilight Meeting**  
Brooks Farm, Mt Albert  
September 10, 2013

**OBGA Annual Meeting**  
Embassy Suites, Niagara Falls  
February 18, 2014

**Ontario Fruit and Vegetable  
Convention**  
Scotiabank Convention Centre, Niagara  
Falls  
February 19-20, 2013  
[www.ofvc.ca](http://www.ofvc.ca)

## Growing Forward 2 | Cultivons l'avenir 2

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- Funding assistance for Project Implementation and Capacity Building
- Areas of focus and criteria

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Whether you are just starting out, or have been in business a long time, Growing Forward 2 offers practical and flexible options to help you reach your goals.

The GF2 Program offers funding assistance to established [producers](#),

[processors, organizations and collaborations](#) that supports six areas of focus where individual businesses can apply for cost-share for Capacity Building activities and Project Implementation. Innovation is a key component present throughout all areas of focus.

For more information visit our website at: [www.ontario.ca/growingforward2](http://www.ontario.ca/growingforward2)

## **A Crash Course on Virus Disease Control**

Ioannis E. Tzanetakis, Dept. of Plant Pathology, Division of Agriculture, University of Arkansas System and Robert R. Martin, USDA ARS, Horticultural Crops Research Laboratory, Corvallis, OR

Not all people are aware that plants can be infected by viruses. Still, plant viruses account for losses in the billions of dollars every year. There have been several cases where a virus epidemic has disseminated crops in vast areas and the most frustrating part from a grower's standpoint is that there is not much to do once a plant is infected.

Let's start from the basics: What is a virus? A virus is an obligate parasite consisting of nucleic acids (RNA or DNA), proteins and in some cases, lipid membranes. The key term here is 'obligate'. Viruses cannot function outside a living cell. If the host dies, the virus goes with it. Thus, in nature viruses have co-evolved with their hosts to keep a fine balance between virus replication and survival, and survival of the host to sustain infection through dormant seasons of the host. This is definitely the case in the majority of plant-virus interactions. Viruses have evolved to co-exist and most have minimal impact on their hosts. With new technologies developed in the last few years we know for a fact that plants are

infected with several viruses but in most cases no definite symptoms are observed. These are what we refer to as 'resident' or 'latent' viruses.

But there are also cases where viruses cause severe plant disease and even death. This is truly an imbalance in the system. The majority of the scientific community agrees that viruses that kill their hosts are probably accidental introductions, as they die out along with their hosts. There are rare cases where viruses can mutate to cause less severe symptoms allowing for their survival in a particular host.

As we learn more about viruses and virus diseases we have come to realize that, at least in berry crops, the majority of disease are not caused by a single virus but rather by the combination of two or more viruses. In the past, scientists were able to identify the 'easy' viruses, entities that were easy to isolate and manipulate. With the new technologies that have been developed, we now realize that the knowledge of the past only accounts for the tip of the iceberg in terms of what causes virus diseases in berry crops. A clear example is blackberry yellow vein disease (BYVD). Until the turn of the century people assumed that symptoms were caused by Tobacco ringspot virus (TRSV). Although TRSV is found in some plants, the majority of symptomatic plants are free of the virus.

Also, TRSV does not cause symptoms in single infections in most modern blackberry cultivars. We now know that BYVD is caused by complexes, with more than a dozen viruses that may contribute to the symptoms. BYVD can be caused by various combinations of these viruses, and in all cases observed to date, there are at least two and up to seven viruses involved.

Management strategies of virus diseases are based on resistance,

control of vectors or elimination of viruses from propagation material. Resistance is based on the premise that viruses are identified by their hosts as invaders at the genetic level that results in some step in the virus life cycle being blocked. Given that most virus disease in berry crops are caused by complexes it is a challenging undertaking to develop multiple virus resistances. If symptoms are expressed in the presence of multiple viruses then plants need to be able to recognize all or most of those entities. If a single pathogen causes disease it is easy to screen and identify resistant sources. However, in berry crops, resistance sources have not been identified for most of the viruses. Resistance to multiple viruses is more challenging as different combinations need to be introduced to plants and the reaction to each virus needs to be evaluated. When breeders work with thousands of accession, the challenge is obvious.



JEFF ALLEN ☐

7307 Highway 221 ☐  
 Centreville, Nova Scotia ☐  
 B0P 1J0 Canada ☐

TEL. (902) 678-7519 ☐  
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Vector control can be a good alternative but knowledge of the epidemiology and transmission of viruses is necessary for the implementation of a successful control program. There are four different modes of transmission when it comes to viruses and their vectors: a.

non-persistent; b. semi-persistent; c. circulative and d. circulative propagative. What do those terms mean? In the non-persistent transmission, virus acquisition and transmission takes place in few seconds or minutes and the vector loses the ability to transmit in minutes. In the case of semi-persistent viruses the vector needs to feed on the source plant for several minutes or even hours, but once the virus is acquired it may be able to transmit from hours to days. The latter two modes of transmission are more complicated as vectors need hours or even days of feeding on infected material to acquire the virus. Then, they are unable to transmit for hours or even days as the virus needs to pass through vector membranes to make it back into the salivary system. However, once acquired, they are able to transmit for days, weeks or even the life of the vector. In the case of circulative propagative viruses, the virus actually infects the vector and in certain cases, it has been proven that they can move to the next generation through infection of the egg. But why is this important to know?

The secret to an effective control regime lies in the knowledge of how viruses are vectored. In the cases of the circulative viruses the answer is straight forward, since there are days between when a vector acquires a virus before it can transmit, allowing for ample time to control the vector. Control will probably eliminate the vector before it is able to move viruses to adjacent plants. How about the case of non-and semi-persistent transmission? This presents a major challenge: Let's assume the case of a non-persistent virus. The vector transmits the virus after short feeding time. A control agent applied to the foliage may change the vector behavior (e.g. the composition of the plant sap has changed) such that the vector does not settle down, but rather moves from

plant to plant, thus increasing the control was applied only a single plant would be infected. This situation is very specific and changes depending the environment, the control agent/chemical and of course the virus/vector combination. Without this information the grower may use valuable resources for vector control and that leads to increased virus spread.

Breeding for vector resistance can be effective at controlling all viruses transmitted by the vector. Probably the best example of this in all of plant virology is the success of aphid resistance in virtually eliminating the spread of the raspberry mosaic complex, a group of three aphid-transmitted viruses. Even though successful in North America for more than 50 years, the original source of aphid resistance has been overcome by new biotypes of the aphid and this resistance is no longer effective. In Europe, the resistance was overcome much more quickly and now multiple aphid resistance genes have been overcome. It must be remembered that if we look at a complex like BYVD, there are multiple types of vectors involved (eriophyid mites, whiteflies, nematodes, thrips and pollen, which makes breeding for vector resistance a monumental task. New areas and introduce new pests to new environments. The introduction of a few Prunus trees infected with Plum pox virus has cost the tax payers hundreds of millions of dollars. Citrus greening is another example of how the inappropriate movement of plant material can cause losses of colossal proportions. So when growers plant their next field they need to recognize the

number of plants that it infects. If no task. Also, in most cases, vector resistance has not been identified in the berry crops.

The easiest and most effective control is planting clean material. Many growers propagate their own stock for planting new fields. Whereas this appears to be an easy and cost effective approach it can have devastating results. Plants may appear normal but this is not uncommon when infected with one or two viruses. When placed in the field, viruses are transmitted between plants and complexes develop, plus additional viruses may be vectored into the field and a field decline may become apparent shortly after planting. Even if there are no apparent symptoms, virus infection may account to a 5-20% yield loss. Establishing a field with virus-tested plants does not mean that they will never get infected. As a law of nature, all organisms from bacteria to amoebas to plants and primates get infected by viruses. A field with clean plants will stay productive for more time and yield better than a field with infected plants, providing growers with better quality product and better yields.

There have been several cases where growers move self propagated plants to extra investment of virus tested plants not only in terms of profitability of the newly planted field. But, also in terms of protecting existing fields on the same farm or in the area from the introduction of new viruses that could jeopardize production. It is certain that the return of this investment will be greater than the risk of disseminating viruses.

**OBGA Twilight Meeting  
Tuesday September 10, 2013**

**Brooks Farm**

122-141 Ashworth Road  
Mount Albert, Ontario  
L0G 1M0  
Telephone: 905-473-3246

**Cost: \$15.00 per person**

We are very excited to have Brooks Farm as our host for the 2013 OBGA Twilight Meeting. Alvin and Brenda have been long time OBGA members and Alvin was an active board member. Son Paul and his wife Kelly have become very active in the business and there continues to be many innovations on the farm.

Brooks Farm grows a variety of berry and vegetable crops including day neutral and June strawberries, summer and fall raspberries, saskatoons, currants and gooseberries along with apples and several vegetables.

Brooks Farm is also very involved in the Agri-Entertainment end of things as well with a well developed Barnyard Playland and Farm Market.

This should be a great tour and meeting

**Arrive a few minutes early and have a look around the farm market**

**4:00 - 6:00 Tour of Brooks Farm** from hosts Paul and Alvin Brooks

**6:00** Enjoy a meal at the farm and network with your fellow berry growers

Please contact Kevin at the OBGA office if you plan on attending. A meal is being planned and we want to make sure we have enough food for all. 613-258-4587 or [info@ontarioberries.com](mailto:info@ontarioberries.com)

Here are some basic directions to get to the farm:

- From the 401, head North on Markham Rd. to Mount Albert Rd.
- Mount Albert Rd. will turn into Ashworth Rd.
- Farm is located at 122-141 Ashworth Rd.