



“Fruit Facts” – Saturday, June 3rd, 2023
Mario Miranda Sazo, Janet van Zoeren and Anya Osatuke

Register Your Spanish- and English-speaking orchard employees for the Bilingual IPM WNY Fruit School

When: Thursday June 14 from 8:30 a.m.- 3:30 PM (attendance is free, lunch included thanks to a generous support provided by Farm Credit East)

Place: Bible Baptist Church of Sodus, Wayne County
6181 Ridge Rd., Sodus, NY 14551

Register your employees by Friday June 9

Registration: <https://cals.cornell.edu/new-york-state-integrated-pest-management/outreach-education/events/escuela-bilingue-de-mip-en-frutas>

This event in Spanish and English brings the farming community together to learn more about pests and diseases in apple orchards, pesticide safety, soil health, and leadership.

- This is also an opportunity to meet other farm employees, share ideas and experiences, and connect with agricultural service providers!
- Join the NYS Integrated Pest Management, Cornell Small Farms Program, CCE Lake Ontario Fruit Program and New York Soil health program for a Spanish/English IPM Field day!
- If you require more information or special accommodations or if you need to register more than one person please send an email to Diana Obregon in English or Spanish: do265@cornell.edu

This morning we are also announcing the 2023 Virtual Orchard Meetup Summer Series titled ‘Managing the Uncontrollable’:

Over the past decade growers have been forced to confront wildly vacillating winter temperatures, uneven and often excessively heavy precipitation events, and extreme temperatures coupled with extended droughts.

When: Thursday June 15 (first meetup will cover **cold stress**; invited specialists and growers will be announced next Tuesday June 6)

Time: 7:00-8:30pm EST

How to attend: Meeting via Zoom, preregistration is not required to attend. Simply go to <https://bit.ly/2023-virtual-meetup> to join a few minutes prior to the start of each meeting.

Next meetups/same 7:00-8:30pm EST: June 29 (water stress) and July 13 (heat stress)

To Do Today

- **Second update about our precision chemical thinning studies:** For the first time we present the results of two precision thinning studies (with Gala at a Niagara site and with Honeycrisp at a Wayne site) by using the Malusim fruit growth rate model and the Einhorn fruit size distribution model (developed by Michigan State University). We are very excited about these preliminary results. We think it is fine to present the ongoing results of the two models but it is too early to try to indicate which one is more accurate. That we will have to determine at harvest. More complete information and final results will be presented at the WNY fruit conference in the winter of 2024. In the meantime,

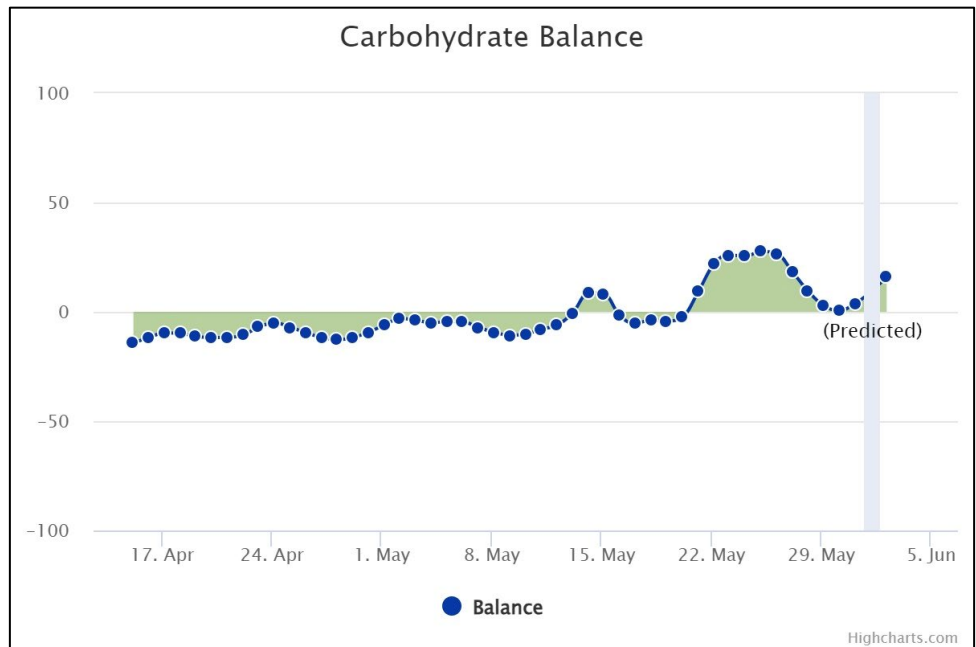
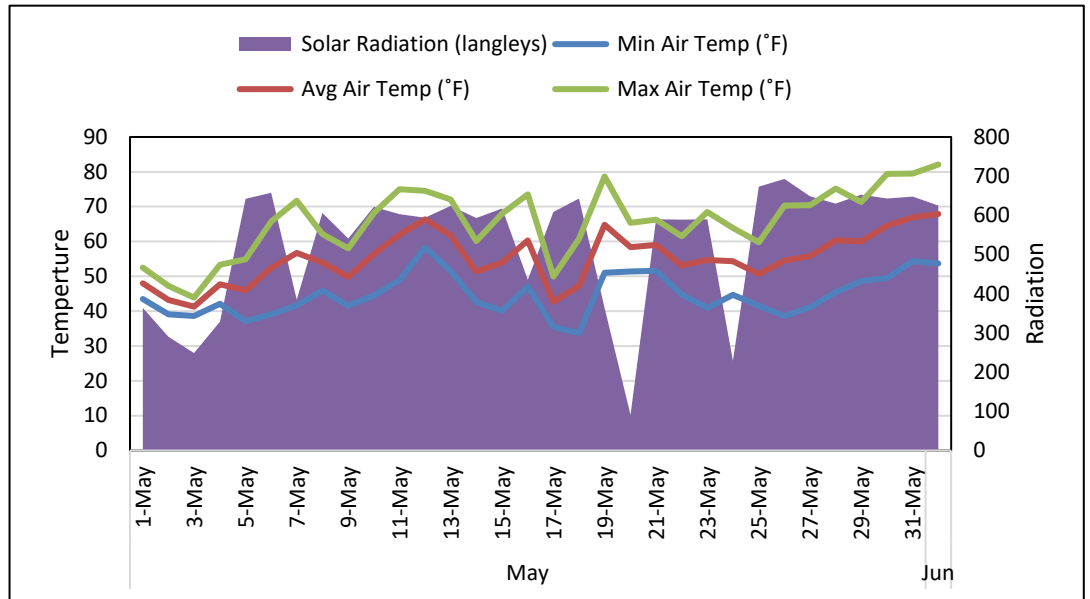
the models are not predicting the same amount of fruit that will persist in the tree at this moment. The Malusim fruit growth rate model is predicting many fewer fruits per tree than does the Einhorn FSD model. Stay tuned!

Site	Cultivar	Estimated total initial fruitlets	Target N° of fruit at harvest	Malusim Fruit Growth Rate Model		Recommendations/ notes
				Predicted N° of fruit still on tree	N° extra fruit that still needs to be removed	
Niagara	Gala	1247	108	268	168	Way too many fruit to hand thin
Wayne	Honeycrisp	676	100	Third measurement will be conducted on Monday June 5		See notes below, grower sprayed this site on Thursday June 1

Site	Cultivar	Estimated total initial fruitlets	Target N° of fruit at harvest	Einhorn Fruit Size Distribution Model		Recommendations/ notes
				Predicted N° of fruit still on tree	N° extra fruit that still needs to be removed	
Niagara	Gala	1247	108	334	226	Way too many fruit to hand thin. The grower must decide if he/she wants to hand thin off 226 fruits or spray again. We suggest to spray asap.
Wayne	Honeycrisp	676	100	266	166	Way too many fruit to hand thin. The NAA/Sevin spray that the grower put on June 1 was justified. We will start the second round of measurements next Monday.

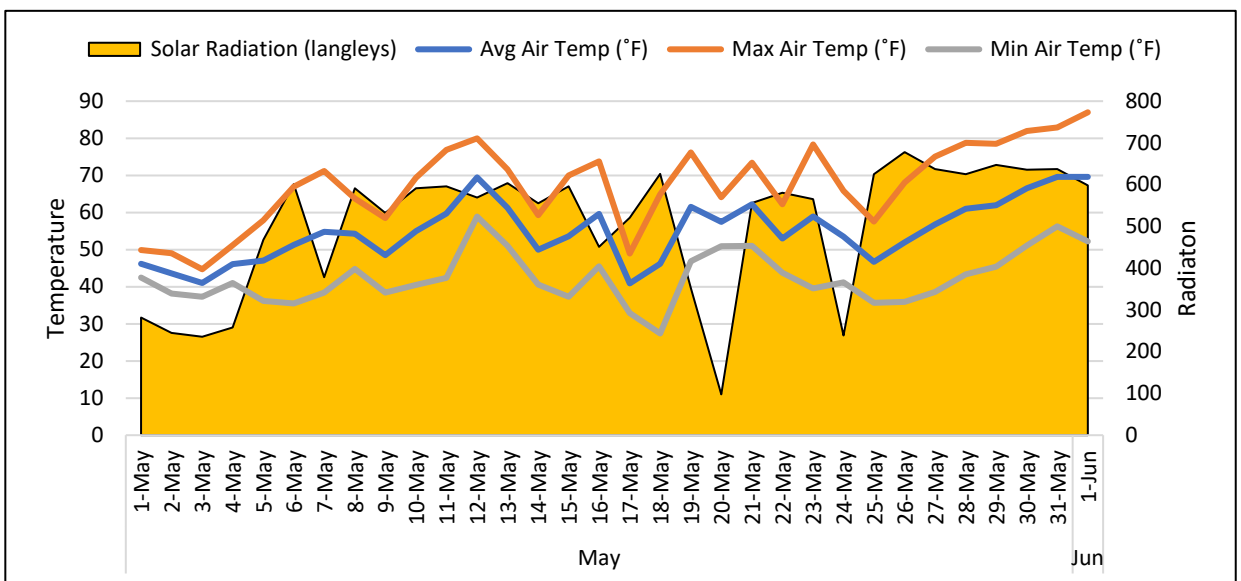
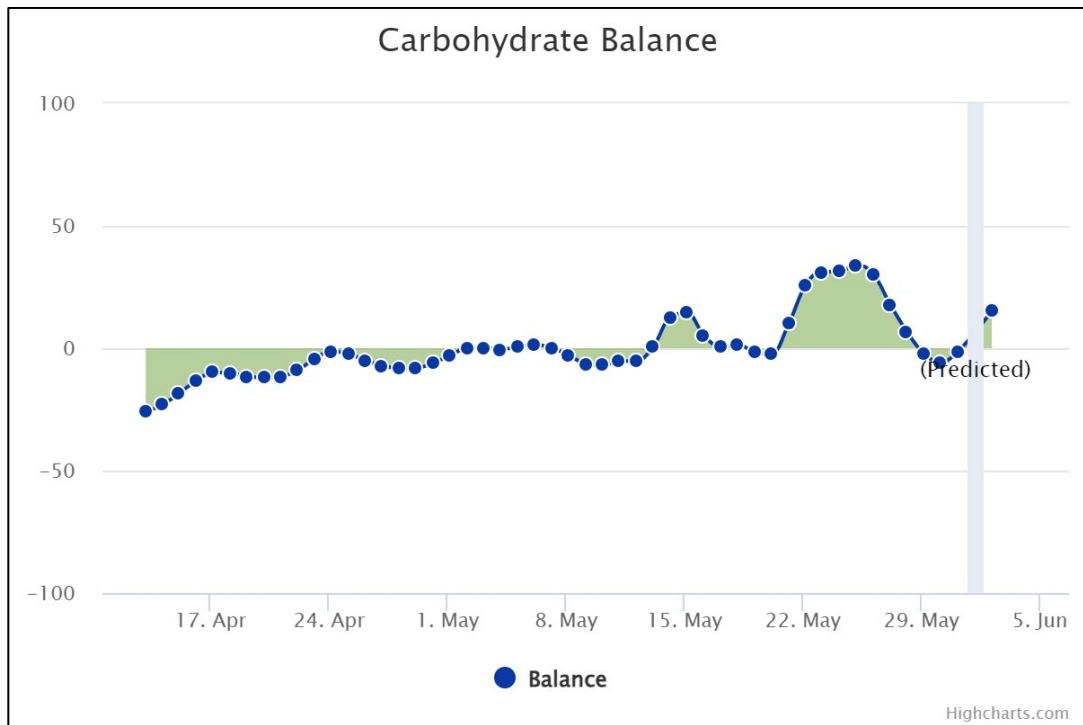
- **Trying to predict thinning efficacy in Wayne County by the end of May 2023:** On Thursday June 1, I received the following information especially prepared for the LOF *Fruit Facts* from Dr. Luis Gonzalez, a Postdoctoral Associate at Cornell AgriTech in Dr. Robinson's program. Luis is currently (1) conducting a large set of experiments, (2) developing a new model to predict fruit thinning, (3) actively analyzing data/writing several manuscripts, and (4) has recently submitted or published several papers. Despite his very busy schedule, he was gracious enough and this morning he is attempting to predict the thinning response in Wayne County (with the current ongoing cold damage situation) until the end of May 31. For his analysis, he utilized the weather conditions from two NEWA weather stations (Williamson at DeMarree and Fairville at AppleShed), and plotted the respective carbohydrate balances, solar radiation, and max/min temperatures. The following bulleted notes were extracted from his more extensive written analysis. Thank you, Luis!
 - **Williamson area (DeMarree):**
 - There was a small carbohydrate deficit during the petal fall sprays applied from May 16 and 20 in the Williamson area.
 - Best weather conditions that favored thinning (high temps and cloudy weather) were more optimal between May 16-17. These conditions should have improved the thinning efficacy.
 - Growers that applied petal fall thinners after May 17 did not experience favorable weather conditions for good thinning.
 - For the next round of thinning sprays that were applied between May 18-20, and despite that MaluSim predicted a small carbohydrate deficit for that time period, I think the thinning efficacy was low or moderate.

- There were not significant carbohydrate deficits the rest of the month at this NEWA station. However, in my previous studies, I have noticed that the most important factor for thinning efficacy is the night temperature, especially the min temps at night because the tree consumes more carbohydrates and consequently, experiences a major deficit for better thinning.
- When I analyzed the min temps after May 29, I think that the majority of the thinning sprays that were applied between May 29 and 31 will have a good thinning effect, despite that MaluSim predicted a moderate efficacy.



○ **Fairville (The Apple Shed):**

- This inland site had lower min temps than the Williamson site, and only reached 50°F by Saturday May 20.
- Inland sites that received a petal fall spray the days of May 15-18 did not experience a carbohydrate deficit and thinning response was decreased.
- There was a small carbohydrate deficit during the petal fall sprays applied from May 19 and 20, and these conditions helped to improve thinning efficacy.
- Trees had a surplus of carbohydrates from May 21 to 28 and thinning response was decreased.
- There was some carbohydrate deficit on May 29, 30, and 31, and thinner response was increased.
- I think most of the thinning sprays applied between May 29-31 will provide adequate thinning.
- If growers had a strong set, had no cold damage, and still decided to use low-medium rates instead of full rates, thinning response may not have been the most optimal without a long and substantial carbohydrate deficit in the month of May.
- Growers who thinned without a substantial carbohydrate deficit and had poor thinning may need another spray of Accede and Maxcel at the 15-16mm fruitlet stage (not later than 19-20mm).
- More chemical thinning options for the last thinning window will be sent next Tuesday June 6.



- **Have you evaluated fruit skin damage, found any weird spot in the skin of the king fruitlet, and/or started to see traditional frost rings yet?**
- **Are you happy or not with the frost protection results you got with your wind machines? Have you wondered if you are using the correct temperature settings to turn on machines to effectively prevent frost damage in the future?**
- **Are you willing to share your current crop damage situation, or just would like to know an accurate % cold damage for the NY apple crop by now?:**
 - This past Sunday May 28 we began to see first frost rings and a couple weird spots in the skin of Honeycrisp and NY-1. I had more time to visit blocks on Wednesday and noticed more pronounced damage in some of our more profitable cultivars.
 - Some growers have mentioned mixed frost protection results with their wind machines' temp settings. One grower sounded very happy with the frost protection results of machines set up at 37.5°F versus others (the majority) that got more variable frost protection results with machines set up around 34-35°F. Wind machines that were set up below 30-32°F were not effective.
 - One grower mentioned that he had better frost protection results in the north side than the south side of the machine. He also wished the machine could have been installed more to the south side of the block (instead of the middle of the block) for better frost protection.
 - Growers evaluated more damage in the east side than the west side of the hills.
 - We have not discussed very openly the current crop damage situation in WNY, perhaps it is too early? Or nobody want to say anything? I attended the NYAA phone call on damage organized by Cynthia Askins last Friday and did not get a good sense of the overall damage (%) in the state.
 - Below I partially edited and removed people names and included what I have been hearing from others about frost damage, thinning efficacy, etc.
 - **Person 1:** No comprehensive summary, Mario. Like other regions in the state, things are all over the board. Some near the lake – no damage. Others just have some damage on the bottoms of trees in low areas of the orchard. Others have extensive damage in one or more orchard blocks. Some of the fruit that survives will have frost rings and be downgraded to processing. I feel we will have a better handle after the Premier Apple Forum meeting in Syracuse in a few weeks.
 - **Person 2:** I was concerned that with the string of nice days this past weekend that the model will suggest normal or aggressive thinning. Will be interesting and scary to see how such a late frost affects set and thinning especially in orchards that have minor physical symptoms.
 - **Person 3:** After the cold temperatures last Thursday, I think we're all hearing that damage in tree fruit and other fruit is spotty. Generally worse in lower lying areas and lower in the canopy. I found a tiny bit of damage in sweet cherries in XX last Friday but not in apples or pears or peaches. People around the state are reporting variable things.
 - **Person 4:** Damage in the xx I cover has been variable town to town, block to block. Portions of XX have very little damage, while a few farms have blocks with likely 90%+ damage. Luckily Honeycrisp seems to be faring better than some of our other varieties like Macs and Cortlands, but hard to paint any broad strokes. Growers in XX and XX have told me they've seen quite a bit of damage. XX is in a similar boat. One orchard has next to no damage, while 10 miles away I'm seeing 90%+ kill in low spots. In addition to outright killed fruit, I'm guessing we're going to see quite a bit of russeted fruit, so a larger % of juice apples this year, everything else being held the same.
 - **Person 5:** In my view, it's too early to offer a meaningful loss assessment for XX. The damage varies by location and variety, and there is a gradient from north to south, with more damage in the xx. I'm anticipating a significant loss in yield, but the picture won't be clear until later this month after we see the effects of thinning applications and June drop. I think quality losses will be the more significant issue but again, time will tell, and some producers will hand-thin damaged fruits.
 - **Person 6:** It seems that the overall observation is that the damage occurred but is mixed. Some places have significant damage, other places will likely see no significant change. It seems that we had damage low on trees and in orchard locations where cold can pool, but that the ultimate damage to the overall crop is currently being documented. I think we can say that for trees where frost damage occurred on fruitlets, that some frost russet is likely, but not specify any percentage at this moment.

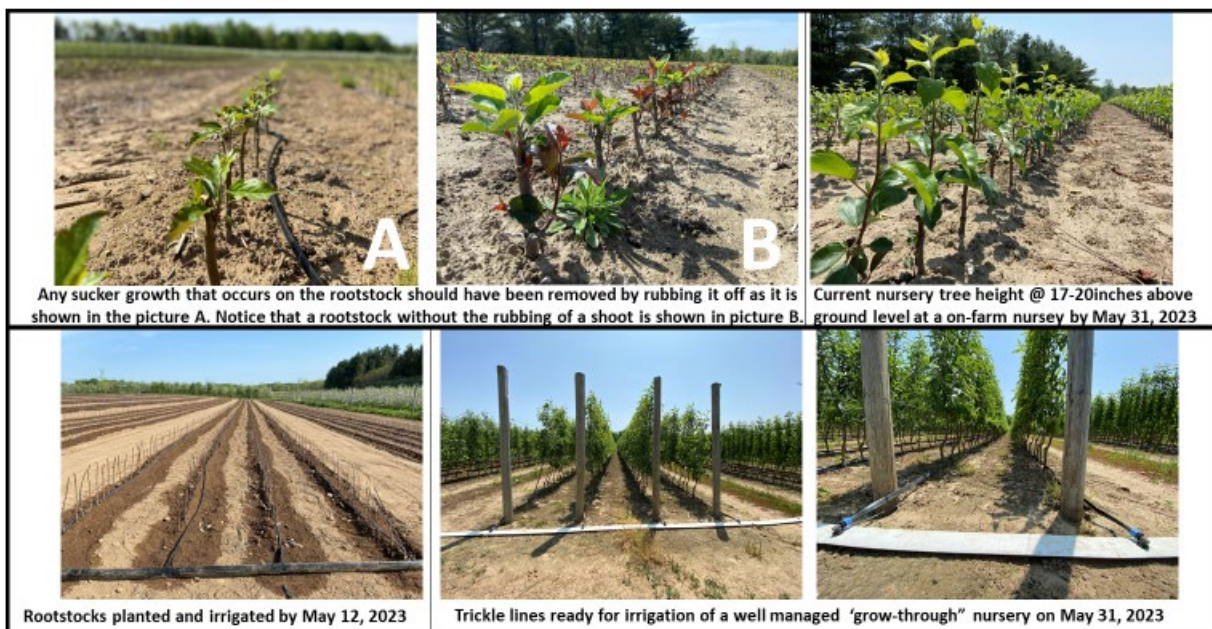
- **Person 7:** Some growers are telling me that their thinning is going ok so far. Other growers and consultants are saying that their thinning is not working, and they may need to reapply?
 - **Person 8:** Not sure about the efficacy of our chemical thinning sprays yet. We've just been thinning this week so far. It got a little hot yesterday (83F), but there's so much damaged fruit showing external rings and scarring that I decided to keep going. A lot of our fruit is still on the small side (NY-1 @11mm, Fuji@ 12mm, Pink Lady @ 13mm).
 - **Person 9:** I got just a little cosmetic damage in the block where the frost can didn't turn on. The lesson: set the temperature for turning on a couple degrees higher. We can hand thin the ugly fruit. Plenty of clean fruit has set and we have the help (chemical thinners).
- **Irrigation reminder for the orchard:** Be aware of the warm and dry weather at the end of May/early June, which can cause significant water deficits. We're in the middle of cell division and about to start cell expansion, water shortages at this point can be critic and hard to recover later on the season.

According to the apple irrigation model, a mature orchard in Western NY with about 1,156 trees/acre will have an average DAILY evapotranspiration of 3,500 gal/acre. A rainfall of 0.5 inches is ~ 9,500 gal/acre, so, unless we have some significant rain, we will have a considerable water deficit accumulated over the week. Check the NEWA apple irrigation model to be more accurate for your orchard.

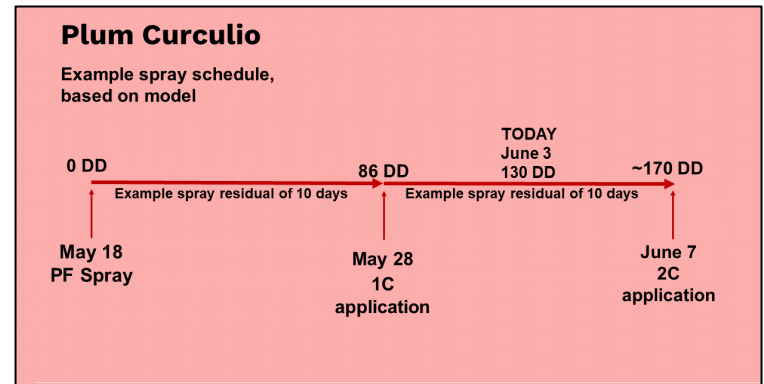
Frequency of irrigation depends on soil type: With sandy soils, water should be added either daily or every 2 days. With silt or clay soils, the daily amount of water needed can be added up for several days.

Remember, if irrigation fails, fails nutrition.

Irrigation reminder for the on-farm nursery and the rubbing of sucker growth that occurs on the rootstocks: Ideally, nursery tree height by now should be around 17-20 inches above the ground level. De-budding of the scion shoot should start happening in the next few weeks. Be ready!



- **Watch for powdery mildew.** Some locations have fairly extensive PM infection already this season. Some options for PM control include Flint extra, Inspire Super, Luna Sensation, Merivon, Miravis, Rally, and others.
- **Woolly apple aphid** is present in some orchard blocks. Woolly apple aphid season has begun. Keep an eye on known hotspots and susceptible cultivars.
- **Continue to keep strong Plum Curculio coverage in your blocks!** We're still only at ~130DD past petal fall, and need to keep coverage on until 308DDs past petal fall. All locations will need a second cover spray with strong PC efficacy. Materials effective against PC include: Exirel, Imidan and Verdepryn (also control OFM), Actara (also controls Rosy apple aphid), Assail and Avaunt.
- Spray to target **codling moth** with a larvicide late this week.



On The Horizon

Next Tuesday May 6, I will start discussing the use of return bloom sprays, root pruning for blocks without a crop, and more.

Good to Know!

There were some additional remarks suggested by Professor Lakso to the last Good to Know! about the use of MaluSim sent on Tuesday May 30:

The MaluSim model is NOT designed to simulate stresses like frost or drought damage. Growers should not use it as normal though it will still give some idea of weather-related differences in extremes of sensitivity:

- The carbon balance model is not a reliable guide here because it was constructed upon the data collected from healthy trees. Good sunny weather may indicate good carbohydrate balances, but frost injury is not taken into account in the model.
- According to Cornell Professor Emeritus Dr. Alan N. Lakso, the model assumes a healthy tree with good water relations, nutrition, and normal function, so it does not try to account for stresses like the unexpected frost recently occurred on May 18.
- Such stresses will change the carbon supply if the leaves are hurt and would affect the demand if the number of fruits are reduced.
- It still will give an idea if there are major carbon deficits related to current weather in addition to any frost problems.
- Growers have to know this so they do not depend on the model under these conditions as carbon balance may vary well not be the limiting factor (it might be due to tree damage, not due to weather).

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. Copyright 2023. All rights reserved. No part of this material may be reproduced or redistributed by any means without permission. Cornell Cooperative Extension provides equal program and employment opportunities.

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