



Healthy Fruit, Vol. 27, No. 1, April 9, 2019

Jon Clements, Author (unless otherwise noted) and Editor

Contents

- [Current degree day accumulations](#)
- [Current bud stages](#)
- [Upcoming pest events](#)
- [Upcoming meetings](#)
- [The way I see it](#)
- [New England Tree Fruit Management Guide](#)
- [Insects](#)
- [Diseases](#)
- [Horticulture](#)
- [Small Fruit Update](#)
- [Guest article](#)
- [Facebook Me](#)
- [Useful links](#)
- [Thank you sponsors...](#)

Current degree day accumulations

UMass Cold Spring Orchard, Belchertown, MA	8-April
Base 43 (NEWA, since March 1)	45
Base 50 (NEWA, since March 1)	10

Note that apple green tip should occur app. 100 DD (Base 43), although obviously there is a range. Zestar! Is at green tip+ (8-April) in Belchertown. Macs are showing a touch of green, but are not “officially” green tip yet. According to the NEWA Degree Days prediction, by April 14 we will have only reached app. 75 DD’s Base 43. So, good luck predicting green tip for McIntosh,

which is technically 50% of the buds showing green on the north side of trees. Just like last year, it looks like an April slog. Would love to hear from you where you are?

Current bud stages

Current bud stages. April 8, 2019, UMass Cold Spring Orchard, Belchertown, MA

				
McIntosh apple Silver tip	Honeycrisp apple Hint of green tip	Gold bosc pear Late dormant	Redhaven peach Early bud swell	Regina sweet Early bud swell

More 2019 bud stages [here...](#)

Upcoming pest events

Coming events	Degree days (Base 43)
Green fruitworm 1st catch	50 to 148
Pear psylla adults active	31 to 99
Pear psylla 1st oviposition	40-126
McIntosh silver tip	63-107
McIntosh green tip	98-145

Upcoming meetings

Fruit Twilight Meeting. Thursday, April 11, 2019. [C.N. Smith Farm](#), 325 South Street, East Bridgewater, MA. 5:30 PM. In collaboration with University of Rhode Island Extension. Pesticide recertification credit available. Light supper/refreshments will be served \$20 meeting attendance

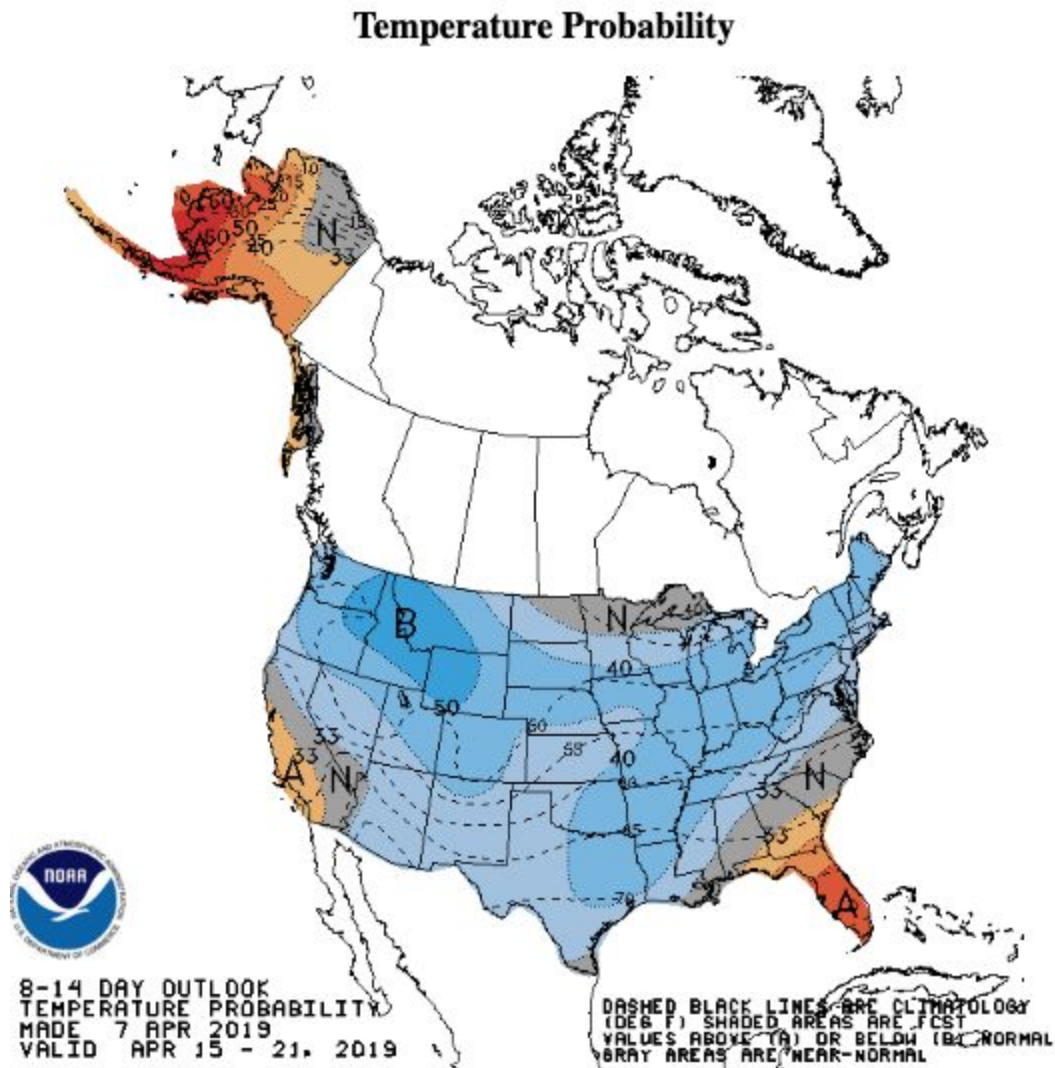
fee collected at the door. Questions? Jon Clements (413-478-7219) or Heather Faubert (401-874-2967). No pre-registration necessary.

Fruit Twilight Meeting. Tuesday, April 16, 2019. [UMass Cold Spring Orchard](#), 391 Sabin Street, Belchertown, MA. 5:30 PM. Pesticide recertification credit available. Light supper/refreshments will be served \$20 meeting attendance fee collected at the door. Questions? Jon Clements (413-478-7219). No pre-registration necessary.

The way I see it...

- This MAY be your last Healthy Fruit (HF), unless you go to the UMass Extension Bookstore (<http://umassexextensionbookstore.com>) and purchase a new [2019 subscription to HF](#) (\$65, e-mail delivery only) in the next week or two. Alternately, you can send me (Jon Clements, 393 Sabin St., Belchertown, MA 01007) a check for \$65 (tips accepted) made out to 'University of Massachusetts.' Make sure you note it is for Healthy Fruit subscription, and includes your e-mail address. You can also use [this mail-in form](#) to order Healthy Fruit and other UMass fruit publications. You can ignore this of course if you have already sent in your payment. Thanks.
- Sometimes I run into some confusion regarding our UMass fruit program publications and membership in [Massachusetts Fruit Growers' Association](#) (MFGA). MFGA membership is \$200 (\$25 for non-grower members) and includes a complimentary subscription to American Fruit Grower. It does not include any UMass fruit program publications. You can join or renew your MFGA membership using a credit card [here](#). (You can also make a voluntary donation to the UMass Cold Spring Orchard Research & Education Center, UMass Apple IPM Program, and/or MFGA's Horticultural Research Fund.) You can also join or renew MFGA using a mail-in form [here](#). Note that using the mail-in form you can also order UMass fruit publications, but I don't recommend ordering UMass fruit publications with your MFGA membership using that form. If you want to order UMass fruit publications, I recommend you use [this mail-in form](#). (Or you can order and pay using a credit card at the [UMass Extension Bookstore](#).) I hope that clears things up a bit. I encourage you to both join MFGA and order the UMass fruit publications that are of interest to you. More information on our UMass fruit publications is available [here](#). If you have any questions, please get in touch with me.
- OK, we are off to another slow start to spring. (Arghh, as a layperson and not a grower, I'd just as soon have it warm.) True McIntosh green tip, well I don't see it happening too soon (maybe within a week if we warm at all, but that is dubious), although I think apple buds are primed and ready to roll as soon as we get *any* warm weather. (Although Zestar! Is at green tip up to 1/4 -inch green here in Belchertown.) Spraying anything is a kind of a moot point with this cold and wet, and there is really no need to rush out and spray anything right now. But, a copper spray on apples (before half-inch green), and on peaches (before bud break) and oil on pears (psylla) should be in the pipeline for when it warms up and spray conditions improve. I suspect many of you still have brush to move or chop? (But try not to rut up the orchard!) I know I still have pruning to do... :-(

- It may be cold and unsettled, but Fruit Twilight Meetings must go on. We have a meeting this week on Thursday evening, April 11, at Chris Smith's orchard in East Bridgewater, along with the Rhode Island fruit Growers' Association. I know Chris would like to see a big crowd. Next week, we kick-off the spring season (I hope) at the UMass Orchard in Belchertown on Tuesday, April 16. Hope to see you there, I suspect we will argue about peach pruning again...



This map looks very much like last year's cold April at this time!

New England Tree Fruit Management Guide available online

- The New England Extension tree fruit specialists -- which include myself, Dan Cooley, Jaime Pinero, and Elizabeth Garofalo at UMass. Mary Concklin at UConn, Heather Faubert at URI, Terry Bradshaw at UVM, George Hamilton and Anna Wallingford at UNH, and Glen Koehler and Renae Moran at UMaine -- have officially launched, and updated for 2019 -- an online edition of the New England Tree Fruit Management Guide. Note that it is easy to print any of the sections,

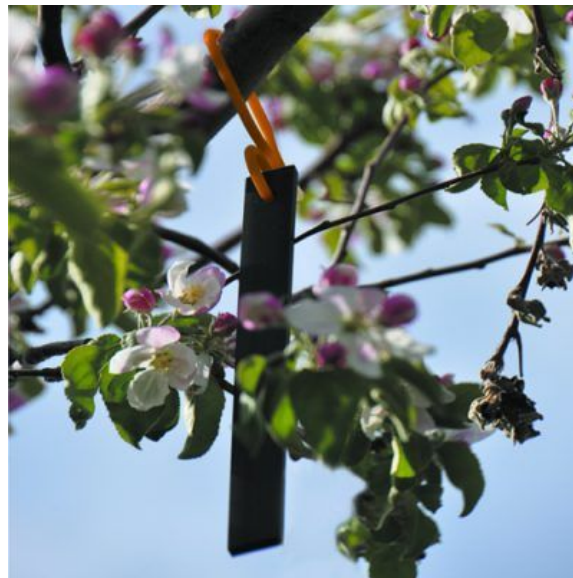
if you want to have old-school reference, for example, to hang on your spray shed wall. Also, it is quite mobile-friendly so make a home screen shortcut to here: <http://netreefruit.org>. Finally, if you really, really want a printed version, order here: <https://www.umassextensionbookstore.com/products/29>.

Insects

Jaime Pinero

New Mating Disruption Formulations for Oriental Fruit Moth (OFM) (Stone and Pome Fruit) and Codling Moth (CM) (Apple and Pear)

Trece Inc. has developed a new, long-lasting formulation of mating disruption for OFM and CM.



CIDETRAK® OFM-L MESO is a high performance mating disruption dispenser which requires about 30 dispenses per acre, resulting in less labor. It has been designed to last the entire season.

CIDETRAK® CMDA + OFM MESO is a high performance, dual mating disruption dispenser for both CM and OFM control in apples and pears. Dispenser rates are 32 per acre.

In 2019, we will be evaluating the performance of CIDETRAK OFM-L MESO in one commercial orchard. We will compare the performance of CIDETRAK OFM-L MESO with that exhibited by another commercial product.

Codling Moth (CM) Resistance to Altacor? Unlikely (yet), But We Will Find Out This Summer!

CM has a documented history of developing resistance to insecticides but rotating through different materials with different modes of action can reduce the risk of this pest becoming resistant. While CM resistance to Altacor has not been reported yet (although there are stories of product failures), in 2019 we will participate in a project led by PennState, which aims at comparing the levels of susceptibility to Altacor in field populations of CM in the Eastern US. Baseline levels of susceptibility were determined around the time when Altacor was first commercialized, which will be used as a comparison for current populations.

This project involves the collection of CM-infested fruit from orchards throughout MA. We hope you will support this project by letting us know when/if we can collect CM-infested fruits from your orchard.

Monitoring Traps for Plum Curculio (PC) Out Soon!

Within the next few days we will deploy monitoring traps to determine the onset of the 2019 PC immigration into apple orchards. We will keep you updated!

Diseases

Liz Garofalo

Last year as I am sure you remember, was even wetter and nastier than the year before. Apple scab was widespread in New England. As such, it stands to reason there will be plenty of scab inoculum this spring. This will make sanitation more important, and likely increases the overall risk of scab throughout the season.

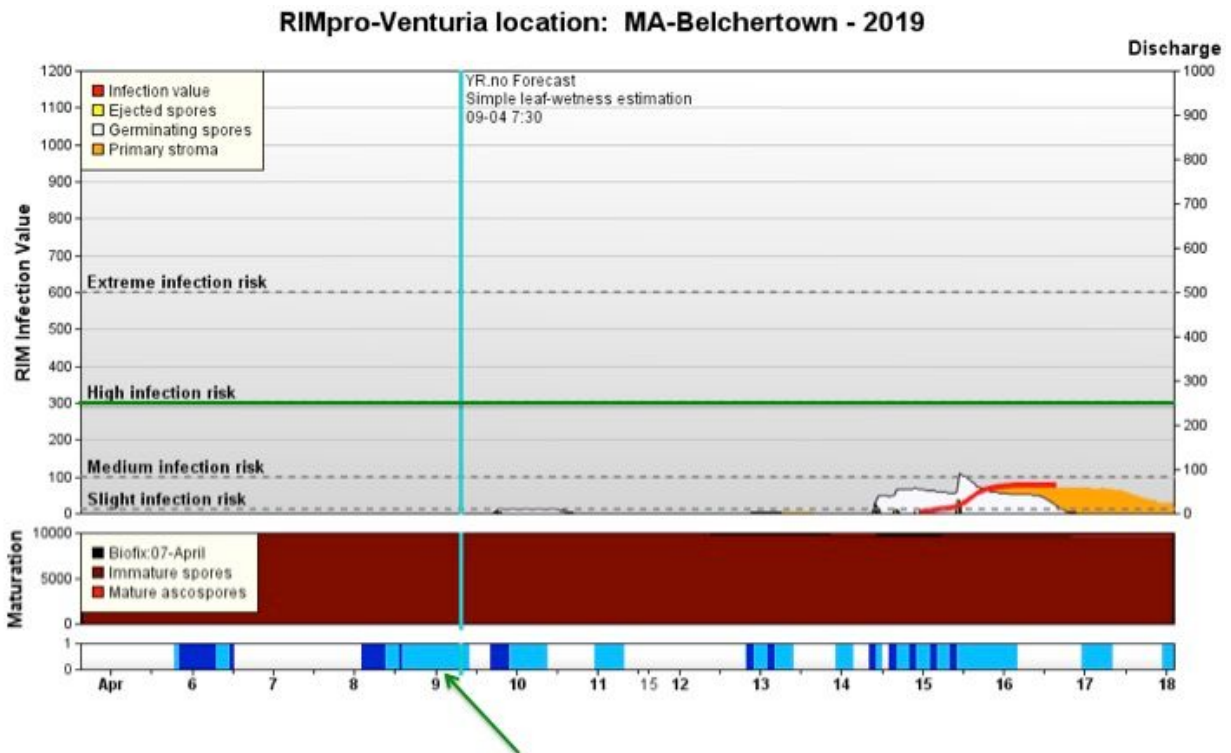
That makes sanitation more important than ever. While fall is the ideal time to deploy sanitation strategies (like urea and leaf chopping), spring treatments are also very effective. If you didn't do any fall chopping or urea, it's critical to do some now. Leaf chopping should be at the top of the list. It destroys leaves and decreases the chance that they will release scab spores. If time allows, a urea spray on the fallen leaves will also increase leaf decay rates. Even if you did some sanitation treatment last fall, if you still see a lot of leaves in the orchard, another trip with the mower is recommended. Especially in places where leaves piled up and were matted down with rain. These leaves may be an important source of scab spores.

Precipitation Totals (inches)

Date	Observed	Normal	Departure From Normal
4/1/17->10/31/17	29.7	30.06	-0.12
4/1/18->10/31/18	35.35	30.06	5.68

Precipitation totals for 2017 and 2018 for the main duration of the apple season. In 2018, we accumulated 5.68 inches more than average. This contributed, in part, to early defoliation of apple trees.

So what's up with scab right now? Thankfully, we are in a small holding pattern with the temperatures slowing development down a little from this weekend's positively (relatively) tropical conditions.



The RIMpro scab forecast above shows a blue line, representing the beginning of the forecast, a green line, indicating the critical 300 RIM value (in a clean orchard, this is where you sit up and pay attention, a RIM of 100 is the critical value in an orchard where scab occurred in the previous year). As you can see, there is nothing of interest occurring in the foreseeable future. While NEWA is showing today as an infection event, it estimates less than 1% of the whole season's infection potential is available. Bottom line- no green tissue, no infection.

First scab spray food for thought:

Observed Scab Infections in Trap Trees at UMass Cold Spring Orchard, Belchertown, MA		
Year	Green Tip	Trap Tree Infection/Rain Event

2016	31 March	1 May
2017	10 April	21 April
2018	18 April	3 May

2016 was the year of the drought, which likely accounts for the full month that went by between GT and the first observed infection in the trap trees. The gap between GT and first observed infection in 2017 was only 11 days. In 2018, there were two weeks between GT and the first observed infection event in spite of the widespread scab we saw the year before. Considering, in most places, we are barely at GT, the current estimated infection events do not concern me. Especially since we have still not seen any actual spore release yet.

Dormant to Green Tip Copper

This is mostly for use against fire blight. Your goal is to get enough copper coverage on all of the trees in your orchard to suppress the *Erwinia*.

Regardless of fire blight history, apply copper at silver to green tip *every year and cover the whole orchard*.

Copper applied later than Half-Inch Green can damage leaves and russet fruit. Avoid copper and oil when temperatures are predicted to be near freezing, as they can damage leaves. This should be okay on trees that are dormant to Silver Tip.

Apply at least 2 lb. of metallic copper per acre. There are too many copper products to list so I won't try, but most formulations have 20% to 50% metallic copper. Check labels to ensure copper concentrations are in this range. Lower concentrations will require more material to get to the 2lb/A rate.

Getting the copper into the cracks and crevices on the trees is critical for proper coverage. So apply as dilute a spray as is practical. Mix with oil, at least 1 qt./100 gal., though you can go higher if you're also trying to control scale and mites. Again, if green tissue is visible, watch out for freezing temperatures within 24 hours of application. Thursday morning looks like it's the only time in the forecast when temps will drop below freezing, down to 31 degrees F. in Belchertown. Of course, check your local weather as it will likely differ.

Horticulture

Jon Clements

Plant trees as soon as you receive them and soil conditions are right; soak roots for up to 24 hours in a water with a bit of nutrient solution; roots just barely in the ground, graft union 4-6 inches above ground!

Finish apple pruning using primarily thinning cuts! Leave stubs in tall-spindle plantings for renewal shoot growth (within reason, longer stubs are better, 1-2 inches?) Hold off on peach pruning as long as you can, until it's dry and warms up -- I like to prune peaches during bloom.

Not too early to think about a pre-emergent herbicide application. Alion on older trees is the gold standard, pre-emergent control of both grasses and broadleaf weeds. Prowl H2O is good on grasses, Chateau on broadleaves. Consult the [tree fruit herbicide table](#) in New England Tree Fruit Management Guide. Gallery is a MUST on new plantings!

Small Fruit Update

Sonia Schloemann

CROP CONDITIONS: Strawberries: Mulch is still in place in many locations but should be coming off as soon as new growth begins and/or soil temperatures are in the 40°F's. Some locations are reporting winter injury from severe winter cold, especially where snow cover was light. Winter injury is expressed by the browning of the center of the crowns. Cut crowns lengthwise to check. Row covers are being put out on early varieties for season advancement. Scouting for [cyclamen mites](#) should be done as new growth appears and for [two-spotted spider mites](#) when first foliage is fully expanded later this month. **Brambles:** Pruning should be complete. Bud break is newly visible in some varieties/locations and will progress quickly with warm temperatures. Winter injury may also be present in brambles. Once new growth begins to push bud growth, slice a few buds in half lengthwise to look for brown tissue. New primocanes are beginning to emerge in some locations. Brambles in tunnels are further along and should be monitored for [two-spotted spider mite](#). **Blueberries:** Pruning should be complete. Winter damage may be present and is seen primarily as tip dieback. Prune out stem cankers from Phomopsis and Fusicoccum. Keep an eye out for [Blueberry Stem Galls](#) and [Blueberry scale](#) (several species) at this time. These are easier to see now than later when foliage has filled in the canopy of the bushes. Budswell is beginning to show in many varieties and some may be at budbreak. Winter Moth eggs have been harder to find than usual again this spring. This is likely due to the increased presence of the WM parasitoid, *Cyzenis albicans*. See the March 27, 2019 [IPM Berry Blast](#) for more on this. Look for apothecia (fruiting cups) of the overwintered [Mummy Berry](#) beneath the bushes after spring rains. If high infections were seen last year, be prepared to protect against this disease this year. See the [New England Small Fruit Management Guide](#) for any treatment recommendations.

Hawkeye's corner (notes from the field)

Liz Garofalo

Not much to report from the field, yet!



Green Tip on "urban" Mac in Greenfield, MA. 7 April, 2019.

Sunday's sunny, warm weather pushed many of us over the edge straight into Green Tip (ok, so, just barley, but, still)! The growing season has officially begun, but let's hope it slows down just a little, yes?

Guest article

YOU'VE GOT SCALE!

(Art Agnello, entomology, Geneva; ama4@cornell.edu)

Reprinted from [Scaffolds Fruit Journal](#), Volume 28, No. 3, April 8, 2019

San Jose scale is one of the historically important fruit pests that has taken advantage of our changing insecticide programs during the last 10–15 years. The disappearance of products like Penncap-M and Lorsban from our list of summer spray materials has been at least partly responsible for the fact that SJS persists or has returned to pest status in a number of orchards. San Jose scale, *Quadraspidiotus perniciosus* (Comstock), is native to China, and was introduced into California on infested plant stock in the late 1800s. It primarily attacks stone fruits, pome fruits, and also walnut. In zones with a moderate climate (such as NY) it can be a key pest that after 4–5 years of infestations can cause severe damage to production; in colder areas, its importance is secondary and can be considered a sporadic nuisance. The most frequent source of an outbreak is usually via infested nursery plants or infestation from wind-dispersed crawlers arriving from other hosts in the vicinity. Three major factors promoting SJS infestations are: its high number of potential host plants (over 700 species); high female fecundity (potential for 100–400 nymphs/female); and an absence of effective natural controls in commercial orchards subjected to standard pesticide programs.

Life History and Description

The adult female is immobile, shaped somewhat like a pyramid, bright yellow in color, and

protected by a gray circular scale covering approximately 1/16 inch in diameter. No eggs are laid externally; the female gives birth to live nymphs, which are known as crawlers. The adult male, which has legs and wings but no functional mouthparts, develops under an oval-shaped gray scale covering slightly smaller than that of the female. It is active just before dusk at temperatures above app. 65 degrees F. and when the wind does not exceed 4 mph. The female produces a mating pheromone to attract the males, which have a short lifespan (2–3 days) and can fly less than 100 yd. However, in spring, if conditions are not favorable for flight, the males can disperse by crawling over the branches to find females and mate.

San Jose scale is found mostly on the woody tissue of branches and twigs, but when infestations are high, they can occur on the fruit surface. In these cases, the scales tend to be found in the areas of the stem and calyx. On rare occasions they occur on the foliage, in which case the individuals present are generally males. This insect tends to be distributed non-uniformly within both the tree and the orchard. In infestations originating from the nursery, scales are located up and down the tree, from the base to the growing point tips. San Jose scale overwinters principally as immatures under scale covers called "black caps," although a small percentage can also be present as "white caps" or else as gravid females that mated the previous summer and did not complete development of the scale cover. There are generally 2 generations per season in New York, but a 3rd generation can occur in years having a long, warm season, particularly in the Hudson Valley. Emergence periods of adult males as well as crawlers are well defined and distinct for each generation. Crawlers emerge about mid-June and again in early August in western NY, and can be timed by using degree day accumulations: 310 DD (base 50 degrees F.) after the 1st adult catch of the 1st generation, and 400 DD after the 1st catch of the 2nd generation.

Damage

The most important damage is caused by feeding, but the indirect damage stemming from presence on the fruit surface can result in downgrading and rejection by the fresh market. San Jose scale crawlers insert their mouthparts into the woody tissue and suck the sap, weakening the plant and reducing fruit and shoot growth, and ultimately desiccating the foliage and causing death of the affected areas. Infested portions of the tree generally exhibit less foliage, smaller fruits, and even sunscald arising from direct exposure to the sun. In fruits, a reddish halo surrounds the point of the scale's attachment on the fruit surface, which is caused by a reaction of the plant to a toxin injected with the insect's saliva. In general, smooth-skinned fruits are more vulnerable than those with a roughened or "velvety" texture, like peaches. Problem populations are more common in larger, poorly pruned standard size trees with inadequate spray coverage.

Control

Ensuring clean plant stock is obtained from the nursery, plus having knowledge of any potential hosts in the area, especially those located upwind of a planting, are some preventive measures that can help to reduce the incidence of SJS infestation in commercial orchards. Although San Jose scale has a number of natural enemies (mainly parasitic wasps), their impact in managed orchards is limited and at times negligible, due to the normal pesticide-based management

programs. In areas of high infestation, early season pruning can remove infested branches and open up the canopy for better coverage. This can substantially reduce population levels, which would otherwise serve as a perpetual source of infestation for the rest of the orchard.

Dormant sprays of 1.5–2.0% horticultural oil, alone or in combination with an insecticide, are the most effective means of controlling this pest. These should be applied at a high volume to completely wet the wood surfaces. Normal recommendations are to complement this tactic with 1–2 summer sprays directed at the crawlers. Severe infestations require two early summer applications against the first generation of crawlers, on a 12–14-day interval. Moreover, it should be emphasized that an optimal management program should incorporate the use of insecticides with different modes of action, to avoid the development of resistance. Options include neonics such as AdmirePro or Assail (summer use); IGRs such as Centaur or Esteem, organophosphates such as Lorsban (pre-bloom only) or Imidan (summer), or newer a.i.s like Movento (summer), Sivanto Prime or Venerate. In this regard, it is important to underscore that San Jose scale has developed resistance especially to some contact materials through their habitual use in insect control programs. Most notably, in 1914, the country's entire apple industry was threatened with extinction because of SJS resistance to lime sulfur – the first documented case in the US! Tragedy was averted because of the introduction of a new product – lead arsenate! (But that's another story.)

Facebook Me

Zestar! Green tip On 7-April. But now things have ground to a halt!



 Gary Snell, Mackenzie May and 6 others

1 Comment

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Arthur Kelly Thank goodness

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Write a comment...



Useful links

UMass Fruit Advisor: <http://umassfruit.com>

Scaffolds Fruit Journal: <http://www.nysaes.cornell.edu/ent/scaffolds/>

Network for Environment and Weather Applications (NEWA): <http://newa.cornell.edu>

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The next Healthy Fruit will be published on or about April 16, 2019. In the meantime, feel free to contact any of the UMass Fruit Team if you have any fruit-related production questions.

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