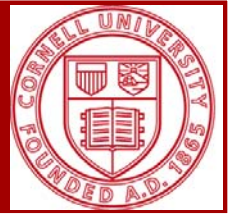




# FRUIT NOTES

## Lake Ontario Fruit Program



Volume 14 Issue 19

August 7, 2014

### 2014 Apple Harvest Preparation Checklist

A. De Marree

1. Have you prepared a production estimate by variety for each block of fruit and estimated the amount of fruit which needs to be harvested each week of harvest?
2. Have you made arrangements to secure enough pickers to get each variety harvested in a timely manner?
3. Have you prepared your labor camp for occupancy this year and made an appointment to have it inspected? (NYS DOL will be checking for migrant labor camp registrations & **over** occupancy this year)
4. Do picking bag straps and liners need replacement? Are new picking bags needed?
5. Are portable toilets with hand washing stations, paper towels and drinkable water in place?
6. Is there an adequate drinking water supply for EACH picking crew with disposable cups? Are the coolers large enough for pickers to refill their quart and gallon containers? Who is responsible for **cleaning, sanitizing & refilling** the crew's main water supply **each morning & afternoon**?
7. Do I need to hire quality control checkers? Is there a job description for quality control checkers?
8. Do I need to hire additional tractor drivers?
9. Have I arranged for trucking?
10. Is there an adequate supply of bin tickets or do I need to order more?
11. What method will I use to track fruit from each picker and each orchard on a daily basis?
  - a. Who keeps track of what each picker picks – do I need to print new forms?
  - b. Are there forms in each truck for truck drivers to record which orchards fruit came from and where it was delivered?



Cornell University  
Cooperative Extension

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### *Building Strong and Vibrant New York Communities*

Diversity and Inclusion are a part of Cornell University's heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans, and Individuals with Disabilities.

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.

- c. Do I have a means of reconciling my records with picker records of fruit picked?
12. New employee paperwork: Have I completed the correct paperwork for each new employee?
    - a. Work agreement covering NY and MSWPA requirements or a copy of an H2A work order given to each employee and a copy in employer files.
    - b. I-9 Form
    - c. W-4 Form
    - d. NY 2104 Form
    - e. Housing notification form (if subject to federal MSWPA laws)
    - f. **NY Form LS 309 (02-12) or LS-309S (02-12)** (*Spanish version*) **OR AL790.1 for H-2A workers**–  
The form must be in the employee’s native language, signed by the employee & filed as well as giving a copy to the employee.
  13. Employee forms not required – but make good sense:
    - a. Name, address and phone number of person to reach in event of emergency
  14. Have you located and retrieved all bins since last year’s crop?
    - a. Have you checked with fruit buyers for your bin allocations and dates for pickup?
    - b. Have bins been cleaned and/or repaired? Is your farm identity legible on each bin? Are there extra bin slats, hardware and hammers readily available for in the field repair? Have repaired bins been moved to the orchards they will be used in?
  15. How will bin tags / tickets be fastened to bins? Are staple guns in working order? Are new staple guns needed? Is there an adequate supply of fasteners?
  16. Has all equipment that will be used in harvest been serviced? Do seats on tractors & forklifts need replacing?
  17. Has machinery been checked for safety – especially if tractor drivers will be getting on and off tractors repeatedly? Are all slow moving vehicle signs in place and visible?
  18. Has a communications plan been explained to harvest support workers? How will specific buyer requirements or changes in fruit destination be communicated to those personnel in the orchard managing the harvest?
  19. Are hazards in orchards clearly marked? Have you marked irrigation valve boxes to avoid trucks destroying them? Have orchard lanes and ruts been repaired to avoid bruising fruit?
  20. Is there an adequate supply of ladders, in the lengths needed AND are they in good shape?
  21. Do you have a food safety plan in place? Who is the person responsible for implementing the plan? Have you contacted your inspection agency for an audit?

22. Have employees viewed a food safety & farm security video? Are all employees aware of their part in food safety and procedures to follow when problems arise?

23. Do you have a plan in place to increase labor efficiency? (reviewing with orchard support staff where picking time has been lost in the past and where gains could be made this season such as reducing bin loading or unloading times, having bins set-up in advance for the next block you will move into, etc.).

24. Are your spray records formatted & printed out for fruit buyers?

25. Are all employees aware of your picking standards and the disciplinary procedures or steps that will be implemented should those picking standards fall short?

26. Do you have posted a set of work rules that have been reviewed with each employee as a part of new employee or new season orientation? Are all employees aware of the farm mission statement?

27. Does each employee know your expectations for a job well done? Do you have written Standard Operating Procedures (step by step checklist) for each job on your farm?

28. Do you have a crop insurance claim this year? Who will notify the crop insurance adjuster a week – 10 days before each variety in question will be harvested?

**Check out our website for additional recordkeeping forms & regulation summaries at <http://lof.cce.cornell.edu/> under the Business (and Then Farm Business Management) links.**

**Pay Statements in Excel:** If you have Microsoft's Excel on your computer, we have available an Excel workbook which will keep daily piece rate and hourly payroll records as well as print pay statements which meet both H-2A, federal and state labor regulations. Please contact me if you would like a copy.

## **Preparing for Harvest**

Craig Kahlke

Now is the time to find your pressure testers (penetrometers) and refractometers (brix) testers – for possible suppliers, or to order new ones check the following links-

for Wagner Instruments pressure testers:

<http://www.fruittest.com/>

or for refractometers, try Atago USA:

<http://www.atago.net/USA/products.html>

or Frostproof: <http://frostproof.com/fruit-testing/> (they have refractometers & pressure testers)

- Get a notebook to record your testing results.

- **Iodine** - Is last year's iodine still any good? Iodine can be stored for up to two years. It

should be stored in an opaque container, out of sunlight in a cool dry place. If any holdover supplies last year did not receive proper storage, it is best to buy new. We will be stocking iodine solution in local extension offices of Wayne, Niagara, and Orleans over the next few weeks in ½ pint (\$4.00) and 1 pint (\$8.00) sizes. If you want large quantities, please call or email Craig (585-735-5448, [cjk37@cornell.edu](mailto:cjk37@cornell.edu)) to order by the gallon (\$40.00). Starch charts are also available free of charge at the same locations.

#### Overall Maturity Issues:

- Close to average bloom dates plus cooler than normal overall weather patterns this growing season and too much rain in many orchards leads to the conclusion **that we may be running just a few days (3-5?) behind a normal year. And last year was very close to normal regarding harvest maturity dates.**

- **Please follow recommended maturity indices for each variety in addition to consulting with your marketer.** Make sure there is adequate varietal flavor prior to harvest.
- **Variation between individual blocks and orchards always occur.** Because of this inherent variation, the average maturity index readings of several grower blocks (as developed by the regional testing program) has often provided a better guide to harvest than readings from individual orchards. **BE SURE TO CONSULT WITH YOUR MARKETER – before harvesting the block.**
- **Crop load effects maturity.** Trees with lighter crop loads, along with stressed trees and very young trees usually mature earlier. Maturity is usually delayed in trees carrying a larger crop.

## Recommendations for Fruit Drop Control in WNY in 2014

Terence L. Robinson and Mario Miranda Sazo

In 2014 there are 3 materials, which are registered for control of preharvest drop in apples: NAA, Retain and Harvista. NAA provides modest drop control but has the negative effect of stimulating ethylene production and fruit ripening. Retain is a plant growth regulator which reduces ethylene production and reduces preharvest drop. It also reduces fruit cracking and fruit greasiness but it delays the development of fruit red color about 1 week. Its performance is improved when combined with NAA since the two products work synergistically to

reduce fruit drop while the Retain suppresses the production of ethylene by NAA. Harvista is a new class of drop control chemical (1-methylcyclopropene or 1-MCP), which inhibits the action of ethylene in the fruit and reduces fruit drop. Each chemical has a different mode of action and thus different timing of application for optimal performance.

Since NAA stimulates ripening and often gives limited drop control when applied alone, we do not recommend the use of NAA alone.

Retain should be applied 2-4 weeks before anticipated normal harvest. We suggest applying Retain at 3 weeks before harvest in cool years and at 4 weeks before harvest in hot years. Our suggested timing for **McIntosh** in WNY in 2014 (a cool year) is Aug 25 (based on the expected Mac harvest beginning on Sept. 15 which is one week before the estimated CA cutoff date of Sept. 23 published by Craig Kahlke in the LOFT newsletter June 26, 2014). A full rate of Retain (1 pouch per acre) will give the best drop control but will delay color development by 7-10 days. A ½ rate of Retain will also work and has a less negative effect on fruit color but the control of fruit drop will wear off sooner (often before the end of September). Our research in the last few years has shown the best combination of drop control with the least negative effect on fruit color is achieved by splitting a full rate of Retain into 2 sprays of ½ rate of Retain each time and including 10ppm NAA in both sprays. In 2014 we recommend the application of the first 1/2 pouch of Retain per acre + 10 ppm NAA (4oz/100 gal) at 3 weeks before normal harvest (August 26 in WNY) and 1/2 pouch of Retain per acre + 10 ppm NAA 1 week before normal harvest (Sept. 8 in WNY). It is critical to include an organosilicone surfactant with Retain especially when combined with NAA. The organosilicone surfactant improves the uptake of Retain better than other surfactants thus ensuring that sufficient Retain is absorbed by the leaf to suppress the stimulatory effect of NAA on ethylene production.

With **Gala** we recommend the application of a ½ pouch of Retain per acre applied 2-3 weeks before expected first harvest. In 2014 we estimate Gala harvest will begin on Sept 3 thus the suggested date to apply Retain is August 20-August 26. The full rate of Retain is never recommended since Retain at the full rate has a very strong negative effect on Gala color development. The 1/2 pouch of Retain per acre will permit Gala fruit to remain on the tree an additional 7-14 days resulting in improved fruit size, good color development and less stem end cracking. Retain delays maturity but results in a more even maturity on the tree. Multiple picks on Gala can be reduced to 2 or even 1 picking in some cases. By delaying harvest date, fruit size increases by 1% each day harvest is delayed. Retain also reduces fruit stem end cracking and greasiness that are problems as Gala fruits mature in the second and third picks.

**Honeycrisp** is a low ethylene producing variety that has very uneven ripening but can have significant pre-harvest drop in some years. We recommend a 1/3 rate of Retain applied 3 weeks before expected harvest in blocks which have had a drop problem in the past. In 2014 our suggested application date is August 25.

**For late September and October varieties** the negative effect of Retain on fruit color development is much less than in early September varieties, thus we suggest the use of the full rate of Retain to provide a consistent reduction of drop and greasiness. For late September and October varieties

which are harvested under cooler conditions, application timing should be 3 weeks before normal harvest date. Treating **Empire, Delicious and Jonagold** with Retain provides some flexibility in harvest date (allowing growers to spread out the harvest) since those three varieties need to be harvested at about the same time. **Cortland and Jonagold** both suffer from greasiness problems as the fruit mature and Retain applied 3 weeks before normal harvest can be a very effective control strategy. **Idared and Rome** both suffer from internal flesh pigmentation (bleeding), which can result in rejection of the fruit at the processing plant. Our recent research indicates this problem can be controlled effectively with ½ rate of Retain applied in mid-September.

Two final reminders about the use of Retain: (1) Remember that the earlier Retain is applied the greater the negative effect it has

on fruit color but waiting too long will result in some ethylene production and some fruit drop before Retain suppresses ethylene production, and (2) Remember to use an organosilicone surfactant such as Silwet (12 oz/100 gallon) with Retain.

**Harvista**, which is an alternative to Retain or NAA, should be applied later than Retain (about 1 week before anticipated harvest but before significant drop occurs). It has a much more rapid action in the plant and can prevent fruit drop even when applied close to harvest and has a long lasting effect. Harvista is difficult to apply and must be applied by the manufacturer (AgroFresh) to ensure an effective application process. If it is applied with or near Captan it can increase the uptake of Captan, which causes phytotoxicity. We recommend that growers use other fungicides beginning 2 weeks before an application of Harvista.

## Time for Leaf Analyses

Mario Miranda Sazo

Leaf analysis gives you the best indicator of tree health and knowing this status will reduce under or over fertilization. Cornell no longer does commercial leaf sample analyses. Since 2009, Cornell University and Dairy One combined their soil and plant testing services in a new venture called Agro-One. To obtain basic soil test and leaf analysis sampling instructions and sample boxes/bags contact Agro-One-Dairy One, 730 Warren Road, Ithaca, NY, 14850 or calling 1-800-344-2697 or visit:.

<http://dairyone.com/analytical-services/agronomy-services/plant-tissue-testing-services/>

Sample collection time varies by crop: (1) Tree fruit should be sampled between 60-70 days after the average petal fall date (this is normally the end of July, early August), (2) strawberry leaves should be collected within the first six weeks after harvest, or after renovation, when the first fully expanded leaves emerge, (3) raspberry leaves should be collected from non-fruiting canes <sup>between</sup> August 1st and August

20<sup>th</sup>, and (4) blueberry leaves should be collected just before or during harvest, leaves from middle of this year's shoot, full sun, between July 1st and August 30<sup>th</sup>.

Sample collection method for tree fruit: Select at least 60-100 leaves for each sample. Leaves are normally collected from the middle of this current season terminal shoots if you are collecting 60-70 days after petal fall. However, if sampling is done later, select the first full-sized mature leaf behind the shoot tip. Select 1 or 2 leaves/shoot from several shoots on each of several trees located throughout the area being sampled. Place samples in open paper lunch bags (separate labeled bags for each sample; get them at the grocery store as we no longer provides them) and allow them to air dry. Fill out and include a copy of "Form P" with each sample (be sure to write down the soil type to get back full fertilizer recommendations). Dried samples can be mailed to Agro-One at 730 Warren Rd, Ithaca, NY 14850. The fruit analysis (called the "180 Package") costs \$24.00 per sample and includes total N, P, K, Ca, Mg, Zn, Cu, Fe, B, and Mn. Full directions for collecting samples can be found at: <http://dairyone.com/wp->

[content/uploads/2014/01/Tissue-Analysis-Guidelines-Fruit.pdf](http://content/uploads/2014/01/Tissue-Analysis-Guidelines-Fruit.pdf) Sample healthy leaves that are well exposed to light.

Sample collection method for berries: (1) Leaves should represent the average condition of the planting and should not be damaged by: disease; insects; weather or mechanical injury, (2) AVOID mixing leaves from different cultivars, (3) DO NOT mix leaves from plants of different ages, (4) a minimum of 50 grams (~ 2 oz) fresh weight from a minimum of 30 leaves are needed per sample, (4) if possible, each leaf should be taken from a different plant within the sampled area, and (5) process for analysis as soon as possible.

Preparing berry leaves for analysis: (1) Use distilled water for washing and rinsing the samples, (2) gently and lightly scrub the leaves together in distilled water, (3) change the water if it becomes dirty or after 8 to 10 samples (whichever occurs first), (4) shake to remove excess water and immediately rinse the sample in clean distilled water, (5) rinse again and shake, (6) transfer sample to paper bag, with top open and dry at room temperature until the leaves are brittle, (7) do not let leaves to stand in water – complete the washing and rinsing process in one minute or less.

### **Subscribe to Harvest Maturity Reports Now!**

C. Kahlke

Now is the time to renew your subscriptions to the Harvest Maturity Reports if you have not done so. Your \$60 subscription (if in the Lake Ontario Fruit Program counties of Niagara, Monroe, Orleans, Oswego and Wayne) gets you critical information on a weekly basis during apple and pear harvest. Fruit samples are collected early in the week from across the

region and sampled for internal ethylene concentration, firmness, starch/iodine, and total soluble solids. Results are summarized and recommendations for harvest windows of major apple and pear varieties are either faxed or emailed to subscribers late in the week. Satellite subscribers outside of the four county regions can receive reports as well, for \$100.

**Lake Ontario Fruit Program  
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- Harvest Maturity Fax Subscription Form

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Please print and submit this form with a check for \$60, (\$100 for those who live and farm outside of Monroe, Niagara, Orleans, Oswego and Wayne counties) made payable to "Cornell Cooperative Extension"

And mail to: Orleans County CCE  
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