



ORCHARD NETWORK

For Commercial Apple Producers

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Orchard Management

Opportunities for Ontario Apples

Leslie Huffman, Apple Specialist, Harrow

This will be my last issue as the editor of Orchard Network newsletter, and as the OMAFRA Apple Specialist. As I retire from OMAFRA on February 20th, I am very optimistic about the future of our industry.

It's an exciting time to be in the Ontario (and global) apple industry. We produce a great product that the market wants – the ultimate snack food, a healthy, versatile and tasty choice, now available year-round and with a flavour for every palate. Many producers can only wish for such a great product!

Consumers are also very interested in our product. The **local food movement** is very popular and continues to gain momentum, and we need to continue capitalizing on this interest at every opportunity. Marketers – either in the wholesale and retail channels, or direct marketers – are using social media to reach more apple eaters. Farmers' markets continue to grow in popularity, and rely on a strong apple presence during harvest season.

There are good opportunities in **value-added apple products**, and several Ontario businesses are showcasing products like sweet and craft ciders, dried apple products and homemade-style baked goods and preserves. The key for

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This issue of the **Orchard Network
Newsletter** was compiled by Carolyn
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consumer acceptance is capturing that fresh apple taste in every product. But we all need to do more to keep apples in the forefront of food choices. We need to support those who **reach consumers** – direct marketers and produce category managers are a good start. We need to work with those reaching our client base – teachers, health units, fitness programs, parent educators, schools and seniors programs. We need to embrace social media – even as it evolves in front of us. Join Twitter, post photos of your orchards, work with other farm groups, and serve apples at every chance. We need to share our story and our passion for apples with them.

Mentoring the next generation of apple growers and marketers is another challenge for the future of the apple industry. We have a keen group of young people returning or choosing this industry, and they can use our support and knowledge. Scholarships for educational opportunities and financial backing for their endeavors are one option to engage them in the apple industry.

But the #1 opportunity for the apple industry is the wide range of **new technologies** that are developing for production, storage and marketing systems. High density orchard trees can be trained to grow tall, fill the fruiting wall, and respond to precision management for top yields, and the best quality fruit. New storage technologies and emphasis on fruit quality from harvest to market will ensure the consumer receives the great fruit we harvest. Advances in integrated pest management and spray application technology keep moving us forward working with this complicated orchard ecosystem.

The Ontario apple industry is perched high, ready to fly forward successfully in this competitive global apple marketplace. I am pleased for the opportunity to work on projects adapting new technology for apples, and have been very fortunate to work closely with my OMAFRA colleagues and many industry players. I am grateful for all the support, and wish you many successful seasons in the future.

Ontario Fruit Blog: ONfruit

If you are a commercial fruit grower in Ontario, sign up for the new ONfruit blog. Fruit specialists from the Ministry of Agriculture, Food and Rural Affairs (OMAFRA) contribute to the blog and can answer technical questions you may have. All information is specific to growing fruit in Ontario.

Topics on the blog include:

- Fruit crop production
- Insects, diseases and weeds monitoring and management
- Weather related issues
- Soil and crop nutrition
- Industry events

Subscribe at <https://onfruit.wordpress.com>.



Apple Tracker: Take Another Look - You will Like It!

Margaret Appleby, IPM Systems Specialist, Brighton

Take another look at AppleTracker.com to see how it can help you keep better records! AppleTracker.com system provides growers with an innovative, extensive management tool for record keeping, tracking and analysis of farming and production events including tree and block information, food safety and traceability, pest management, crop protection as well as harvest, storage, and shipping event tracking. Now that's being organized!

The system is free for all Ontario Apple Grower (OAG) members and each member has their own personal login for AppleTracker accessed with login and passcode. Don't have your login information? Email Matt Deir at matthew.deir@dragonflyit.ca. Your orchard maps in the system are from the Agricorp GPS ADaMS mapping system. If your orchards are not mapped OR if they need to be updated/changed, please contact Larissa Osborne at Larissa@ontariotenderfruit.ca or 905-688-0990 ext. 235 at the OAG.

The system has been in operation for over two years and every effort has been undertaken between growers using the system and the developer, DragonFly IT, to ensure that the system is providing useful information without extra paperwork burden. If you haven't looked at AppleTracker recently, you will be pleased with how easy and efficient it has become.

When logging onto the system, a "dashboard" will display a series of tabs - Growing, Harvest, Packing, Storage, Shipping, GAP/Audits and Reports. The "All Events" tab gives a quick look of all the events that you have recorded from spray application, employee training, harvest, storage to building assessments. This information is used to complete the CanadaGAP required reports. There have been recent updates to the CanadaGAP manual and these updates will be included in the tracker system.

So why not gather up your records from 2014, go on-line and try it out! Like any other program, it takes a little time to get used to it but once you do, it is simple to use. If you need to make corrections there are lots of opportunities to edit.

For pesticide applications (under 'Growing'), there are lots of cool features. Each chemical listed is linked to the label. You can add new chemicals to the list. A drop-down list will show existing treatments from Publication 360, showing the name, formulation, rates and target pest. You add the "When, Why, Where and What" of your spray event and AppleTracker will record it and ask you to confirm. If you want, AppleTracker can send you alerts by email when re-entry intervals have passed or when it is safe to harvest. A new feature is the chemical inventory. You input your current inventory, record purchases and the program keeps track of what is in your spray shed. In fact, right now, you can start by inputting your inventory as of today.

Continual improvements and more features are being developed with input from the apple grower focus group. Future enhancements will include work crew planning and tracking and cost of production reports by block. Watch future newsletters for more details.

Have questions about the system? Not sure where to start? We suggest you view the YouTube videos first. These videos will walk you through the program and give a great visual on the capabilities. <https://www.youtube.com/channel/UCcg8Dubf8Pc2z3VMnB6C5N>

Coming to the Ontario Fruit and Vegetable Convention February 18th and 19th? Be sure to visit Matt Deir with DragonFly IT in booth #1005 for a demonstration of the web site or to ask your questions!

The screenshot shows the Apple Tracker web application interface. At the top, there's a navigation bar with tabs: Dashboard, Growing, Harvest, Storage, Shipping, Switch Account, and Farm Manager. Below this is a header section with the 'FRUIT TRACKER' logo and 'Dragonfly Test Farm Inc. 945 Princess'. The main content area is titled 'Dashboard :: Dragonfly Test Farm Inc.' and shows a 'You are here' breadcrumb. Below the header, there's a row of buttons for 'All Events', 'Scouting', 'Growing', 'Harvest', 'Packing', 'Storage', 'Shipping', 'GAP/Audit', and 'Reports'. Underneath these are buttons for 'New Irrigation', 'New Spray', 'New Harvest', 'New Packing', 'New Storage', 'New Shipment', and 'Switch Accounts'. The 'Recent Events' section contains a table with the following data:

Date	Organisation	Event Type	Event Summary	Actions
February 04, 2015 00:00	Dragonfly Test Farm Inc.	Harvest	- West - East Block - Away Block / Ambrosia - Home Block / Cortlands	View
January 30, 2015 10:15	Dragonfly Test Farm Inc.	Field Scouting	Test	View
December 31, 2014 08:15	Dragonfly Test Farm Inc.	Shipment	- My Truck - Vineyard Growers Co-Op Ltd. - PEACH YELLOW 6x3P, CRDBRD (1 pallets) - PEAR BARTLETT 8x2, CRDBRD (1 pallets)	View
December 31, 2014 00:00	Dragonfly Test Farm Inc.	Spray	- Home Farm - New Area Test - Empty Plant & Acre Counts - July 18 Test - Some New Area - First Base - more...	View
December 30, 2014 10:07	Dragonfly Test Farm Inc.	Field Scouting	Photo test	View
December 24, 2014 00:00	Dragonfly Test Farm Inc.	Irrigation	Another New Area - 58274.73 Litre	View

High Density Apple Orchard Videos

Leslie Huffman, Apple Specialist, Harrow

Apple growers thinking about planting high density orchards can start by watching a new video series by OMAFRA. We chose five topics of interest to apple production:

- Why Plant High Density?
- Tree Training in the Planting Year
- Managing High Density Apple Trees: Year 2 to Full Production
- Cropload Management for High Density Apple Production
- Building Strong Trellises for Large Apple Crops

Other videos in this series will be of interest to apple growers:

Hugh Fraser, OMAFRA Agricultural Engineer, has created videos on:

- Bird Bangers Part 1: How They Work
- Bird Bangers Part 2: How to Set the Controls
- Wind Machines in a Vineyard or Orchard

As well, Rebecca Shortt, OMAFRA Irrigation Engineer prepared a video targeted to orchard growers "Apple Drip Irrigation Maintenance". This was part of her irrigation management series:

- How to Measure Pressure and Flow in Drip Irrigation System
- Monitoring Soil Moisture: Part A
- Monitoring Soil Moisture: Part B
- How to Interpret Soil Moisture

These videos were part of a larger project (Fruit and Vegetable Innovation How-To Videos) by OMAFRA horticulture staff to demonstrate Best Management Practices, new economic production methods, and risk mitigation for horticultural operators. This project will produce about 30 videos (1- 3 minutes long) covering 7 crops, including tender fruit, grapes, apples, hops, sweet potatoes, greenhouse vegetables and greenhouse floriculture.

These videos can be accessed on the OMAFRA website (type ontario.ca/apples), Ontario.ca/hortvideos (Ontario.ca/videoshorticoles) or go to YouTube at look for the atOMAFRA channel.



Crop Protection

Crop-Adapted Spraying Project - Results to date

Dr. Jason Deveau, Application Technology Specialist, Simcoe

Imagine a sprayer operator is spraying an apple orchard with a fungicide. The label clearly prescribes 100 grams of formulated product per hectare. The operator has always sprayed big trees with 1,000 litres of spray mix per hectare and had good control. They finish spraying the big trees and move on to a block of newly planted, high density trees. Should they still apply 1,000 litres of spray mix per hectare?

Most operators would say 'No, of course not', because there is so much less tree canopy on a hectare of high density compared to the larger, older trees. Perhaps they would turn off the nozzles that over-shoot the smaller trees, drive faster, or only drive every second row.

If the operator decides to change their rate-per-hectare, they generally do so in an ad hoc manner that results in an application that is technically "off-label". They are compelled to make this choice because pesticides labelled for crops like trees, shrubs, vines and canes should not have rates that reflect the area of a planting. They should reflect the crop area-density, which means the amount of target canopy in a planting, not the area of a planting. Many international studies have demonstrated this conclusively.

Since 2010, OMAFRA has been developing the Crop-Adapted Spraying (CAS) model. CAS allows an operator to adapt rate-per-hectare in such a way that the foliar dose consistently meets a minimal coverage standard, even if the size, shape and density of the canopy is different between blocks (see Figure 1). Models such as this have been used since the 1960's, when tree-row volume started to gain acceptance. CAS does not allow the operator to apply more pesticide than the label allows but, when there is very little target, it generates pro rata reductions that should achieve the same level of control. This is particularly appropriate for orchard operations shifting from semi-dwarf to high-density plantings.

Two Ontario orchards have been testing CAS-optimized rates since 2013 and a third joined for the 2014 season. A final season of testing is planned for 2015, and the results from all three years will be reviewed for any possible compounding effects arising from repeated use of optimized rates in the same trees. None are anticipated.

Each orchard reserved anywhere from a few rows to several thousand trees to act as the treatment condition for optimized rates. The remainder of the orchards were sprayed in the grower's traditional manner, and

represented the control condition. Plant growth modifiers (e.g., thinners, stop-drops) and drench applications (e.g., dormant oils) were applied in the grower's traditional manner for both treatment (CAS) and control conditions. For each operation, critical data such as tree spacing, shape and density, were entered into the CAS model. Sprayers were then calibrated according to the model, where fan speed, travel speed, spray volume, spray distribution, orchard architecture and environmental conditions are all accounted for using water-sensitive paper as a coverage indicator (see Figure 2).

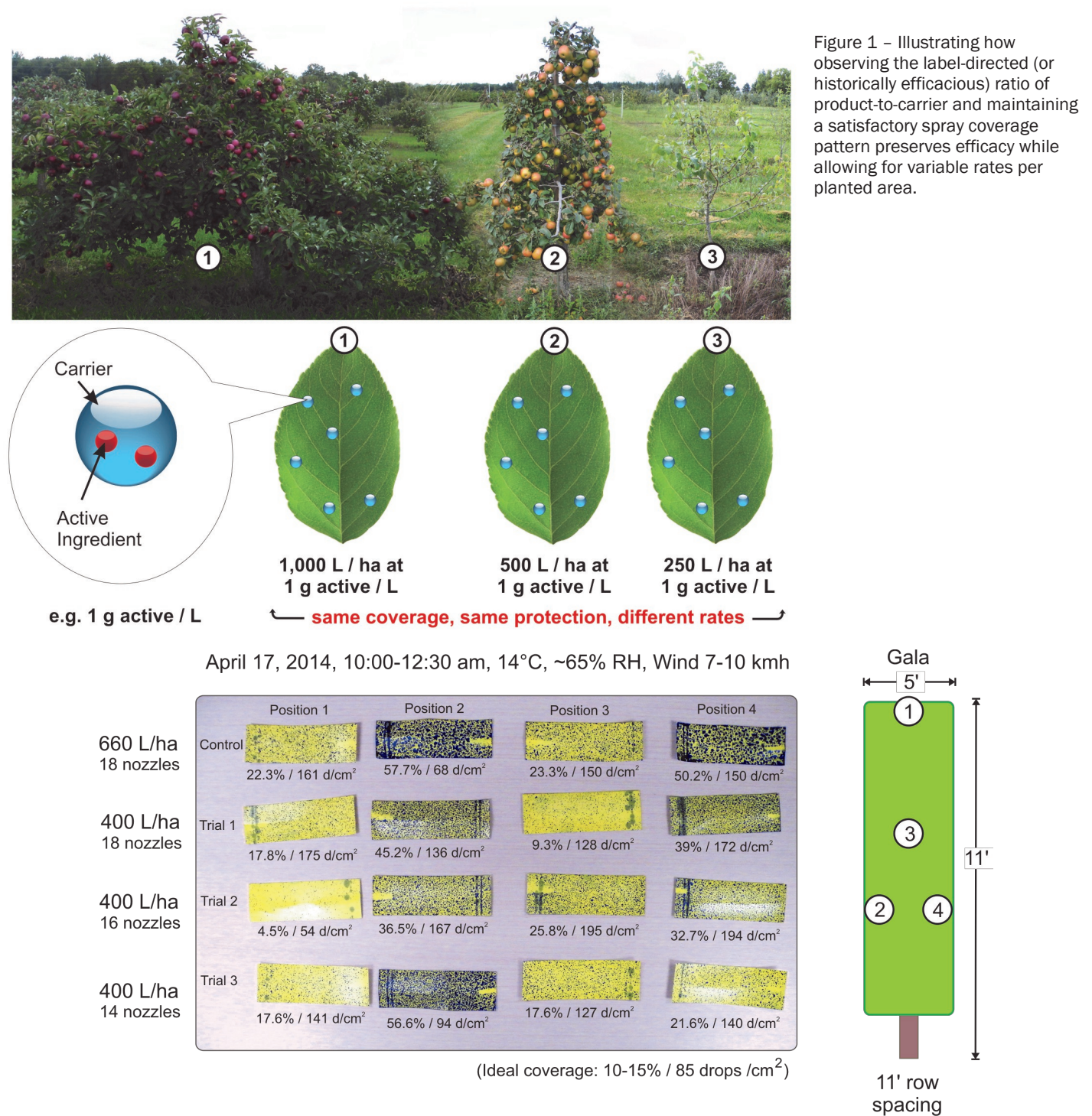


Figure 2 – Water-sensitive papers collected from a spring 2014 CAS calibration. The top row of papers represents the grower's typical rate (660 L/ha) and nozzle distribution. Papers were located in canopy positions that correspond to the tree illustration. The CAS model proposed 400 L/ha as an ideal volume given the tree size and amount of canopy per ha. Row 2 shows coverage achieved at this rate over 18 nozzles (nine per side); position 3 had unsatisfactory coverage. Row 3 shows coverage from a re-distribution of spray over eight nozzles per side, but gave unsatisfactory coverage in position 1. Overall satisfactory coverage was achieved in the final row using 14 nozzles emitting 400 L/ha.

In this blind study, a scout followed a regimented weekly protocol: 10 trees were randomly chosen from both the control and treatment (CAS) conditions each week. The scout performed an average 2.5 taps per tree (25 per condition), sampled 5 leaves per tree (50 per condition), inspected 10 spurs/terminals per tree (100 per condition) and at harvest, collected 50 apples for destructive examination per condition. Over 13-15 weeks, pest presence and damage was recorded.

Based on the CAS model, each orchard applied 25% to 35% less spray mix (dependent on their unique situation) in the treatment condition compared to control. The following tables present the 2013 and 2014 weekly mean counts per tree, from a total of 10 trees, for each orchard and condition.

Raw data with high skewness were transformed prior to analysis of variances (ANOVA) using Proc GLM of the SAS program. Grouping was carried out by Duncan's multiple range test. For data with non-normal distribution, Proc GLIMMIX of the SAS program was used and grouping was carried out using Tukey-Kramers. For all other data with low observations or categorical data, Kruskal-Wallis test was used for non-parametric ANOVA.

Table 1 – 2013 Weekly mean pest count per tree, from a total of ten trees, over 15 weeks. Asterisks indicate significantly different counts between conditions within an orchard.

Pest	Orchard 1		Orchard 2	
	Control	CAS	Control	CAS
Apple Leaf Curing Midge	10.0*	5.9*	18.2	24.4
Apple Rust Mite	-	-	-	-
Codling Moth	-	-	-	-
European Red Mite	0.27*	1.7*	5.53	3.07
Green Apple Aphid	3.7	0.07	82.4	92.7
Japanese Beetle	0.13	0.07	10.5	14.7
Leaf Hopper	1.47*	0.87*	2.07*	2.9*
Mullein Bug	-	-	-	-
Oblique Banded Leaf Roller	2.4*	1.6*	6.87	5.6
Oriental Fruit Moth	-	-	0.13	0.27
Plum Curculio	0.2	0.73	0.4	0.4
Rosy Apple Aphid	0.07	0.0	4.0	16.5
Spring Feeding Caterpillar	2.0*	0.7*	5.27	3.8
Tarnished Plant Bug	0.3	0.6	0.6	0.6
Two Spotted Spider Mite	10.1	10.4	13.6	3.5
Woolly Apple Aphid	0.07	0.13	11.9	13.8
Apple Scab	-	-	-	-
Bitter Rot	0.6	0.25	0.13	0.2
Black Rot	5.3*	3.0*	4.7	5.07
Powdery Mildew	0.7	0.7	0.4	0.07
Rust	0.53	0.33	-	-
San Jose Scale	-	-	-	-

Table2 – 2014 Weekly mean pest count per tree, from a total of ten trees, over 13 weeks. Asterisks indicate significantly different counts between conditions within an orchard. Orchards 1 and 2 are in their second year of the trial and Orchard 3 is in its first year of the trial.

Pest	Orchard 1		Orchard 2		Orchard 3	
	Control	CAS	Control	CAS	Control	CAS
Apple Leaf Curing Midge	1.79*	2.49*	5.17	4.97	1.79	1.46
Apple Rust Mite	0.25*	1.6*	0.16	0.23	0.12	0.09
Codling Moth	0.02*	0.0*	0.08*	0.07*	0.01*	0.03*
European Red Mite	9.13*	0.43*	3.32*	18.1*	10.5*	22.0*
Green Apple Aphid	-	-	-	-	0.03	0.04
Japanese Beetle	0.0*	0.0*	0.26*	0.28*	0.01	0.00
Leaf Hopper	-	-	0.17	0.08	0.01	0.01
Mullein Bug	0.01	0.0	0.03	0.01	0.0*	0.04*
Oblique Banded Leaf Roller	0.17	0.12	0.03	0.07	0.15	0.21
Oriental Fruit Moth	-	-	-	-	-	-
Plum Curculio	0.06	0.06	0.05	0.01	0.2*	0.08*
Rosy Apple Aphid	0.45*	0.03*	-	-	0.08	0.15
Spring Feeding Caterpillar	0.09*	0.22*	0.40	0.30	0.23	0.28
Tarnished Plant Bug	0.18*	0.08*	0.21	0.18	0.18	0.21
Two Spotted Spider Mite	0.39*	0.04*	0.27*	1.38*	0.89	1.23
Woolly Apple Aphid	-	-	-	-	0.01	0.0
Apple Scab	0.02	0.02	0.0	0.01	0.02	0.03
Bitter Rot	-	-	-	-	-	-
Black Rot	0.05*	1.23*	0.08	0.16	0.84	1.81
Powdery Mildew	-	-	-	-	-	-
Rust	-	-	-	-	-	-
San Jose Scale	0.01	0.00	0.00	0.01	0.02	0.02

Pest counts with statistically significant differences between conditions were graphed by week to determine whether or not they represented an economic threat to the orchard. In all cases, pests were adequately controlled by both conventional and CAS-optimized application regimes. Black rot (indicated by frog eyed leaf spot) and two spotted spider mite counts from 2013 and 2014 are presented as examples (Figures 3-6).

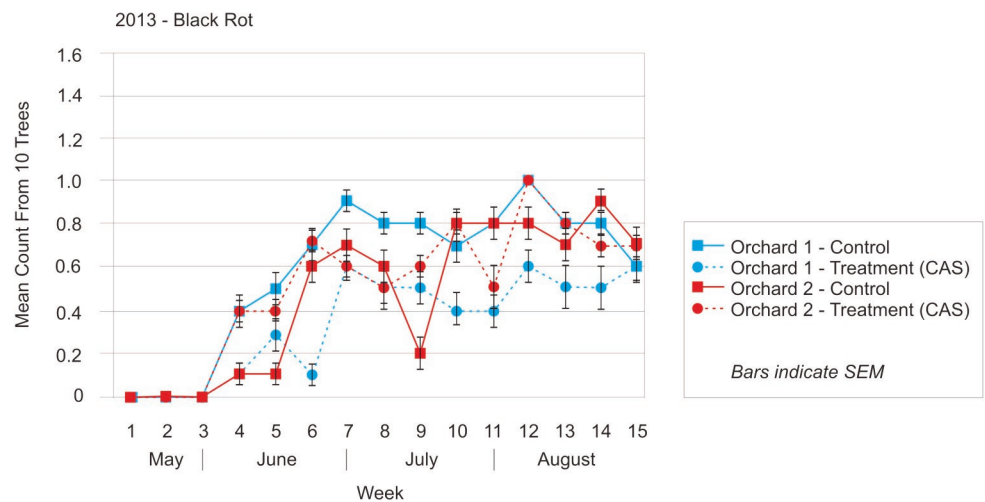


Figure 3 – 2013: Weekly mean black rot count per tree, from a total of ten trees, over 15 weeks. Black rot was indicated by frog eyed leaf spot. Five leaves and 10 spurs/terminals were sampled from 10 trees in each condition. While Black Rot is statistically higher in Orchard 1's treatment (CAS) condition, counts are too low to raise concern. Bars indicate standard error.

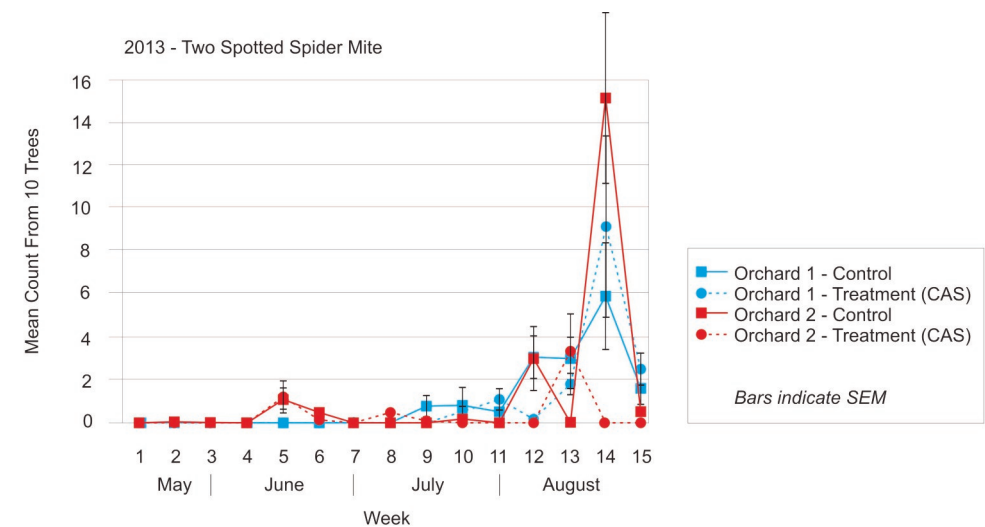


Figure 4 – 2013: Weekly mean two-spotted spider mite count per tree, from a total of ten trees, over 15 weeks. Five leaves were sampled from 10 trees in each condition, for a total of 50 random leaves per condition per week. While TSSM is statistically higher in Orchard 1's control condition, and Orchard 2's treatment (CAS) condition, it is not high enough to be an economic concern. Bars indicate standard error.

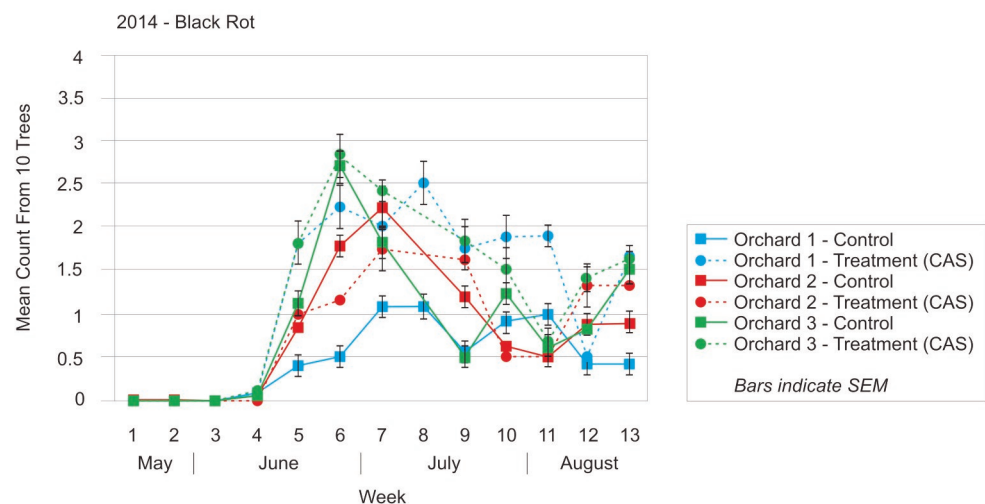


Figure 5 – 2014: Weekly mean black rot count per tree, from a total of ten trees, over 13 weeks. Black rot was indicated by frog eyed leaf spot. Five leaves and 10 spurs/terminals were sampled from 10 trees in each condition. While Black Rot is statistically higher in Orchard 1's treatment (CAS) condition, counts are too low to raise concern. Bars indicate standard error.

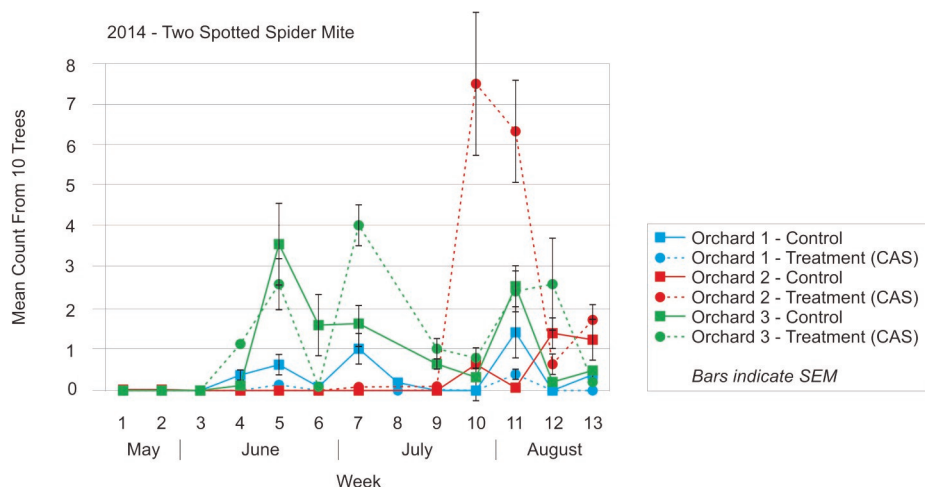


Figure 6 – 2014: Weekly mean two-spotted spider mite count per tree, from a total of ten trees, over 13 weeks. Five leaves were sampled from 10 trees in each condition, for a total of 50 random leaves per condition per week. While TSSM is statistically higher in Orchard 1's control condition, and Orchard 2's treatment (CAS) condition, it is not high enough to be an economic concern. Bars indicate standard error.

50 apples were randomly collected from each condition at harvest, quartered, and inspected for damage. The following graphs show the cumulative counts of apple damage for the 50 apples from each condition for 2013 (Figure 7) and 2014 (Figure 8). While the counts may not be statistically significant, with the exception of Orchard 2 in 2014, the CAS apples had par or less damage than the control blocks.

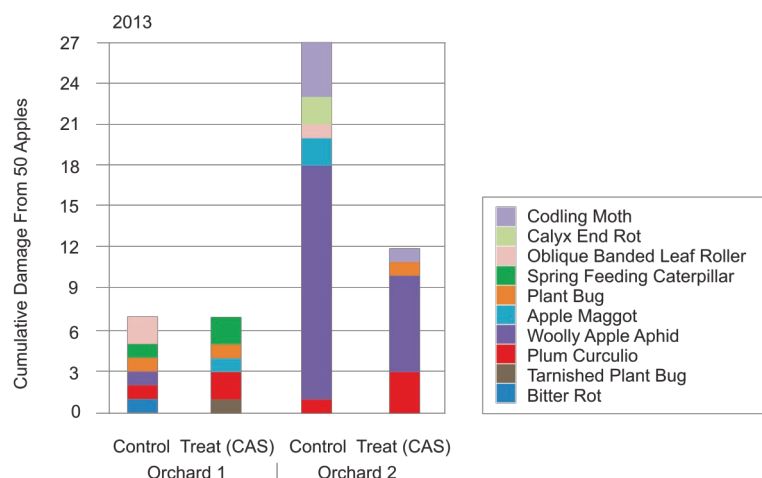


Figure 7 – 2013: Cumulative counts of apple damage to 50 apples randomly collected from each condition. Some apples presented with multiple indications of damage.

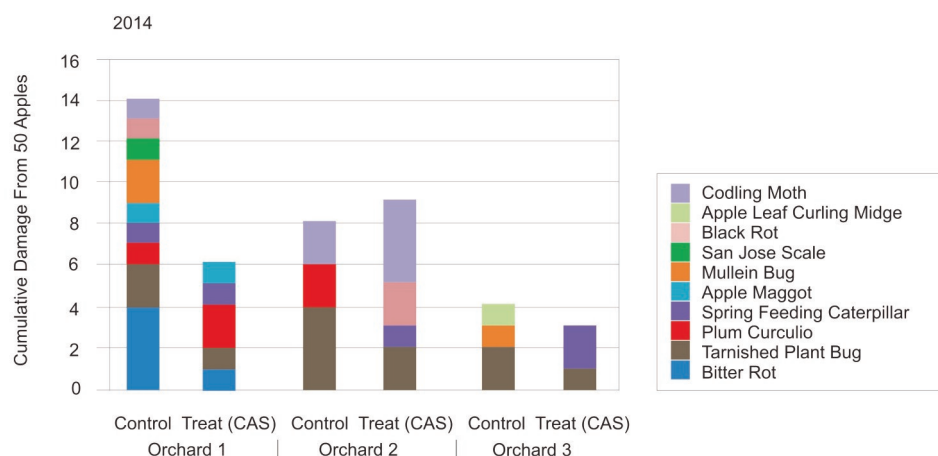


Figure 8 – 2014: Cumulative counts of apple damage to 50 apples randomly collected from each condition. Some apples presented with multiple indications of damage.

The results indicate that the CAS model for optimizing orchard pesticide rates is as efficacious as the grower's typical practices. Growers reported that these methods were intuitive and that they would be willing to expand their use of CAS throughout their operations following the 2015 trials.

Ontario's province-wide adoption of these methods has the potential to reduce unnecessary environmental pesticide loads and orchard operating expenses without compromising pest control. Further, it can be argued that the coverage-centric calibration method improves the consistency of pesticide coverage, potentially improving the overall application.

The upcoming 2015 trials will include the three Ontario orchards as well as a Nova Scotia orchard that demonstrated successful preliminary results in 2014 (data not presented). The CAS model is currently being adapted from its Microsoft Excel format to a more convenient app for mobile devices, which should be available in the summer of 2015.

Special thanks to Kristy Grigg-McGuffin (OMAFRA Pome Fruit IPM Specialist), summer students Taylor Wallace, Carly Decker, Megan Leedham, and Tara Wiedeman, statistical expertise by Behrouz Ehsani, and the grower co-operators for making this research possible.

New University of California IPM Photo Repository

Identifying nontarget crop and ornamental plant damage from herbicides has become much easier, with the launch of a new online photo repository by the Statewide IPM Program, University of California Division of Agriculture and Natural Resources.

Dr. Kassim Al-Khatib, weed science professor at UC Davis and director of the UC Statewide Integrated Pest Management Program (UC IPM), has gathered nearly a thousand photos of herbicide-damaged plants, drawn from his own and others' research. The images are cataloged to show damage that can occur from 81 herbicides in more than 14 specific herbicide modes of action, applied in field to demonstrate the symptoms or when known herbicide spray has drifted onto the plant.

Each image is characterized with the name of the plant, mode of action of the herbicide, and notes the specific symptoms of damage. Together these photos provide a comprehensive archive of damage to over 120 different crops and ornamental plants by known herbicides, which users can easily compare with what they see in the field.

Also included in the repository is information about the modes of action of various herbicides and an index of example herbicide trade names and active ingredients. The repository can be found at:

herbicidesymptoms.ipm.ucanr.edu/

Postharvest

External CO₂ Injury in 'Empire' Apples during Storage Room Loading

Dr. Jennifer DeEll, Fresh Market Quality Program Lead - Hort Crops, Simcoe

The objective of this study was to investigate the development of external CO₂ injury in 'Empire' apples (Plate 1) during storage room loading. Effects of cooling rate and SmartFresh were also investigated.

'Empire' apples were harvested from a commercial orchard near Simcoe, Ontario in 2014 and transported to the *Apple Research Storage Lab* in Simcoe, within one hour of harvest. Fruit maturity upon arrival at the lab consisted of 4.7 ppm internal ethylene concentration, 15.2 lb firmness, 10.6% soluble solids concentration, 764 mg malic acid per 100 g of juice, and 5.5 starch index. It is important to note that this would be considered slightly past optimum maturity for long-term storage, making the fruit less susceptible to external CO₂ injury.



Plate 1: External CO₂ injury in 'Empire' apple.

Half of the apples were rapidly cooled to 3°C, while the others were slowly cooled from ~22°C down to 14-16°C overnight. Half of the 'Empire' at each temperature were also treated with SmartFresh (1-ppm, 1-MCP) overnight. After 24 hours, all apples were held in ~17% O₂ + 4% CO₂ at 3°C for 1, 2 or 4 weeks. These scenarios were intended to mimic the build-up of CO₂ during commercial room loading before the establishment of controlled atmosphere. Upon removal from storage, fruit were allowed to warm to room temperature and then evaluated for quality that day.

'Empire' fruit started to exhibit external CO₂ injury after only 1 week of storage (Table 1) and there were significant increases after 2 and 4 weeks (P<0.0001). Slow cooling increased the incidence of CO₂ injury (P<0.0001) and the disorder appeared sooner, compared to fruit cooled rapidly. As expected, SmartFresh also increased incidence of CO₂ injury (P<0.01).

Table 1: Quality of 'Empire' treated with or without SmartFresh, cooled rapidly or slowly, and held for 1, 2, or 4 weeks in air at 3°C with ~4% CO₂.

	Internal ethylene (ppm)	Firmness (lb-force)	External CO₂ injury (%)
1 Week			
No SmartFresh			
Rapid	11	15.2	0
Slow	2	15.8	0.5
+ SmartFresh			
Rapid	2	15.2	0
Slow	1	15.6	1.0
2 Weeks			
No SmartFresh			
Rapid	8	14.9	3.5
Slow	11	15.2	9.5
+ SmartFresh			
Rapid	1	14.8	14.0
Slow	2	15.1	30.5
4 Weeks			
No SmartFresh			
Rapid	17	14.4	7.0
Slow	7	14.8	26.0
+ SmartFresh			
Rapid	1	14.8	22.5
Slow	20	14.4	59.0

These results indicate that storage operators must be cognizant of CO₂ accumulating during loading of storage rooms with 'Empire' apples. This cultivar is extremely sensitive to CO₂. The use of diphenylamine (DPA) will reduce the development of external CO₂ injury.

Announcements

Ontario Fruit and Vegetable Convention



The Ontario Fruit and Vegetable Convention is an annual gathering of horticultural crop producers involved in the production of fruits and vegetables from across Ontario.

The 2-day (Feb 18-19) convention is located at the dynamic Scotiabank Convention Centre in Niagara Falls, Ontario, and features a great lineup of horticultural experts, educational sessions, trade show exhibitors and great networking opportunities. Now entering its 13th year, discover for yourself why it is called Canada's Premier Horticultural Event. For more information visit www.ofvc.ca

This year the conference offers lots of interesting sessions for apple growers but it may be difficult for you to attend all of them. Why not bring others from your farm to attend these concurrent sessions and gather up this good information?

Apple Program

Thursday, February 19, 2015 - 9:30 am

Managing Summer Fruit Rots in Apples

- Dr. Dave Rosenberger, Cornell University, Professor Emeritus

Response of Gala to Multiple Applications

of Chemical Thinners - Dr. John Cline, University of Guelph, Simcoe

Cultivar Trial Update - Nick Ibuki, Summerland Varieties Corp., Summerland

Panel: Views from the Next Generation of Orchard Managers

Gerbe Botden, Botden Orchards, Thornbury
Manus Boonzaier, Algoma Orchards, Newcastle
Brian Rideout, Manintree Orchards, Blenheim
Lisa Hill-Alexander, Vanessa Hill Orchards, Vanessa

2:00 pm - **Modern Pruning Concepts for Precision Cropload Management** - Dr. Terence Robinson, Cornell University, Geneva

Moving Towards Ecologically-Based IPM in Eastern Apple Orchards - Dr. David Biddinger, Pennsylvania State University

Labour Efficiency with Platforms - John Molenhuis, Cost of Production Lead, OMAFRA, Brighton

Orchards of the Future - Dr. Terence Robinson, Cornell University, Geneva

Apple Cider Workshop (Sweet and Hard Cider)

Wednesday, February 18, 2015 - 9:30 am

Beyond the Plastic Jug – Innovative Cider Products - Cheryl Peck, *The Cider Keg*, Vittoria

Invest in Sanitation to Invest in Cider Quality - Louise Agius, *Risk Management*, OMAFRA

Making Winning Craft Cider at West Avenue Ciders - Chris Haworth, *West Avenue Cider*, Toronto

Quality Factors in Cider Making - Claude Jolicoeur, *Author, The New Cider Maker's Handbook*

Calling all Ontario Cider Producers

Our Ontario Cider Competitions are organized with two goals in mind: to encourage excellence in cider making, and to raise consumer awareness of Ontario's cider products.

Last year, at our **4th Annual Ontario Sweet Cider Competition**, our judges chose the best sweet cider by Larry Short of Sun Ray Orchards. At our **1st Annual Ontario Craft Cider Competition**, our judges chose the best hard craft cider by Chris Haworth of West Avenue Cider Company.

We hope to see more entries at the **2nd Annual Ontario Craft Cider Competition** and the **5th Annual Ontario Sweet Cider Competition** on **February 18, 2015** in Niagara Falls. Bring your entries to the Niagara Falls Convention Centre by noon on Feb. 18. We will need either two 4L jugs of sweet cider, or 3 x 750 ml bottles (or equivalent) of hard cider. Jugs or bottles should be unlabelled. This competition is open to all Ontario cider makers, including those using a custom presser. The Craft Cider Competition is open to commercial producers licensed by the AGCO.

New this year will be two categories of craft cider – common cider, and specialty cider. Each commercial cidery can enter once in each category. More details to come for specifications.

Ciders will be judged on February 18 (afternoon), and the judging is open to the public. Winning entries will be announced at the Farmers and Friends Reception on February 18, and the winning sweet ciders will be available to taste on Thursday morning at the Apple Session.

Pollinators in Horticulture

Thursday Feb 19, 2015 - 9:30 a.m.

Hannah Fraser, *Provincial Entomologist for Horticulture*;
Paul Kozak, *Provincial Apiarist*, OMAFRA

Pollination is an essential service for most flowering plants including many fruits and vegetables. Find out more about the insects that provide this essential service to agriculture and how to encourage their populations on your farm. Bring your questions about pollinators in agroecosystems to our expert panel.

Native Pollinators in Ontario Agriculture - Nigel Raine, *University of Guelph*

Honeybees in Agriculture - Ernesto Guzman, *University of Guelph*

Integrating Pollinators Into Pennsylvania Apple IPM - David Biddinger, *Pennsylvania State University*

Creating Pollinator Habitat within Farm Systems - Susan Chan, *Farms at Work*

Panel: Making it Work – Encouraging Pollinators on Your Farm - Kyle Mauthe, *Long Point Region Conservation Authority*; Sam MacLean, *MacLean Berry Farm*; other TBA

2:00 p.m. Ontario Honeybees in the Maritimes Pollinating Lowbush Blueberries - Chris Hiemstra, *Commercial Beekeeper*

Lowbush Blueberries in Northern Ontario - Trevor Laing, *Northern Ontario Blueberry Grower*

Linking Pollinator Services to Northern Blueberry Production - Les Eccles, *Ontario Beekeepers' Association*

Expert Panel Pollination in Ontario – Your Questions Answered - N. Raine, E. Guzman, S. Chan, L. Eccles

IPM and Pollinators - Hannah Fraser, OMAFRA

Apiculture in Ontario Update - Paul Kozak, OMAFRA



Fire Blight Session at OFVC 2014

Michael Celetti, Plant Pathologist Horticulture Crops Program Lead, OMAFRA

Fire blight is a serious disease of pear and apple. In 2014, several apple orchards in Ontario, Quebec and the Maritimes were severely infected with this disease. Models such as Cougar Blight predicted the potential infection of apple blossoms in the spring during 2014. Growers who experienced the wrath of fire blight in the past and took action by protecting their orchards with streptomycin still observed some fire blight in some orchards but managed to keep this disease from causing significant damage. Some growers who never had fire blight in their orchards before and did not protect them were severely affected by this disease (Figure 1).



Figure 1. Apple tree severely infected with fire blight.

Up until recently, streptomycin was the only effective management tool registered in Ontario for control of this devastating disease. It was feared that reliance on streptomycin for fire blight management may lead to the development of resistant strains of the pathogen. Fortunately a new biological based product Blossom Protect and a new antibiotic Kasumin have been registered in Canada to help growers manage fire blight and possibly reduce the risk of resistance developing.

Fire blight requires an integrated approach for successful disease prevention and management. The management of fire blight cannot be obtained with a single 'silver bullet' strategy but requires the utilization of all available knowledge about the pathogen. To learn about the latest technology available to manage fire blight in their orchards, researchers on the forefront of fire blight management from Cornell University, Michigan State University and Agriculture Canada will present and discuss prevention and management of this disease. A panel of experienced Ontario apple growers will talk about their experiences with fire blight and the importance of prevention and management. Participants will learn how to use and interpret the fire blight prediction model Cougar Blight warnings to aid in the timely application of fire blight management products.

Fire Blight Management Session

February 18, 2015 - 9:20 a.m.

The Fire Blight Situation in 2014

- *Michael Celetti, OMAFRA, Guelph*

Fire Blight Management Begins with Prevention

- *Dr. George Sundin, Michigan State University*

Fire Blight in my Orchard: Now What?

- *Dr. David Rosenberger, Cornell University*

Alternative and Novel Products for Managing Fire Blight

- *Dr. Antonet Svircev, AAFC, Vineland*

Grower Perspective: My Experience Managing Fire Blight

- *Cathy McKay, Apple Grower/Consultant*

- *Lindsay Pink, Consultant*

- *Paul Frankis, Apple Grower*

Q & A Grower/Expert Panel:

- *Dr. George Sundin*

- *Dr. David Rosenberger*

- *Dr. Antonet Svircev*

- *Cathy McKay, Apple Grower/Consultant*

- *Lindsay Pink, Consultant*

- *Paul Frankis, Apple Grower*

Hort Engineering Session

Thursday, February 19, 2015 - 2:00 p.m.

Rebecca Shortt, Water Quality Engineer, Simcoe

What's new and cutting edge? Come to the Hort Engineering session to finish off the convention with a blast of great information that you can bring back to your operation.

This session features

- Ben Hindmarsh with OMAFRA's Innovation unit will speak about **controlling deer damage**, what works and what doesn't.
- Hugh Fraser, OMAFRA will present from his 35yr career his best tips for your **cold storage and packing facility**.
- How to **get the most out of SmartFresh**. George Burkholder from SmartFresh will present alternative application methods.
- We can all use more hands and more time – see what robots are available to help in horticulture, what's up and coming and where robotics are being developed. Medhat Moussa (U. Guelph) will bring us **all things robotic** as our final speaker.

Soils and Soil Fertility Session

Wednesday, February 18 - 2:00 p.m.

Christoph Kessel, Nutrition (Horticulture) – Program Lead

There has been lots of talk lately about soil health and the 4R's – the right rate, time, source and place of crop nutrients.

It's an important discussion to have because soil fertility is about soil health, not just about the fertilizers you apply. It is managing and improving your soil's chemistry, biology and physical properties.

Plan to attend the *Soils and Soil Fertility Session*, being held on Wednesday, February 18th in Room 204 and find out if you are "*dirt poor or soil rich*".

Dirt Poor or Soil Rich - Soil health: management practices to improve soil health - *Adam Hayes, OMAFRA*

Nitrogen Management 4Rs - Getting the most from your nitrogen dollar means knowing rate, source, timing and placement - *John Lauzon, University of Guelph*

Getting the Right Rate - A soil test is a key tool in planning your 4R program - *Christoph Kessel, OMAFRA*

4Rs on the Ground: Field Examples

- *Dan Clarke, A&L Canada Laboratories Inc., Adam Hayes, Christoph Kessel, John Lauzon*

Attn: CanadaGAP Stakeholders

Updated versions of the CanadaGAP Food Safety Manuals have now been released.

- 1) Fruit and Vegetable Manual, Version 6.3
- 2) Greenhouse Manual, Version 6.3

For certification purposes, the new manuals take effect on April 1, 2015. A corresponding update to the CanadaGAP audit checklist will be issued prior to that effective date.

To facilitate the transition to the updated manuals, the following resources can be found at: <http://www.canadagap.ca/manuals/manual-downloads/>.

- The updated manuals are available as a free download
- A document outlining the main changes to the manuals is available
- Revisions documents tracking the changes from previous versions of the manuals are available
- A document summarizing commodity-specific differences is also available
- A chart outlining which sections of the manual are applicable to different types of operations (i.e., production, packing, storing, repacking, wholesaling, brokerage)

Scope Changes

The CanadaGAP manuals can now be used by fresh produce brokerage firms, operations involved in production, packing and storage of greenhouse strawberries, and those who are repacking and wholesaling mushrooms.

Main Changes

A major change for 2015 is in Section 19.1 and relates to the sourcing of product. Operations must now be sourcing their product from suppliers who are also certified to CanadaGAP or to another industry-recognized third party food safety audit/certification.

Otherwise the majority of revisions to the manuals are editorial in nature, to clarify or further explain existing requirements.

CanadaGAP maintains seven separate generic HACCP models, which are available upon request. This approach ensures that any issues or scientific developments affecting only certain crop groupings, commodities or processes will continue to be addressed with the appropriate technical rigour.

Please direct any questions to info@canadagap.ca

Upcoming Good Agricultural Practices Workshop

Assessing and Managing Food Safety Risks in Produce Production and Packing workshop

Paul Bailey, Risk Identification and Management Coordinator, OMAFRA

Are you a small-to medium-sized grower and/or packer of fruit and/or vegetables? Ensuring consumer safety is in everyone's best interest. To maintain your products' safety and a trusted business reputation, it is important to take steps to minimize or eliminate contamination risks.

To learn how to identify and manage potential food safety risks in your operation, plan to attend an upcoming *Assessing and Managing Food Safety Risks in Produce Production and Packing* workshop in your area.

This full-day workshop, held by OMAFRA, will provide essential information and effective tools to help growers and packers of fruits and vegetables identify and minimize food safety risks.

Workshop dates and locations:

- Kemptville: Wednesday, February 25
- Colborne: Tuesday, March 3
- Aurora: Wednesday, March 11
- Waterloo: Wednesday, March 25
- Waterford: Tuesday, March 31

The registration fee is \$30, including GST.

For more information on the workshops or to register, please call 1-877-424-1300.

Tree Fruit and Fresh Grape Worker Safety Workshops

The following upcoming workshops are **FREE** to Ontario tender fruit, apple and fresh grape growers.

Please register for the one in your area.

Workplace Safety and Prevention Services will lead the workshops and take growers through how to:

- Assess health and safety at your operation
- Develop and maintain health and safety policies and procedures at your operation
- Access resources found in our Health and Safety Program for Members

Refreshments will be provided.

PRE-REGISTRATION IS REQUIRED AND SPACE IS LIMITED

Please contact Sylvana at 905-688-0990 ext. 231.

Dates	Location	Time
March 19	Massey House, 27 King Ave. W., Newcastle	9:00 – 11:00 a.m. Followed by Engage Agro Meeting
March 25	Marsh Street Centre, 187 Marsh Street, Clarksburg	9:30 – 11:30 a.m.
March 31	Colasanti's Tropical Gardens, 1550 Road 3 East, Kingsville	2:00 - 4:00 p.m.
April 1	The Blue Elephant, 96 Norfolk Street South, Simcoe	9:00 - 11:00 a.m.
April 2	Hernder Estate Winery, 1607 8 th Ave., St. Catharines	2:00 - 4:00 p.m.

Save the Date

High Density Fruit Tree Training Workshop

With Dr. Terence Robinson, Cornell University

March 30 and 31 in the Niagara area

Stay tuned for more details. Space is limited.

Agricultural Information Contact Centre: 1-877-424-1300

E-mail: ag.info.omafr@ontario.ca

Northern Ontario Regional Office: 1-800-461-6132

www.ontario.ca/omafr

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