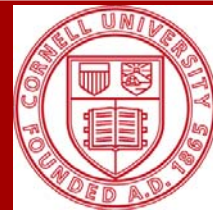




# FRUIT NOTES

## Lake Ontario Fruit Program



Volume 13 Issue 7

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.

April 17, 2013

### Weed Control in New Plantings

D. Breth

After 2 growing seasons observing weed control results and tree growth in many treatments in newly planted orchards, we have been able to draw some conclusions about what the best herbicide is in high density plantings. Your answer will depend on your expectations:

- 1. Some growers will tolerate more weeds than others?** I work with a 20% weed cover treatment threshold but also take into consideration that small weeds like lambsquarters, ragweed, and horseweed rosettes will grow quickly and be harder to control if the stems get a chance to harden off. The current recommendation is to have a weed-free herbicide strip at least during the critical months of May through July.
- 2. Some growers judge herbicide results by the number of applications required for the season.** Some growers want to be on a 3 to 4 week schedule of post-emergent control; some are willing to wait for weeds and respond when needed but expect fewer applications per season.

Pre-plant site preparation is critical for any new fruit tree planting. Survey the field the year before for any weed species, especially biennials and perennials since they are the most difficult to control and have a life cycle very similar to your intended crop. Preparing a field right with a glyphosate or glyphosate plus 2,4-D treatment the early fall before planting will help control many of the perennials and biennials; these foliar applied herbicides will be translocated down to the roots to do a better job of killing these problem weeds. We learned in the 2012 EXPO from Dr. Brad Majek, Rutgers Univ., that if Canada thistle is a problem in the field, depending on the crop planted or fallow, this weed must be controlled starting 2 years before planting with a combination of glyphosate plus Banvel or Stinger in a fallow field or in Roundup-ready corn starting in spring when the shoots first appear in the spring; and need to be followed up on a 60-75 day interval with as many as 3 applications per year. Of course, there are label restrictions for amount allowed per acre per year. In any case, perennial weeds need to be identified and a plan of attack started ideally 2 years before planting.

After planting, because the soil is freshly disturbed and a new crop of weed seeds from the "seed bank" is brought closer to the soil surface with tillage, it is important to apply a pre-emergent herbicide labeled for use in new apple trees. Wait until after a settling rain after planting so the herbicide cannot get washed into direct contact with the fine tree roots. These options include: pendamethalin (Prowl H2O), oryzalin (Surflan), oxyfluorfen (Goal, GoalTender, Galigan), flumioxazin (Chateau) and terbacil (Sinbar). These materials in combination will broaden the spectrum of weed species controlled and the duration of residual control.

Prowl or Surflan alone would only provide about 30 days of control before post-emergent follow-up was needed. If you tank mix Chateau with Prowl or Surflan until pink bud in apples, or bud break in stone fruit, it would extend control to about 6 weeks. If you start with a program of Prowl or Surflan in combination with GoalTender, it must be applied by bud swell in a concentrated window of application but my trials showed it would last approximately 2 months before any follow-up treatment was needed. Sinbar used at the ½ lb/acre rate lasted over a range of 1 to 2 months. Irrigation will reduce the residual of most herbicides.



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With the exception of oxyfluorfen and Chateau, most residual herbicides require 0.5 to 1 inch of rainfall or irrigation to activate them in the seed soil germination zone (top 2 inches). This rainfall is necessary within 24 hours of application for older herbicides that photo-degrade such as napropamide and some within 2-4 weeks. But most residual labels require incorporation by rainfall **before weed seeds germinate**. This is listed on specific labels and if not incorporated, the weed seeds will be free to germinate after the application and will not be impacted by the post-emergent herbicide in mix at the time of application.

The most effective post-emergent control is achieved when weed seedlings are very small (2-6 inches tall), actively growing, and not water stressed. Sunny days to follow will speed up the burn-down effect. So watch the weather forecast, look for rainfall in the forecast within a couple days after application (to incorporate residual herbicides) and sunny weather for a few days following application for burn-down herbicides. Life is a compromise.

The establishment costs of new high-density apple orchards at 1000-2000 trees per acre are estimated at \$10,000 per acre. Growers plant these orchards on precocious rootstocks so they can harvest a crop as early as 2nd to 3rd leaf. The better the tree growth in the early years, the better the potential yields. But if these orchards have to compete with annual, biennial, and perennial broadleaf weeds, and annual and perennial grasses, for water and nutrients, tree growth is significantly reduced. What is the cost of that reduced tree growth to the grower?

Growers need to be aware of the potential economic impact weeds have on young tree growth. Treatments, rates, number of post-emergent applications (includes the first applied with the residual herbicide) and cost of herbicides per acre of

apples covering 25% of the acreage are listed in Table 1. These herbicides must be rotated by mode of action and weed spectrum for following years. See next week's newsletter or go to our website: <http://www.fruit.cornell.edu/lof/> under featured resources.

In a recent project funded by NESARE Partnership Grant for 2 seasons, we can show a significant difference in crop load potential and recuperation of investment in the 2<sup>nd</sup> and 3<sup>rd</sup> leaf. The first year in a new planting (1584 trees/acre), the potential crop load based on trunk cross-sectional area (cm<sup>2</sup>) for the 2<sup>nd</sup> leaf in the untreated weedy checks was \$900 per acre, compared to \$1700 in the best treatment (based on tree growth) of Prowl plus glyphosate; the second year growth allowed for 3<sup>rd</sup> leaf production of \$1900 in the weedy checks vs. \$3800 in the best treatment of Prowl plus glyphosate. In the 2<sup>nd</sup> leaf established planting with lower tree density (890 trees/acre), there was a potential crop load value in the 3<sup>rd</sup> leaf of \$900 in the weedy checks vs. \$1650 in the best treatment in these plots of Prowl plus paraquat or glyphosate or Alion; for the 4<sup>th</sup> leaf, \$1530 in the weedy checks vs. \$2200-2880 in the best treatments.

#### Final considerations for weed management in new plantings –

- 1) There is a lot more light exposure in new tree plantings allowing more weed seed germination.
- 2) Irrigation is not always an even distribution of water in the herbicide strip so variable herbicide incorporation can lead to variable results.
- 3) Irrigation in young plantings will increase the need for follow up post-emergence herbicide treatments, more than non-irrigated plantings.
- 4) Be particularly cautious in application so you are not spraying using a flood nozzle across the row to cover the entire width of the herbicide strip when using herbicides that can cause trunk damage

especially in green bark. Modify your sprayer to use an even flat fan nozzle with a shield to prevent drift to just treat one side of herbicide strip at a time, but you can set it up with 2 booms to spray one side of 2 rows at a time. The Chateau label still requires nonporous trunk guards or paint in trees established less than 1 year.

- 5) Check all labels for adjuvants required, rate limitations per acre per application and per season, pre-harvest intervals, weed species that are controlled and at what growth stage, and rate adjustments for tree age and soil type.

Table 1: Treatment and rates to maintain <20% weed cover	\$/apple acre
Surflan (4 qts/a) + 4 Paraquat (P)	\$ 15.20
Prowl H2O (4 qts/a) +4P	\$ 13.33
Surflan (3 qts/a) + Chateau (12 oz/a) + 3P	\$ 26.03
Prowl H2O (4 qts/a) + Chateau (12 oz/a) + 3P	\$ 26.65
Surflan (3 qts/a) + GoalTender (3 pt/a) + 3P	\$ 23.21
Prowl H2O (4 qts/a) + Goaltender (3 pt/a) + 3P	\$ 23.83
Matrix (4 oz/a) + 2P	\$ 15.70
Surflan (3 qts/a) + Matrix (4 oz/a) + 2P	\$ 23.16
Surflan (3 qts/a) + Matrix (4 oz/a) + GoalTender (3 pt/a) + 2P	\$ 33.66
Sinbar (8 oz/a) + 4P	\$ 11.98
Diuron 4L (1.6 pt/a) + simazine 4L (1 qt/a) + 3P	\$ 7.40
Prowl H2O (4 qts/a) + 3 glyphosate	\$ 14.46
Prowl H2O (4 qts/a) + Chateau (12 oz/a) + 3 glyphosate	\$ 27.77
Alion + 2P	\$ 29.37

## Special Registrations

A. Agnello

### Thionex (endosulfan)

Mike Helms from PMEP has informed us that our application for a NYS 2(ee) registration of Thionex for use against the unlabeled pest, Brown Marmorated Stink Bug, in apple has been approved by the NYS Dept. of Environmental Conservation. This registration pertains to both Thionex 3EC (EPA Reg. No. 66222-63) and Thionex 50W (EPA Reg. No. 66222-62). Users must have a copy of the appropriate 2(ee) recommendation in their possession at the time of use. Copies of the above 2(ee) recommendations are posted to the "NYS 2(ee) Recommendations and Categories" section of the PMEP website: [http://pmez.cce.cornell.edu/regulation/2ee/unlabeled\\_pest/fruits/apples/insecticides/index.html](http://pmez.cce.cornell.edu/regulation/2ee/unlabeled_pest/fruits/apples/insecticides/index.html). The recommendation should also be

available on PIMS

(<http://pims.psur.cornell.edu>) shortly. When using a 2(ee) recommendation, remember to follow any applicable directions, restrictions, and precautions on the primary product label.

### Guthion (azinphosmethyl)

The supplemental label allowing the use of Guthion 50W Solupak (EPA Reg. No. 66222-162) on apples, crabapples, blueberries, cherries and pears until September 30, 2013 in NYS, has been posted on the PIMS website and is now accessible at: <http://128.253.223.36/ppds/534675.pdf>. For specific crop use directions on application rates, insects controlled, remarks and additional restrictions, refer to the full product label.

## Five Ways to Promote a Healthy Soil

David Granatstein, WSU

(edited by M. Miranda Sazo)

Soil has been called the "living skin" of planet earth, an essential but fragile part of the biosphere. As such, it responds *negatively* to abuse and neglect, and *positively* to care.

Attention to soil health (or soil quality) has waxed and waned over the years, but it is on the upswing now. The U.S. Department of Agriculture's Natural Resources Conservation Service is launching a new Soil Health Initiative that focuses on the following principles for improving soil health: (1) minimize soil disturbance, (2) keep the soil covered as much as possible, (3) diversify with crop rotation and cover crops, (4) try to provide living roots in the soil for as much of the year as possible. For additional information on the NRCS Soil Health Initiative, go to [www.nrcs.usda.gov/wps/portal/nrcs/main/national/soils/health/](http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/soils/health/)

**Make Your Soil a Happy Home for Roots.** Before planting is the time to attend to a number of potential soil quality issues, which can be physical, chemical, or biological in nature. These include: (1) treating for replant disease and nematodes, (2) dealing with major nutrient problems (such as phosphorous or calcium), (3) adjusting pH (orchards can get pH zonation from higher applications of acidifying nitrogen fertilizers to the tree row versus the alley, or elevated pH from poor quality irrigation water), (4) increasing organic matter through soil amendments or a cover crop prior

to planting, (5) improving drainage, and (6) alleviating compaction.

**Minimize Disturbance.** This primarily refers to tillage or cultivation. With perennial crops like tree fruit, there is obvious disturbance at planting. After that, the soil can go undisturbed for many years, allowing structure to form, food webs to establish, and soil function to improve in general. The main disturbance we might use would be a tillage operation for weed control in the tree row. Keeping any tillage shallow and infrequent is good for the soil and for the surface feeder roots of trees.

**Keep the Soil Covered as Much as Possible.** This principle is based on the goals of minimizing soil erosion and maintaining surface water infiltration. Past research has demonstrated that trees do respond to mulching. Practices like mow and blow of alley vegetation onto the tree row, and sweeping flailed prunings onto the tree row can provide a thin mulch layer that may provide a large portion of the mulch benefit at a fraction of the cost of hauling in material.

**Try to Provide Living Roots in the Soil for as Much of the Year as Possible.** Tree root systems, especially those of apples on dwarfing rootstocks, are not very dense and don't explore much of the soil volume in the tree row. The soil biota rely on exudates (leakage

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of carbon-based compounds) from roots for a good portion of their food supply. Can we grow other plants with our trees that will benefit the soil, and benefit the orchard? I have tried this with living mulches in the tree row, with mixed results. Competition needs to be controlled at key times, and this is more feasible with established orchards. You also need to consider habitat for rodents as a possible undesirable effect. But the idea has a lot potential and many opportunities for trying new species, mixtures, and management. Experience being gained with multispecies mixes (cover crop “cocktails”) is

showing promising results that can’t always be explained.

**Carefully Manage Your Irrigation Water.** Water can be a significant source of various minerals that may have beneficial or detrimental effects on soil. Most of our surface water is high quality, while groundwater tends to be more problematic. In addition, irrigation water management is involved in preventing unwanted loss of nutrients below the root zone or cold soil conditions at times when you want the soil biota to increase function. Good water management can also prevent waterlogging and creation of anaerobic conditions in soil leading to disease, denitrification, and other problems.

### **Precision Nutrient, Weed Management and GPS Planting Meeting**

This is a field meeting with multiple activities with Cornell faculties Terence Robinson and Lailiang Cheng for all WNY fruit growers and consultants on **Tuesday April 23, 3-5pm** at **Lamont Fruit Farm**, 12703 Stillwater Rd., Waterport, Orleans County, follow the Cornell event signs. Come to see and learn: (1) how guided soil sampling is conducted in a Super Spindle apple orchard, (2) how the soil data is then used to create a management zone map, and (3) how soil

sampling sites can be placed according to soil variability. There will be also a GPS planting unit to understand the pros and cons of more precise planting technologies when establishing a new apple orchard. If you are interested in observing weed control results in small plots using various fall herbicide treatments last season, Debbie Breth will be happy to walk you through the plots and help with weed identification.