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Update on Pest Management  
and Crop Development

F R U I T J O U R N A L

March 18, 1996

VOLUME 5

Geneva, NY

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IT'S  
SPRING!  
REALLY

THE  
GATHERING  
GREEN  
(Art Agnello,  
Entomology,  
Geneva)



❖❖ After an overly adequate stretch of cold-and-snowy-just-like-the-old-days, I'm sure I wasn't the only one to get optimistic during February's 2-3 week thaw. But despite the arctic fronts that followed immediately afterward, I'm convinced that we're definitely on our way through spring's color change, from white-gray to brown-green. With this first issue of the year, we officially embrace the assumption that the field season will be upon us before we're completely ready, so the first order of business will be to dispense with the normal housekeeping details that need to be addressed so we can feel properly jostled to attention.

First of all, subscriptions. You've been sent this issue in the form that you want to receive it, according to our records. If you have the hard copy mailed to you but failed to return the re-subscription card, this will be your last issue (or maybe the next to last; depends on how organized I am.) The electronic ASCII-text version is being sent to the CENET or e-mail address you have specified. Let us know of any preferred changes you wish to make in this arrangement (to/from one form or another, address changes, start-up or stopping of subscriptions, etc.), and we will do our best to accommodate you. Also, there is a web version available from the NYSAES home page of the World Wide Web; if you have access, the URL address is:

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

As always, we are happy to consider contributions (particularly from N.Y. sources) in the form of articles on topics in any of the fruit crop protection or crop production areas, as well as N.Y. field observations, trap data, etc. For the record, we generally do not send the mailed version of this newsletter to growers, homeowners, or other private individuals not having some fruit extension, commercial, university or governmental affiliation. This is not only for economic reasons, but also because of "turf" considerations having to do with growers' relationships to their local Extension programs. (There are a few exceptions, mostly for people who were "grandfathered in" before this policy was instituted, and we prefer to keep this number low). The electronic version will be sent to anyone who requests it.❖❖

ROLLING  
WITH THE  
PUNCHES

MITE CONTROL:  
SILVER BULLETS  
AND DODGING THE  
BULLET  
(Art Agnello,  
Entomology, Geneva)

❖❖ There have been some noteworthy changes in the mite control landscape since last season, so a little status review might be in order. First of all, we finally have some additions to the list of tools available to us. Savey miticide received a federal apple and pear label on Feb. 9, and was approved by the N.Y. DEC on Feb. 15. Savey 50WP is registered to control European red mite on apples at a rate of 3 oz/Acre, applied no later than the pink bud stage. It is also registered for the control of ERM and twospotted

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mite in pears at 4–6 oz/Acre (28 days PHI). In addition, Apollo SC (4EC), which received its federal and NYS label last fall, is registered for use on apples to control ERM and TSSM (among others not occurring in NY) at a rate of 4–8 oz/Acre, applied from delayed dormant through tight cluster. It also has a label for mite control in pears (4–8 oz/Acre, 21 days PHI), and apricots, cherries, peaches and nectarines (2–8 oz/Acre, 21 days PHI). The chemistry of the two products is different but their mode of action is similar.

Use guidelines for each product call for no more than one application per season, in the interest of good resistance management practice. Obviously, this also means that only one of these products should be used in a given orchard per season. From what we know about the use patterns of these materials in other fruit-growing regions, it would be advisable to regard them as a single entity for purposes of resistance. First of all, these acaricides are simply destined to have a limited field life before mite populations develop resistance to them, and we already have a good idea just how quickly this can happen if they're overused. Secondly, each one exhibits cross-resistance to the other, and to a roughly comparable degree, regardless of which one you start with. Both are theoretically capable of providing long-term mite control, even season-long under ideal circumstances (low population pressure and unfavorable weather conditions). The choice of which one to use should depend on the specifics of your own spray schedule requirements, keeping in mind that the best results will be obtained generally if:

- Application is made as late in the tree's developmental stage as is allowed by the label. Considering how easily illegal residues of these materials can be found on the fruit, anyone who tries to cheat by spraying later than the legal period will be doing the entire fruit industry a grave disservice.

- You don't shave the rates; that is, use 3 oz/A of Savey, and at least 4 oz/A of Apollo (it's not clear whether using the 8 oz maximum will necessarily give you justifiably better control for your money).

- You maintain good spray coverage, as always.

Both of these products are ovicidal (and Savey is also effective against larvae), so their effectiveness is directly related to how well you can soak all the canopy's surfaces where eggs are found. Neither of these materials has systemic action, so mites on leaves developing after the application will not be killed. Predator mites are not affected by either product.

- They aren't used on every block on the farm. To be conservative, it would be prudent to use oil as an early-season program where you can and where it's a logical option. In blocks with unusually heavy pressure and/or where it's not possible to do an adequate job with oil, opt for Apollo or Savey at the appropriate timing. Then, depending on how favorable the late spring and early summer weather conditions are for mite growth, keep a watchful eye on the trees in July in case you need to apply a rescue treatment, which brings us to the next issue...

The EPA last month proposed the eventual cancellation of registrations of Kelthane and Omite on apples, citing toxicological concerns. The details on this are all rather sketchy, and a final resolution will probably not be achieved soon enough to directly affect the availability of

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## scaffolds

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### scaffolds FRUIT JOURNAL

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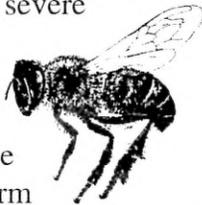
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these products in 1996. However, I think it's safe to say that we can no longer assume that we'll always be able to turn to these standby products to take care of an over-threshold count during the summer. I do know that one of the factors the EPA will be considering in its final decision on Omite is how well fruit growers can demonstrate that they use it according to good IPM guidelines. This translates into employing good monitoring and threshold decision rules, and doing as much as is practical to conserve predator mite populations, so a word to the wise should be sufficient. ❖❖

## BEE READY

GOSSAMER WINGS  
(Taken from Dave Green,  
Pollination Supplier,  
Hemingway, SC)

❖❖ Eastern fruit growers would be wise to check with their pollination suppliers and make early arrangements this year. A severe winter in the Northeast and mid-Atlantic coast has caused greater than normal losses. Bees in New York and New England had more than six weeks without weather warm enough for a cleansing flight. One non-migratory beekeeper had lost over 800 of 1000 hives as of mid-February. Some beekeepers have also been unable, or unwilling, to control varroa mites, and their winter losses have been heavy, some reporting 100% loss. Varroa has, of course, mostly eliminated wild honeybees.



Queen and package suppliers in the southeast have been experiencing a strong demand for early spring, probably exceeding the supply, which has been reduced by freak weather conditions. Temperatures in the 80's in February in SC and Georgia, along with an unusually good maple nectar flow, stimulated early brood rearing, making bees vulnerable, when the record cold hit during the past few days. We were at 19°F on the morning of March 9, which shatters the previous record low by six de-

grees. Many hives have chilled (dead) brood, which they were unable to protect from the cold, and will be correspondingly weakened by the need to carry out the dead over the next couple weeks. Weak hives will not survive, because they will be unable to remove the dead quickly enough. The spring forage for the bees is mostly hardwood blossoms, which have been damaged, at least for the next couple of weeks (the normal build-up time). ❖❖

## INSECT TIME

SUN CALENDAR  
(Dave Kain and  
Art Agnello,  
Entomology, Geneva)

❖❖ Since some of those who receive this newsletter, and many of their clients (i.e., growers), do not have access to up-to-date computerized degree day information, we've decided to include in the 1996 Tree Fruit Recommends charts showing daily degree day values, calculated using the Baskerville-Emin method, for a given set of maximum and minimum temperatures. There are two charts, one for base 43°F and one for base 50°F; they can be found on pp. 105-108.

You will need to know the maximum and minimum temperatures on each day for which you want to calculate degree days. Select the appropriate chart for the base temperature that you want to use (We use base 43 for determining the time to sample for OBLR and STLM). Read down along the column on the left to find the minimum temperature for that day. Use a ruler or your finger to mark the row it's in. Then read across the row on the top to find the daily maximum temperature and down that column to where it intersects with the row containing the minimum, to find the degree day value.

Because of space limitations, only minimum temperatures from 10°F to the base temperature are given. This is because, for all practical purposes, when the minimum temperature is above the base

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temperature, the Max/Min method of calculating degree days is as accurate as the Baskerville-Emin method. Therefore, when the MINIMUM temperature is GREATER than or equal to the base temperature, degree days (base x) = average daily temperature minus base temperature.

For example, using 43°F as the base, a minimum of 47 and a maximum of 65 (°F):

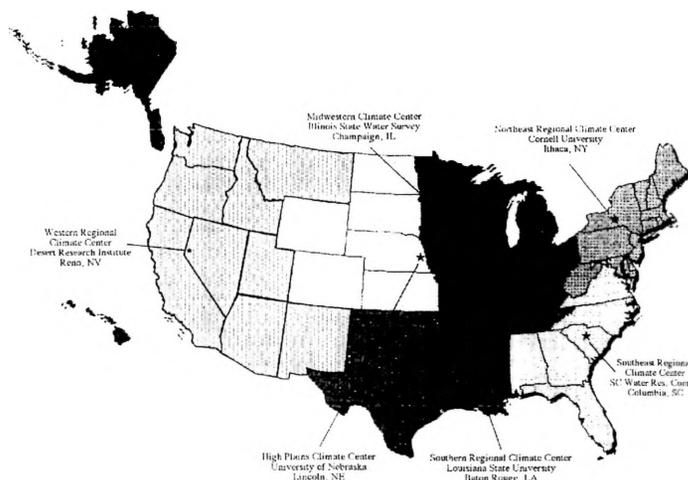
$$\text{Degree days} = [(65+47) \div 2] - 43, \text{ or } 57 - 43 = 13$$

$$\text{Degree days} = [\text{Average}] - \text{base}$$

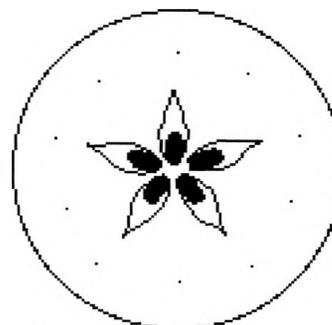
Conversely, maximum temperatures below the base are not given because if the MAXIMUM temperature is LESS than or equal to the base, 0 degree days accrue that day.

You can monitor daily maximum and minimum temperatures yourself with a readily available max/min thermometer (make sure to read it at the same time each day). Or, they can be obtained from local weather reports. If you would like historical information (e.g., January 1, 1996 to today) it may be obtained through a variety of means. Most central and complete would probably be the NOAA Regional Climate Center in your area (ours is the Northeast Regional Climate Center located on Cornell's Ithaca campus). For a nominal fee, they can provide clients up-to-date and historical data for a large number of stations throughout their region. Clients with computers and either a modem or internet connection can obtain an account (by calling NRCC user services) to provide direct access to data and information in the NRCC database through their CLIMOD system. At present there is no charge for this account. A 9-page brochure is now available, entitled "NORTHEAST REGIONAL CLIMATE CENTER Program, Products and Services". The information provided in this brochure primarily describes the activities/products of the Northeast Regional Climate Center. However, locations, addresses, phone numbers, etc. for the other U.S. regional climate centers are included. The brochure can be obtained by contacting: Northeast Regional Climate Center, 1123 Bradfield Hall, Cornell Uni-

versity, Ithaca, NY 14853-1901 (Tel 607-255-1751; Fax 607-255-2106; E-mail: nrcc@cornell.edu Information about the NRCC and its products is also available on the World Wide Web communications network (You must still contact them directly to obtain data). Their URL is <http://met-www.cit.cornell.edu>



Other sources of historical data may include your local Cooperative Extension office, amateur weather observers, or newspapers. As a final note, we might suggest using a little discretion when comparing our predictions of biological events with your local DD data. These are provided as a general guideline of things to expect in the agroecosystem, and as such are helpful but still inexact. It is normal to see slight variations in the relative timings of phenological events from one location to the next, so discrepancies of 20–30 DD (or more) in accumulated heat units at a given moth's flight or bud stage are not necessarily a problem. ❖❖



PPE

COVERING YOUR ACT  
(Art Agnello,  
Entomology, Geneva)

❖❖ Another addition to the 1996 Tree Fruit Recommends is Table 42a (pp. 184–186), “Worker Protection Standard Re-Entry and Personal Protective Equipment Guidelines”. This table is a compilation of re-entry intervals and PPE requirements for a list of commonly used pesticides. Because this list is incomplete, and because the information was taken from the product labels, you should always turn to the labels themselves as a final determinant of what is required in these matters; particularly valuable is the “Agricultural Use Requirements” box, which usually appears near the beginning of the label. However, although the necessary equipment is named on the label, it is not generally described in any detail, so the possibility exists of some misinterpretation. The following descriptions are taken from an EPA document about interpreting PPE statements on pesticide labels:

Label Statements

Comments

Long-sleeved shirt or and long pants

Also acceptable: woven nonwoven coverall, or plastic or other barrier-coated coverall, or rubber or plastic suit

Coverall worn over short-sleeved shirt and short pants

Also acceptable: cover all worn over long-sleeved shirt and long pants, or coverall worn over another coverall, or plastic- or other barrier-coated coverall, or rubber or plastic suit

Coverall worn over long-sleeved shirt and long pants

Also acceptable: coverall worn over another coverall, or plastic- or other barrier-coated coverall, or rubber or plastic suit

Chemical-resistant apron worn over coverall or over long-sleeved shirt and long pants

Also acceptable: plastic- or other barrier-coated coverall, or rubber or plastic suit

Chemical-resistant protective suit

Plastic- or other barrier-coated coveralls, or rubber or plastic suit

Waterproof suit or liquidproof suit

Plastic- or other barrier-coated coveralls, or rubber or plastic suit

Waterproof gloves

Any rubber or plastic gloves sturdy enough to remain intact throughout the task being performed

Chemical-resistant gloves

Barrier-laminate gloves, or other gloves that glove selection charts or guidance documents indicate are chemical-resistant to the pesticide for the period of time required to perform the task

Chemical-resistant gloves such as butyl or nitrile

Butyl gloves, or nitrile gloves, or other gloves that glove selection charts or guidance documents indicate are chemical-resistant to the pesticide for the period of time required to perform the task

Shoes

Leather, canvas, or fabric shoes, or chemical-resistant shoes, or chemical-resistant boots, or chemical-resistant shoe coverings (booties)

continued...

- Chemical-resistant footwear      Chemical-resistant shoes, or chemical-resistant boots, or chemical-resistant shoe coverings (booties)
- Chemical-resistant hood or wide-brimmed hat      Rubber- or plastic-coated safari-style hat, or rubber- or plastic-coated fire fighter-style hat, or plastic- or other barrier-coated hood, or rubber or plastic hood, or full hood or helmet that is part of some respirators



**DISEASES**

**MARSHALL  
MAC  
CANKER**

**WILL DELAYED  
DEFOLIATION  
LAST FALL  
CAUSE PROBLEMS  
THIS SPRING?**  
(Dave Rosenberger,  
Plant Pathology,  
Highland)

❖❖ Many apple orchards throughout New York State had an unusual appearance last fall and winter because the leaves stayed on the trees until mid-January. In parts of New York, early summer of 1995 was quite dry, whereas the fall was wet and mild. Trees that had almost ceased terminal growth by early July started growing again with the late summer rains. In the Hudson Valley, leaves were still green and active until the first killing frost in early November, when temperatures dropped to the low 20's (°F). Leaves were frozen in place and turned brown, but they failed to abscise. Leaves stayed on the trees through several major snow storms, then dropped quite suddenly and uniformly in mid-January as a result of a combination ice-and-rain storm. However, some of the leaves that dropped in January left behind petioles that are still attached to the trees.

Dr. Ed Stover surveyed several orchards in the Hudson Valley in December and noted that Paulared trees had retained relatively few leaves, whereas Empire trees had retained more than 60% of their leaves. In subsequent observations, Dr. Stover was unable to find any evidence of winter damage to the wood or buds of trees in the Hudson Valley, but he did find that some trees in the Champlain Valley suffered cold damage when temperatures there dropped to the low single digits in late November.

A canker problem on Marshall McIntosh trees consistently has been associated with retained petioles on terminal shoots on this cultivar. Cankers are usually initiated on vigorously growing trees that are 4–10 years old and that had retained petioles the previous fall. Cankers are initiated at nodes and can quickly girdle limbs that are one inch or more in diameter. In young trees, this frequently results in the loss of the central leader or major scaffold limbs.

No single fungus has ever been identified as the cause of Marshall Mac canker. I have recovered the white rot fungus, *Botryosphaeria obtusa*, more frequently than any other pathogen when making isolations from these cankers, but no one has verified that *B. obtusa* is the primary cause of the cankers. In fact, I suspect that Marshall Mac cankers result from a combination of winter damage and fungal invasion of winter-damaged buds. The retained leaf petioles that are associated with this disease are evidence that the trees did not harden off properly during the fall prior to infection. The retained petioles may also provide an entry point for the fungus (or fungi) that later cause cankers. After studying this problem on Marshall Mac, we also noted that similar cankers occur on other cultivars that have retained petioles, but the canker problem is less common on other cultivars than on Marshall McIntosh.

The severity and incidence of canker problems on Marshall McIntosh reportedly have been reduced by applying a delayed-dormant copper spray in problem blocks. Copper has been applied using the same rates and application timing that is suggested

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for orchards with fire blight. The benefits of copper sprays for reducing canker incidence have not been verified in controlled experiments, and no mechanism has been proposed to explain how such copper sprays would prevent invasion by fungi that might cause cankers. Despite the lack of experimental evidence, many growers have concluded that a copper application at Silver Tip to Green Tip is worthwhile in blocks of Marshall McIntosh where retained petioles are evident. I believe that Marshall Mac trees that have retained petioles definitely should be sprayed with copper this spring as a precautionary measure.

Empire trees are generally highly susceptible to canker diseases and had a lot of retained petioles this year. Should Empire trees also receive a delayed-

dormant copper spray to reduce the risks that trees will develop cankers? Unfortunately, we don't know the answer. I am not ready to recommend that copper be applied for canker control on cultivars other than Marshall Mac. Some growers may wish to apply copper on limited portions of their Empire blocks to see if the sprays provide any benefit. However, when copper sprays are applied too late (after Green Tip), at inappropriate rates, or in years when there is only limited rainfall between Green Tip and bloom, the copper residue present at bloom can contribute to fruit russetting. Thus, copper applications must be approached with caution.

Next week: More on potential risks and benefits of copper sprays on apple trees. ❖❖

PHENOLOGIES	
Geneva: Apple -	<b>Dormant</b>
Pear, cherry -	<b>Dormant</b>
Peach, plum:	<b>Dormant</b>

UPCOMING PEST EVENTS		
	<u>43°F</u>	<u>50°F</u>
Current DD accumulations (Geneva 1/1 - 3/18):	25	5
(Highland 1/1 - 3/18):	75	20
<b>Coming Events:</b>	<b>Ranges:</b>	
Green fruitworm 1st catch	41-143	9-69
Pear psylla adults active	2-121	0-49
Pear psylla 1st oviposition	25-147	1-72
McIntosh at silver tip	56-137	17-58



NOTE: 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 possible. These recommendations are not a substitute for pesticide labelling. Please read the label before applying any pesticide.

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**scaffolds**

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