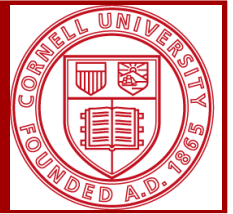




# FRUIT NOTES

## Lake Ontario Fruit Program



Volume 13 Issue 5

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### Precision Apple Orchard Management and Coming Educational Activities for 2013

Mario Miranda Sazo, Alison DeMarree, Terence L. Robinson, and Lailiang Cheng

We recently conducted an in-depth school on "Precision Apple Orchard Management" with a conference room filled by more than 200 apple growers, researchers, and extension leaders who came from NY, MI, OH, PA, ME, VT, VA, MA, NC, IN, along with the Canadian provinces of Ontario and Quebec. 110 growers attended from the three main NY production regions. Each of the speakers and participants shared their ideas on where we are and where we should go in apple orchard management in the next 5-10 years. We discussed 10 management areas (crop load management, nutrient management, water management, weed management, orchard design, labor management, risk management, disease management, insect management, and harvest management) where greater precision could be achieved with new technologies. For each management area we presented the state of the art in management and new precision orchard management technologies on the horizon.

**What is Precision Agriculture?** It is a management philosophy that seeks to manage crop production in a precise manner to obtain the best possible economic outcome. Although precision agriculture tactics are more common in grain crops and less common in tree fruit crops, there are gains we can make in apple production by examining precision agriculture concepts within the context of apple orchard management.

**Precision Agriculture with Grain Crops.** Precision agriculture began with grain crops in the 1980's and focused on ways to reduce the variability in grain crop yield across fields with variable soils. The concept was to quantify within-field variation and then modifying those areas with low yield separately than the rest to obtain equal crop performance across a field. It has focused primarily on fertilization and seeding practices within a field. The core of precision grain crop agriculture is to measure the variability in soil pH, nutrient levels, water stress and yield, and then apply fertilizers, lime, water or tile to those parts of the field that need it to even out the yield. Key to this effort has been variable rate application of fertilizers. To assist in this effort, new technologies have been implemented to make the job easier. These include on-board computers to process data, GPS guidance of the tractor, along with mapping of the field for soil characteristics and tying the map to GPS. In addition, GIS data management systems are used to develop field maps that are tied to GPS locations and variable rate fertilizer applicators that are computer controlled using the GIS maps to automatically apply different rates of fertilizer or lime to a field.

**Precision Agriculture with Orchards.** Precision apple orchard management is related to precision grain crop agriculture but has a broader focus. It has as its central focus to maximize orchard profitability and view each orchard management practice through the lens of what will be the impact of this practice on orchard profitability. With fruit crops there is substantially more management of the crop than with grain crops. These additional crop management efforts include canopy management (pruning and training), crop load management (thinning), fruit quality management (light distribution



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Every effort has been made to provide correct, complete, and up-to-date pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly, and human errors are still possible. These recommendations are not a substitute for pesticide labeling. Please read the label before applying any pesticide.

*Building Strong and Vibrant New York Communities*

Cornell Cooperative Extension provides equal program and employment opportunities. NYS College of Agriculture and Life Sciences, NYS College of Human Ecology, and NYS College of Veterinary Medicine at Cornell University, Cooperative Extension associations, county governing bodies, and U.S. Department of Agriculture, cooperating.

within the canopy) and fruit maturity management (harvest maturity management). This requires a broader definition of precision orchard management than the traditional precision grain crop management of soil fertility, pest and weed control, water and yield.

**Two Upcoming Precision Orchard Management Extension Meetings:** As a follow up to the in-depth school we would like to conduct a series of “Precision Orchard Management” field workshops this year. In addition to the traditional Petal Fall Thinning meetings conducted every year we would like to invite you to attend **2 new educational meetings**.

<b>Educational meeting</b>	<b>When, where</b>
<b>Precision Nutrient Management</b>	<i>Field meeting activity for all WNY fruit growers and consultants on <b>Tuesday April 23, 3-5pm</b> at Lamont Fruit Farm (12703 Stillwater Rd., Waterport, Orleans County)</i>
<b>Precision Chemical Thinning</b>	<i>Training class offered at NYSAES in Geneva (Jordan Hall) on <b>Wednesday May 1, 3-5pm</b> for all consultants and WNY growers interested to implement the “Precision Thinning” approach. This is an improved method of conducting chemical thinning that utilizes both the carbohydrate model as a tool for predicting response prior to application of chemical thinners and the fruit growth rate model for early assessment of thinning response immediately after application.</i>

## **How Do I Manage Spotted Wing Drosophila (SWD) on My Farm?**

Laura McDermott, Regional Agricultural Specialist, Eastern NY Commercial Horticulture Program  
(Edited by Deborah Breth)

Ripening and ripe fruit are susceptible to SWD attack, but they appear to be only mildly attracted to unripe fruit. If adult SWD are present on your farm, manage them aggressively.

### **Aggressive management entails:**

1. Excellent sanitation: Fruit should be harvested frequently and completely. Unmarketable fruit should be removed from the field and either frozen, “baked” in clear plastic bags placed in the sun, or disposed of off-site. This will either kill larvae or remove them from your farm.
2. Canopy and water management: Prune to maintain an open canopy. This may make plantings less attractive to SWD and will facilitate pesticide applications. Leaking drip lines should be repaired, and overhead irrigation should be minimized.
3. Insecticide treatments: Insecticide treatments should begin when scouting reports in the region alert growers to the first fly detection. Treatments should be applied

at least every seven days and repeated in the event of rain. Choose the most effective insecticides with pre-harvest intervals that work for your picking schedule. Rotate insecticides according to their modes of action. Check the 2013 Cornell Guidelines for the latest list of approved pesticides (See tables below). Growers should be careful to avoid exceeding maximum applications per season which may be difficult for organic growers.

4. Monitor success of insecticide treatments with baited traps: Use red cups with holes no larger than 5mm in size. Bait can be apple cider vinegar or a yeast/sugar mix – whatever is easier for growers to accurately monitor. Traps should be hung in mid-canopy or on the north side of the row. Monitor these traps weekly.
5. Regular fruit sampling: At least 100 fruit per block per harvest should be observed for infestation between sprays to determine spray efficacy. Place fruit sample in Ziploc bags. Crush berries lightly and add the saltwater

solution (1-2 tsp salt to 1 cup water). Leave for an hour and assess for larvae.

6. Cool berries immediately: Chilling berries immediately after harvest to 32° -33°F will slow or stop

the development of larvae and eggs in the fruit. U-Pick customers should be encouraged to follow this strategy to improve fruit quality at home.

## Green Tip Prediction

T. L. Robinson and M. Miranda Sazo

The predicted date of green tip in Western NY remains unchanged from what was predicted last week (April 16 and 17 for Idared and Delicious, respectively). The weather forecast indicates we will slowly accumulate

growing degree hours in the next few days and then rapidly accumulate growing degree hours after Thursday, April 3.

## How Food Marketers Can Make “Win-Win” Adjustments to their Strategies to Help Consumers Eat Better while Staying Profitable

From *Smart Marketing, January 2013 issue*

article summary by Brooke Pearson (B.S. 2013) and Kristen Park, Cornell

Food marketers are masters at getting people to crave and consume the foods that they promote. Often their marketing tools are used in response to consumers' desires for tastier, more convenient and less expensive foods. Unfortunately, much of the food that is advertised may be high in fat and sugar. With the obesity epidemic at an all-time high, we need to look for marketing solutions that can have positive outcomes for both businesses and consumers.

The following is from an academic article that describes how food marketing may be influencing consumption and over-consumption. It then provides food marketers with some promising ideas on how they might meet their business objectives of profitable sales and at the same time make adjustments to help consumers eat better.

The authors are Pierre Chandon<sup>1</sup> and Brian Wansink<sup>2</sup> and the full article can be found at:

[http://foodpsychology.cornell.edu/pdf/market\\_fat.pdf?Item=9](http://foodpsychology.cornell.edu/pdf/market_fat.pdf?Item=9)

### Summary

It is important to understand that marketers and the executives who guide them are torn between satisfying the desires of various consumers, the demands of their shareholders, and the concerns of public health organizations that largely perceive the food industry as the new tobacco industry. Looking for solutions that would work in today's fast-paced culture, we scoured a host of marketing studies and examined current marketing trends. We then identified changes that food companies can implement to continue to grow their profits without growing their customer's body mass index (BMI). In our exploration we chose to focus on key marketing tools, all of which have powerful effects on consumers.

**Pricing** is one of the strongest marketing factors that predicts energy intake and obesity and explains why obesity mainly plagues lower-income consumers. Econometric studies suggest that lower food prices have led to increased energy intake. Within the last thirty years the price of food has drastically declined which in turn may have caused people to eat more. In addition, one study suggests that if fast food prices were increased by a mere 10%, the obesity rate would decrease by 0.7%. People accelerate the

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<sup>2</sup> Wansink is with the Dyson School of Applied Economics and Management, Cornell University, Ithaca, NY.

consumption of products they believe were purchased at a lower price. We suggest applying this principle to healthier foods by offering quantity discounts or bonus packs. This can induce consumers to increase their purchases of fruits and vegetables, for example. Other win-win considerations include:

- Reduce retail price of healthy food through more efficient production and distribution, e.g., lower spoilage with better packaging.
- Give coupons or discounts on fruit and vegetables, such as \$1 off salads, buy-one-get-one-free.
- Use social media to promote healthy food choices.

Marketing **promotion**, or communication, enhances consumers' expectations of taste, quality, and social value. Today, 72% of television advertising for food promotes candy, cereal, and fast food. A study in Montreal proved that banning television advertising in children's programming reduced consumption of sugared cereal and trips to fast food restaurants. Promoting healthy foods in and of itself to consumers may not be effective though because of the stigma that they will taste worse. We propose re-branding healthy foods on non-health related positive benefits. Some win-win considerations include:

- Increase the use of social media and advertising for healthy products.
- Increase healthy eating in the media; in movies and TV shows, portray characters eating healthily, especially in media geared towards kids.

The tastiness and package size of a food **product** can have an effect on satiety and how much a person ultimately consumes. Increasing the flavor complexity and number of components in a food improves its overall tastiness rating. Offering healthy foods that have more complexity, such as a fruit salad instead of a whole fruit, can increase consumption

because of both variety and convenience. Larger package sizes can lead people to eat more. Reducing package sizes of less healthy foods by elongating the packages makes the size reduction less visible, which in turn can make choosing a smaller size more likely. Furthermore, restaurants can add a smaller size on the menu. Even if nobody chooses it, it will make other sizes look bigger and will lead people to choosing smaller sizes.

Eating is often more than just food intake; it is a social activity, a cultural act, and a form of entertainment. The eating environment, or **placement**, can promote mindless behavior that causes people to eat more food than they realize. For example, studies have suggested that the increased availability of fast food (but not full-service restaurants) is a strong predictor of local obesity. Salience, or visibility, matters. When jars of 30 chocolate candies were placed on the desks of secretaries, those in clear jars were consumed 46% more quickly than those in opaque jars. The more visible and accessible a food is the more of it will be consumed. Displaying healthy foods in highly visible areas will increase consumption. For example, fast food restaurants could more prominently display an attractive picture of a salad, and grocery stores might replace candy with fruit and healthy snacks at the register. This and previous research shows that small changes in the eating environment can cause a significant difference in the width of our waistlines. Other win-win considerations include:

- On dining tables at home or in restaurants, replace foods that are easy to eat, such as chips or bread, with food that is more time-consuming to eat, like peanuts.
- Instead of asking consumers if they want the supersize, ask if they want to add a salad or another healthy item that brings in more money.
- Serve the same size portions on smaller plates to reduce consumption and maintain satisfaction.

Food companies are already trying some solutions to mitigate the effect of overconsumption. Some of initiatives include:

- Chili's \$20 dinner for two – each person gets an entrée but they split an appetizer.
- A Bunch of Carrot Farmers has fun, innovative advertising for produce, on “Eat ‘em like junk food” campaign for baby carrots on YouTube.
- Food companies have reduced the amount of fat, sugar, and salt in many of their products without compromising the product's taste.
- Positioning chocolate milk in the school lunchrooms so it is less convenient to take.

Food marketers can use these and other suggestions located in the complete article as a winning formula to make money while promoting healthier foods!

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“Smart Marketing” is a marketing newsletter for extension publication in local newsletters and for placement in local media. It reviews elements critical to successful marketing in the food and agricultural industry. *Please cite or acknowledge when using this material.* Past articles are available at <http://marketingpwt.aem.cornell.edu/publications.html>

### **Tree Fruit Cold Damage Survey**

Please respond a survey prepared by Greg Lang (MSU) and other scientists who are working on putting together a future grant proposal focused on cold damage in temperate grape and tree fruit crops.

The survey, which is a quick 12-question multiple choice survey, can be answered at:

<http://www.surveymonkey.com/s/ColdDamageTreeFruitGrapes>

### **Product Registration Update**

Art Agnello, Dave Rosenberger, Debbie Breth

The following are some of the more significant changes (so far) to the list of insecticides and fungicides available for use in NY tree fruit crops for the 2013 growing season; more are sure to follow:

#### **Insecticides**

Guthion/Azinphos-methyl - Last year, the EPA released an order allowing the use of existing stocks in the rest of the country through September 2013, but up until last week, this use was prohibited in New York State because all state-approved labels prohibited its use after September 30, 2012. However, on March 18, 2013, the NYS DEC reversed its stance and approved the continued use of azinphos-methyl products in New York State until September 30, 2013. The Supplemental Label should be available on PIMS later this week; we'll provide a link when to it when it appears.

Thionex - All endosulfan products are currently registered for use in apples and pears only, and EPA has mandated a stop-use date of July 31, 2013 for endosulfan in pears.

Provado - This original formulation of imidacloprid has been replaced by AdmirePro and is no longer being sold by Bayer CropScience.

Isomate OFM TT (Pacific Biocontrol, EPA Reg. No. 53575-29) - This is the replacement product for Isomate M-100, which is in the process of being discontinued. This twin-tube tie dispenser has a field life of 180+ days, and is therefore being recommended for full-season mating disruption of oriental fruit moth and lesser appleworm in all tree fruits.

Two new pre-mix insecticides have been registered in NY by Syngenta, Agri-Flex and Voliam Flexi; both are restricted-use products and their use in Nassau and Suffolk Counties is prohibited. For best effectiveness and insecticide resistance management, the use of pre-mix products should be reserved for situations when multiple pest species are present and appropriately matched to the combination of active ingredients and modes of action contained in the product.

Agri-Flex (EPA Reg. No. 100-1350) is registered for use against a range of pests in apples and pears. This product is a mixture of thiamethoxam, the a.i. in Actara, and abamectin, the a.i. found in Agri-Mek. In apples and pears, it is labeled for control of plum curculio, European apple sawfly, green peach aphids, Comstock mealybug, leafminers and leafhoppers, and mites. Additionally in pears, it is labeled for pear psylla. It has a 12-hour REI, and a PHI of 35 days. This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds; it may not be applied between early pink and petal fall in apples, or between green cluster and petal fall in pears. For pear psylla, 8.5 oz./acre of AgriFlex equals 5.4 oz/acre of Actara and 16 oz/acre of Agri-Mek.

Voliam Flexi (EPA Reg. No. 100-1319) is registered for use against a range of pests in pome and stone fruits in NYS. This product is a mixture of thiamethoxam, the a.i. in Actara, and chlorantraniliprole, the a.i. found in Altacor and Voliam Xpress. The label lists lepidopteran pests such as codling moth and oriental fruit moth, obliquebanded leafroller, leafminers and green fruitworm, plum curculio, European apple sawfly, leafhoppers and aphids (except woolly apple aphid), pear psylla, plus (in stone fruits only) cherry fruit fly, stink bugs, tarnished plant bug and thrips. It has a 12-hr REI, and a PHI of 35 days in pome fruits, 14 days in stone fruits. This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds; it may not be applied between early pink and petal fall in apples, between green cluster and petal fall in pears, and between swollen bud and petal fall in stone fruit. Do you want to provide equivalent rates based on a.i.? I found that Voliam Xpress requires 12 oz. to equal 4 oz. of Altacor for

codling moth. Syngenta suggests you will need an additional ounce of Actara in Voliam Flexi for plum curculio pressure. You will need to add 2 oz./acre of Actara for PC control using Endigo. But watch the total seasonal application of Actara; only 11 oz./acre/season are allowed in NY.

### **Fungicides & Bactericides**

Tree Tech OTC (Florida Silvics, EPA Reg. No. 64014-11) is a formulation of oxytetracycline, an antibiotic registered for foliar use on peaches and nectarines to control bacterial spot. It is also registered on peach for microinjection to manage peach X-disease, and for control of fire blight on apples and pear, but is not as effective as streptomycin.

Topguard (flutriafol, Cheminova, EPA Reg. No. 67760-75) is a member of the triazole group of sterol inhibitor fungicides. It is exceptionally effective against apple powdery mildew, cedar apple rust, and quince rust. Its activity against scab on apples is similar to that of Rally. It will not control scab in orchards where DMI-resistant populations have reached economic thresholds (i.e., where Rally and other DMI fungicides are no longer working). As with Rally, Topguard must be mixed with a contact fungicide both for resistance management and to protect fruit against scab infections.

### **Herbicides**

Sinbar WDG is now registered for use by TKI NovaSource and it is still labeled for use at 0.5 lb/acre in newly planted trees after the first soil settling rainfall. Alion was registered by NYS DEC Oct. 5, 2012, for use in pome and stone fruit established at least 3 years at 5 oz/acre. It is a broad-spectrum, long residual herbicide with no post-emergent activity. Many growers might have applied this last fall.

Please note that the 2013 Cornell Pest Management Guidelines for Commercial Tree Fruit Production are now available as both online at <http://ipmguidelines.org/treefruits/> and a hard copy at <https://psep.cce.cornell.edu/store/Guidelines/Item.aspx>

Insecticides for SWD in 2013. You will need to go to <http://pims.psur.cornell.edu/#searches> to print 2(ee) labels.

Insecticide & EPA #	IRAC group	Recommended rate	Seasonal total per acre	Number of consecutive sprays	Total sprays per year	Minimum treatment interval	PHI
<b>Blueberries</b>							
Spinetoram Delegate WG, 62719-541	5	3-6 oz/A	19.5 oz/A	2 of Group 5	6	6 days	3 days
Spinosad Entrust, 62719-282 Entrust SC, 62719-621	5	1.25-2 oz/A, 4-6 fl oz/	9 oz/A 29 fl oz/A	2 of Group 5	6 3 per crop	6 days	3 days
Azadirachtin AzaSol, 81899-4 Molt-X, 68539-11	UN	6 oz/A 10 fl oz/A					0 days
Bifenthrin Brigade WSB, 279-3108	3A	5.3 to 16 oz/A	5 lb			7 days	1 day
Bifenthrin plus Triple Crown, 279-3440	3A and 4A	6.4-10.6 fl oz/A	31.0 fl oz/A			7 days	5 days
Fenpropathrin Danitol 2.4EC, 59639-35	3A	16 fl oz/A	32 fl oz/A				3 days
Phosmet Imidan 70-W, 10163-169	1B	1.33 lb/A	7 1/8 lb/A		5		3 days
<b>Caneberries:</b>							
Spinetoram, Delegate WG, 62719-541	5	3-6 oz/A	19.5 oz/A	2 of Group 5	6	4 days	1 day
Spinosad Entrust, 62719-282 Entrust SC, 62719-621	5	1.25-2 oz/A, 4-6 fl oz/	9 oz/A 29 fl oz/A	2 of Group 5	6	5 days	1 day
Azadirachtin AzaSol, 81899-4 Molt-X, 68539-11	UN	6 oz/A 10 fl oz/A					0 days
Bifenthrin Brigade WSB, 279-3108 Brigade 2EC, 279-3313	3A	8 to 16 oz/A 3.2-6.4 fl oz /A	0.2 lb ai 2 lb/A 12.8 oz/A		Only 1 postbloom	7 days	3 days
Bifenthrin plus Triple Crown, 279-3440	3A and 4A	6.4-10.3 fl oz/A	10.3 fl. oz/A			7 days	3 days
Fenpropathrin Danitol 2.4EC, 59639-35	3A	16 fl oz/A	32 fl oz/A				3 days
Malathion 8 Aquamul, 34704-474	1B	2 pts/A					1day
<b>Strawberries:</b>							
Spinetoram, Radiant SC, 62719-545	5	6-10 fl oz/A	39 fl oz/A	2 of Group 5	5	4 days	1 day
Azadirachtin AzaSol, 81899-4 Molt-X, 68539-11	UN	6 oz/A 10 fl oz/A					0 days
Fenpropathrin Danitol 2.4EC, 59639-35	3A	16 – 21.33 fl oz/A	42.67 fl oz/A		2		2 days
Bifenthrin Brigade WSB, 279-3108	3A	8.0 to 16 oz/A	5 lb/A				0 days
Spinosad Entrust, 62719-282 Entrust SC, 62719-621	5	1.25-2 oz/A 4-6 fl oz/A	9 oz/A 29 fl oz/A	2 of Group 5	5	5 days	1 day
Malathion 8 Aquamul, 34704-474	1B	2 pts/A					3 days

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**Contents:**

- Precision Apple Orchard Management and Coming Educational Activities for 2013
- How Do I Manage Spotted Wing Drosophila (SWD) on My Farm?
- Green Tip Prediction
- How Food Marketers Can Make “Win-Win” Adjustments to their Strategies to Help Consumers Eat Better While Staying Profitable
- Tree Fruit Cold Damage Survey
- Product Registration Update
- NYS Raises the Minimum Wage
- Save the Dates

## NYS Raises the Minimum Wage

A. De Marree

The NYS minimum wage will increase over a 3 year period (see chart below). Each increase will go into effect on December 31<sup>st</sup>. Growers will need to begin planning for these increases. As we approach December 31, 2013 you will need to download new minimum wage posters from:

<http://labor.ny.gov/workerprotection/laborstandards/workprot/minwage.shtm>

The chart below shows the NYS Minimum Wage increases and **projects** what the Adverse Effect Wage Rate ***might be*** if it increased at the same rate!

	Current	<i>minimum wage as of:</i>		
		12/31/13	12/31/14	12/31/15
<b>NYS Minimum Wage &gt;</b>	<b>\$7.25</b>	<b>\$8.00</b>	<b>\$8.75</b>	<b>\$9.00</b>
<i>percent increase &gt;</i>		10.3%	9.4%	2.9%
<b>AEWR &gt;</b>	<b>\$10.91</b>	<b>If AEWR is increased at same %:</b>		
		\$12.04	\$13.17	\$13.54

## Save the Dates

- April 23 - Precision Nutrient Management**, Lamont Fruit Farm, Orleans County – see page 2 this issue
- May 1 - Precision Chemical Thinning**, Jordan Hall, NYSAES, Geneva– see page 2 this issue
- August 1 – Summer Fruit Tour**, NYSAES, Geneva- more info TBA
- August 6 – Storage Workshop**, Cornell University, Ithaca-more info TBA