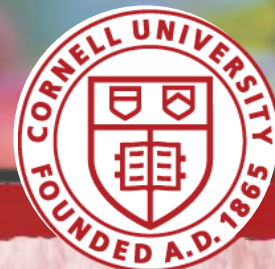


Tree Fruit News



After Top-Working: Managing the New Grafts

Dr. James Schupp, Professor of Pomology, PSU

Top-working is the name for grafting established trees to another variety. The existing tree, the "stock", is cut back, leaving just one or two limbs (nurse limbs) to supply the tree with energy.

Short sticks of 1-year-old wood of the new variety (the scions) are inserted (grafted) into the cut surface. Once the tissues of stock and scion make new connections, the scions begin to grow into a new tree. One of the first questions to address is how many scions to leave? The typical case is that two scions were grafted, and often both of these grow. If only one scion takes, then train it as a tall spindle/vertical axe/ central leader tree. If both scions grew, then there are some options:

1. Select the biggest and trim down to one. However, this isn't necessary, and it slows healing of the grafting wound. The wound where the stock tree was cut off will cover over from the base of the scion. If there are two, the wound heals from both sides and covers over twice as fast.
2. You can leave both scions and bend the smaller of the two down across the center of the trunk to a horizontal angle. This essentially makes that scion into a scaffold limb. This works okay, but you should wait until the end of the first season to do this, as the strain of bending can cause the graft to break. This is a good way to manage more vigorous trees at moderate spacing. Always bend over the center of the trunk. Don't pull the scion away from the trunk as it is easily broken when pulled away.
3. The best way to train top-worked scions for high-density plantings with trellis is to leave both scions to grow as a bi-axis (two leader) tree. After the first growing season, crisscross them by bending them over the middle of the trunk, and allow the two scions to form an in-line V-shaped canopy. Two leaders will help to make a calm tree with a smaller, narrower canopy. Minimal pruning promotes earlier production. Top-worked trees re-establish very quickly, and it is often possible to get a partial crop in the second or third year.

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The graft union is very brittle when the trees first start to grow. Provide support when the trees are still very small. Attach bamboo stakes/ vertical wire and tie the biggest shoot of each scion to this support structure. Initially, this will help prevent birds from landing on the tops and breaking them off. As the scions grow very rapidly, they will establish a large leaf area while the graft union is still very brittle. Without support, these can break in the high wind. After the biggest shoot is safely secured, rub off competing buds on each scion. Only one shoot per scion is needed to create the two leaders.

What if the buds were floral? There will still be a vegetative shoot that will come out beneath the flowers. These buds will lag behind at first, but they will grow to make a perfectly acceptable leader, and you probably won't be able to tell them apart in a couple years. Use caution if you feel the need to pick off the flowers, as the graft is brittle and subject to breakage if you yank on them too much. Protect any open blossoms against fire blight.

Prune out/ rub off any suckers that sprout from the trunk or the base of the nurse limb. Keep the scions open and exposed to full sunlight and spray coverage. If the scion(s) grow successfully, the nurse limbs should be removed after the first growing season.

First season pest management is similar to other vigorous non-bearing trees. Careful monitoring for fire blight is warranted, with the possibility of late opening bloom from the scion buds, and the overall vigorous

growth. Monitor for, and control potato leafhopper (PLH). PLH seems to seek the tender foliage from top-worked trees, and too many of them causes chlorotic/ necrotic leaf margins (hopper burn) and stunted growth.

Top-worked trees grow rapidly, and there normally is no need for supplemental fertilizer. Provide supplemental irrigation to prevent water stress. This will keep the tree growing, so that the trees will fill their space by the 3rd or 4th leaf (Figure 3). Tree training is minimal. Top-worked scions grow extremely fast, and usually the lateral buds will break and form new side branches on the current season's growth. Side branches formed this way have naturally wide branch angles, so limb bending isn't needed. Keep the terminal growth attached to your vertical support structure, and re-tie these every 2-3 weeks, as needed.

Starting in the second season, the vigor and dominance of the terminal growth can be managed by adjusting its angle. More vertical terminals will grow taller and have smaller side branches. Terminals that are bent to 30-35 degrees from vertical will be somewhat shorter and will have some stronger side branches. An angle of about 25 degrees from vertical often provides a good balance of vigor, and is wide enough to allow adequate space for both leaders. After the second year, the leaders are permitted to grow vertically.

This article was written and reprinted with permission by Dr. Jim Schupp of Penn State University. Access the original version [here](#).

Precision Irrigation: Where to Start

Mike Basedow, CCE ENYCHP

As we enter the warm summer months, you might consider trialing the precision irrigation model on your farm to improve tree growth in your new plantings and maximize fruit size in your mature blocks.

Irrigation can be helpful in maximizing tree growth in the first few years of orchard establishment (Dominguez and Robinson, 2015). This is particularly important for trees planted with multiple large feathers in tall spindle plantings, as well-branched trees will have a disproportionally large leaf area that may not be adequately supplied with water by the trees' damaged roots. Drip irrigation insures the leaders can continue to grow to their full potential, leading to higher yields within the first five years of establishment.

Irrigation can also increase fruit size in mature plantings

(Lordan et al, 2016). While fruit thinning is one area where growers can affect fruit size, providing sufficient water is also critical. Water stress, even temporarily, reduces the fruit growth rate. Once the growth rate slows, this loss in size may be difficult to overcome, even when soil moisture levels return to normal during subsequent rain events.

The amount of water apple trees need on any given day heavily depends on a number of weather variables. These include the temperature, how windy and sunny it is, and the amount of rainfall the site has recently received. These factors are constantly monitored by NEWA stations, and are summarized under the Precision Irrigation Management tool, available at <http://newa.cornell.edu> under the "Crop Management" tab. To use the tool, select your farm's weather station (or whichever NEWA station you use for your weather data) from the menu on the left

hand side of the screen. Then, enter your green tip date, the tree spacing, and the age of the block you would like to irrigate.

This will then bring up a table, showing the current day in green, the previous week in blue, and the following predicted week in tan. From here, you will have the option to adjust the numbers under the rainfall and irrigation columns. The rainfall column is prepopulated with NEWA data, but you can change it if you know your site received an amount differing from what NEWA recorded. You can also adjust the irrigation by gallons per acre (GPA). Using this column and the one on the far right, the Cumulative Water Balance column, is how you can determine how much water you need to irrigate your blocks. Looking at the Cumulative Water Balance Column, a positive number or a "0" indicates the field is at capacity. We generally begin applying irrigation when the field is at 80% water holding capacity, which for clay loam soils often begins at about -20,000 gallons per acre.

The other number you will want to determine is your application rate to know how many hours it will take for your system to put out a given GPA.

To determine this, you will need to know your emitters' flow rate in gallons per hour, and the number of emitters you have per acre.

Multiplying the number of emitters per acre by the flow rate will give you your application rate, which will be in gallons per hour per acre. So, if you want to apply 5000 GPA, and your application rate is 622 Gallons per hour per acre, you can divide 5000 by 622, and determine you will need to irrigate for eight hours.

There are a few additional recommendations for practicing precision irrigation. During the early season, apply the necessary irrigation once per week. Then in mid-June switch to two applications per week in clay or loamy soils, and every other day in sandy soils. When large rain events are predicted, do not irrigate the day before or three days after the rain event, as the upper

layer of soil is likely to still be saturated.

So, if you would like to manage fruit size more precisely and maximize your tree growth in your new plantings, consider trialing the model on some of your irrigated blocks this season.

Sources

Dominguez, L.I. and T. Robinson. 2015. Strategies to improve early growth and yield of tall spindle apple plantings. NYFQ. 23 (2):5-10.

Lordan, J., T. Robinson, P. Francescatto, G. Reig, A. Wallis, and A. Lakso. 2016. Precision management: How and why we should irrigate. NYFQ. 24(1):15-19.

Cornell Apple ET Model

Change green tip date or tree density and click "Calculate" to recalculate results. Changing "Age of Orchard" will automatically recalculate table.

Green tip date	In row spacing	Between row spacing	Trees per acre	Age of orchard	Water balance
4/26/2018	3 feet	14 feet	1037	Mature ▾	Calculate

Apple Evapotranspiration Model Results

Date	Orchard ET (gallons)		Rainfall		Irrigation	Water Balance (gallons/acre)	
	per tree	per acre	inches	gallons/acre	gallons/acre	Daily	Cumulative
Jun 12	3.2	3328	0.00	0	0	-3328	-3328
Jun 13	1.9	1981	0.06	1140	0	-841	-4169
Jun 14	0.7	775	0.07	1331	0	556	-3613
Jun 15	2.8	2879	0.20	3802	0	922	-2691
Jun 16	3.9	4019	0.00	0	0	-4019	-6710
Jun 17	3.5	3677	0.00	0	0	-3677	-10386
Jun 18	1.7	1719	0.43	8173	0	6455	-3932
Jun 19	2.7	2827	0.00	0	0	-2827	-6759
Jun 20	3.4	3569	0.00	0	0	-3569	-10328
Jun 21	2.5	2604	0.00	0	0	-2604	-12932
Jun 22	3.5	3630	-	-	0	-3630	-16562
Jun 23	2.7	2827	-	-	0	-2827	-19389
Jun 24	1.5	1553	-	-	0	-1553	-20943
Jun 25	2.5	2551	-	-	5000	2449	-18493

You can enter your own rainfall or irrigation amounts and click the "Calculate" button which will appear above to recalculate the water balance.

INVASIVE SPECIES & EXOTIC PESTS

European Cherry Fruit Fly

Rhagoletis cerasi

Juliet Carroll and Taylere Herrmann, New York State Integrated Pest Management Program, Cornell University

Introduction

An insect pest native to Europe and parts of Asia, European cherry fruit fly can infest *Prunus spp.* such as sweet cherry, tart cherry, all saints cherry, mahaleb cherry, and black cherry. This insect can also infest fruit of honeysuckle (*Lonicera spp.*), including those of invasive honeysuckles (*L. tartarica* and *L. morrowii*). Concern has been raised about the devastation European cherry fruit fly could cause to cherry crops in the United States as it was found in association with honeysuckle in Ontario, Canada in 2016. In 2017, European cherry fruit fly adults were found in Niagara County, New York on traps set along the Niagara River in wild cherry and honeysuckle.

Concern

A serious problem in Europe, European cherry fruit fly has the potential to infest 100% of sweet and tart cherry crops causing cherries to be unmarketable. With a value of about \$767 million for sweet cherries, and \$106 million for tart cherries in the U.S., infestation could cause large economic losses for growers. Two other Tephritid fruit flies are native to North America that can infest cherries – black cherry fruit fly (*R. fausta*) and cherry fruit fly (*R. cingulata*). Introduction of another species could disrupt existing IPM programs in cherries, making control more difficult, or, if the life history of this newly introduced cherry fruit fly is similar to the other two, it may readily be controlled along with the others.



Female European cherry fruit fly on cherry. Photo: R. Coutin /OPIE



Adult European CFF female (left) and male (right). Photo: C. Daniel and J. Grunder. Ncbi.nlm.nih.gov



Cornell Cooperative Extension



**Agriculture
and Markets**

Description

Female European cherry fruit flies are typically 3/16 inch (5 mm) in length and males are 1/8 inch (4 mm) in length. Flies have a tan head and a black body with a distinctive yellow spot on the thorax. The wings are clear with four large distinct blue-black bands and one small band. Larvae are white in color and are about 1/4 inch (6 mm) in length. Overwintering in the soil, pupae are light yellow-brown and approximately 1/8 inch (3-4 mm) long. Adult European cherry fruit flies are often observed on sunlit portions of cherry trees or honeysuckle bushes because females prefer to lay eggs in fruit bathed in sunlight.

Damage

Cherries in which an egg has been laid will exhibit a puncture wound and as the larva develops in the fruit, the tissue around the wound will become brown and soft. When cutting or breaking open suspect fruit, the larvae and internal fruit damage can be seen easily. Typically, only one egg-laying or oviposition site is found per cherry, although it is possible to have more. Infested cherries may shrivel, display soft spots, and rot. Infested fruit may also have small holes formed when larvae exit fruit to drop to the ground to pupate. Growers cannot sell infested cherries for fresh or processed fruit and must dump them or sell to distilleries at a financial loss.

For More Information

European cherry fruit fly. 2010. Michigan State University's invasive species factsheets. http://www.ipm.msu.edu/uploads/files/forecasting_invasion_risks/europeancherryfruitfly.pdf

Rhagoletis cerasi (European Cherry Fruit Fly) - Fact Sheet. 2017. Canadian Food Inspection Agency. <http://www.inspection.gc.ca/plants/plant-pests-invasive-species/insects/european-cherry-fruit-fly/fact-sheet/eng/1467913088353/1467914654510>

European Cherry Fruit Fly (*Rhagoletis cerasi*). 2011. Stone Fruit Commodity-Based Pest Survey. USDA APHIS. <https://caps.ceris.purdue.edu/dmm/1276>



Damage on cherries from an oviposition site. Photo: R. Coutin /OPIE



Damage to cherries caused by larvae. Photo: C. Daniel and J. Grunder. Ncbi.nlm.nih.gov



Pupae in the soil. Photo: C. Daniel and J. Grunder. Ncbi.nlm.nih.gov

20 Minute Ag Manager Webinars:

All webinars run from 12:00 until 12:30.

To register, go to <https://tinyurl.com/y9gfqbmX>. Registering once gives you access to the series.

July: Managerial Accounting

- July 3—Budgeting 101
- July 10—Assessing a Capitol Investment
- July 17—Relevant Information and Sensitivity Analysis
- July 24—Pricing for Profit
- July 31—Know When to Hold'em, Know When to Fold'em (assessing performance)



[Previous 20 Minute Ag. Manager sessions are now available on our ENYCHP YouTube—Learn the highlights in just 5 minutes!](#)

Upcoming Events

Champlain Listeria Workshop July 24th

The Champlain Valley Listeria Workshop has been scheduled for July 24th from 8:30 to 4:30 at the American Legion Hall at 9509 Route 9, Chazy, NY from 8:30 to 4:30 (full agenda to follow). [Register HERE](#)

Champlain Valley Pesticide Applicator Pre-Exam Training

July 25 and 26, 2018

CCE Office

6064 Rte 22 # 5, Plattsburgh, NY

1-5:00 pm each day

CCE ENYCHP Horticulture Specialists will be offering a training to review core concepts and commodity specific items in preparation for the exam.

- **PRE-REGISTRATION is REQUIRED by Friday July 13th. Space is limited!**
Workshop cost is: \$25.00
(Plus additional costs for manuals and exam)
- The exam itself will be offered by DEC in Plattsburgh on:
Thursday, August 2nd, 9am-1pm at the same location
(Please arrive at least 15 minutes prior to the exam start time)
- **THE CERTIFICATION EXAM** will be administered by NYS DEC to qualified applicants.
- **Potential test takers MUST verify their eligibility with the DEC and register for the exam with the DEC prior to taking this class.**
- Fee for the exam is \$100 payable to DEC the day of the exam.
- **Pre-Exam Training Registration:**
Email or call Mike (mrb254@cornell.edu 518-410-6823) with the names of the employees that would like to attend by **July 13th**. We will then send over instructions for how they can pay and sign up to take the exam.
- **Manuals:**
DEC requires each person taking the exam to provide their own copies of the Category manual they are being tested in (Category 22 for fruit) on the day of the exam. **Students need to bring both the core and category manuals to the pre-exam training.**
They can be purchased online through the Cornell Store by visiting this link:
<https://store.cornell.edu/c-873-cornell-coop-ext.aspx>

Students should also be familiar with the WPS How to Comply Manual, available here:
<https://www.epa.gov/pesticide-worker-safety/pesticide-worker-protection-standard-how-comply-manual>

This CCE training is not a substitute for the 30-hour training class for those without experience. CCE supplemental training is available only to those who already meet the education and/or experience requirements and are therefore qualified to sit for the Private Applicators Certification Exam. All participants must have experience working on their own farm, or through employment on another farm. Any questions on exam eligibility will be answered by your regional DEC representative (Brian Primeau (518) 623-1267 bprimea@gw.dec.state.ny.us for Region 5)

Please call or email Mike with any questions. mrb533@cornell.edu 518-410-6823

TREE FRUIT NEWS

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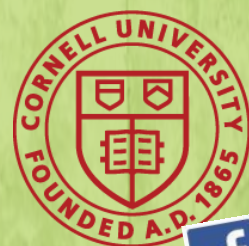
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