scaffolds

Update on Pest Management and Crop Development

FRUIT JOURNAL

April 28, 2003 VOLUME 12, No. 7 Geneva, NY

INSECTS

IN THE PINK

PUSHING TOWARDS PINK - Part II (Art Agnello & Harvey Reissig, Entomology, Geneva)

❖❖ Last issue, we looked at European red mite and rosy apple aphid as two primary pests poking around at this time of year. Here we continue with our consideration of pink period insect pests.

Spotted Tentiform Leafminer

What else is happening at pink? STLM is laying eggs, but most orchards don't seem to suffer too greatly from 1st brood leafminer these days, and a sequential sampling plan can be used to classify STLM egg density at pink or of sap-feeding mines immediately after petal fall (see pp. 66 & 68 in the Recommends). Treatment is recommended if eggs average 2 or more per leaf on the young fruit cluster leaves at pink, or if sap-feeding mines average 1 or more per leaf on these leaves at petal fall. Sampling can be completed in approximately 10 minutes. In recent years, only 1 out of 6 sampled orchards have required insecticide treatments to control first-generation STLM populations. Actara, Avaunt, or Vydate at pink, or Provado or Lannate at petal fall are our recommendations for this pest; Provado will also add to the leafhopper control if you don't use enough Sevin at thinning to do an adequate job. The pyrethroids — Ambush, Asana, Danitol, and Pounce — are also extremely effective against STLM, but use them in awareness of their detrimental effect on beneficial insects and mites.

Miscellaneous

Leafrollers are also out there, but only part of the population is active at this time, so it's better to wait for bloom or petal fall to address this one. Tarnished plant bug is the only real player left, and you'll have to decide for yourself whether this bug is of sufficient concern to you to justify treating. We have seen few orchards in western N.Y. where TPB control is warranted (slightly more so in the Hudson Valley), simply because the most effective treatment to use is still a pyrethroid, which a) wipes out predator mites, and b) still rarely lowers TPB damage enough to be economically justified. If you elect a spray of Ambush, Asana, Danitol or Pounce at pink for plant bug, you'll take care of rosy apple aphid

continued...

IN THIS ISSUE...

(and STLM) at the same time; if rosies are your primary concern, scout for them first, and use Actara, Lorsban or Thiodan if you find any. Avaunt appears to have as much activity against plant bug as Actara, but is not effective against rosy apple aphid.❖❖

GENERAL INFO

APPLE ARCHIVES

TRAC APPLE RECORD-KEEPING AND REPORTING SOFTWARE AVAILABLE

(Julie Carroll, IPM, Geneva)

What is TracApple?

❖❖ TracApple is an easy-to-use software program that apple growers can use to record their yearly spray history and automatically generate required processor spray reporting forms. The program is being offered to apple growers at no charge. TracApple can complete the required spray forms for Motts, AgriLink, Ultimate Juice, Beechnut, and the generic Processor Spray Form.

Why was TracApple developed?

Last year, during meetings with growers, one of the repeated themes expressed to the NYS Fruit IPM Coordinator was the need to simplify the spray reporting system to processors. Many growers said they often spent hours re-entering the same information on forms to satisfy the various processors they supplied. From that concern, the idea was born to create a computer program that could generate the processor spray reports from a master form. The end result was TracApple, a spray tracking and reporting program.

How does TracApple work?

Those familiar with working on a spreadsheet will find it easy to use TracApple, since it is written in Microsoft Excel, a popular spreadsheet program. Very simply, the user "fills in the blanks." There are two primary data entry "sheets", much like a sheet of paper. One sheet asks for basic grower information, such as name and address. The other sheet allows the user to enter their spray information, such as the spray date and chemical used. From the data entered on these sheets the program is able to complete the required processor forms automatically.

Are there other benefits to using TracApple?

We think so! TracApple has "drop down" lists for pesticides and diseases that you can select from. This saves time and prevents typing errors. When you select a pesticide Trade Name from the list, the program automatically fills in the EPA registration number on the form. The software also has Farm and Harvest Data sheets that automatically generate drop-down lists specific to your farm operation.

What hardware and software do I need to run TracApple?

- Microsoft Excel spreadsheet
- Internet service or a CD-ROM Drive
- Printer

continued...

scaffolds

is published weekly from March to September by Cornell University—NYS Agricultural Experiment Station (Geneva) and Ithaca—with the assistance of Cornell Cooperative Extension. New York field reports welcomed. Send submissions by 3 pm Monday to:

scaffolds FRUIT JOURNAL
Dept. of Entomology
NYSAES, Barton Laboratory
P.O. Box 462
Geneva, NY 14456-0462
Phone: 315-787-2341 FAX 315-787-2326
E-mail: ama4@cornell.edu

Editors: A. Agnello, D. Kain

This newsletter available on CENET at: news://newsstand.cce.cornell.edu/cce.ag.tree-fruit
and on the World Wide Web at:
http://www.nysaes.cornell.edu/ent/scaffolds/

Who developed TracApple?

New York State Integrated Pest Management Program

Juliet Carroll, Fruit IPM Coordinator, and Judy Nedrow, Programmer

How can I get a copy of TracApple to try with my business?

Write:
NYS Integrated Pest Management Program
Cornell University, NYS Agric Expt Station
630 West North Street
Geneva, NY 14456-0462

Phone, Fax, E-mail or Web site:
PH: (315) 787-2430
Fax: (315) 787-2360
E-mail: jec3@cornell.edu
www.nysipm.cornell.edu

❖❖

PASSING FUNGAL SYSTEMS

PROBABILITY OF SCAB INFECTIONS RESULTING FROM INTERMITTENT WETTING PERIODS

(Bill Turechek & Juliet Carroll, Plant Pathology & IPM, Geneva)

❖❖ Growers who rely on the Mills Table to predict apple scab infections often ask, "How should I handle intermittent wetting periods?" Several studies have been conducted in an attempt to answer this question, but none of the studies provided answers for all of the various combinations of temperatures and wetting and drying intervals. Yet, results from the experiments that have been conducted DO provide us with enough information to derive a good rule of thumb.

The most detailed study to date was conducted by Chris Becker and Tom Burr in the early 1990's. In their approach, they asked if apple scab conidia could cause disease after exposure to various wet-dry-wet intervals at either 50, 59, 68, or 77°F. Three initial wet intervals were tested, either: (1) 15 min, (2) the time at each temperature required for ca. 50% of conidia to germinate, which turned out to be 7, 5, 4, and 5 hours at 50, 59, 68, and 77°F, respectively, or (3) the time at each temperature required for ca. 20% of the conidia to also form an appresorium (i.e., 20% of the spores penetrated the host) which was 12, 8, 7, and 8 hours at 50, 59, 68, and 77°F, respectively. An appresorium is the structure the fungus produces to penetrate the host plant. After exposure to the initial wet interval, plants were exposed to 0, 0.25, 6, 12, 24, or 96 hours of drying at either 60% (low) or 90% (high) relative humidity. This was followed by a final wet interval of 24 hours. After exposure to the final wet period, they assessed the proportion of ungerminated conidia and germlings (i.e., germinated conidia) with or without an appresorium that were killed.

Results of this study showed that ungerminated conidia were not killed by exposure to dry intervals until drying exceeded 96 hours within the range of temperatures and relative humidities studied. Germlings with or without an appresorium were more sensitive to drying than ungerminated conidia. Twenty percent of germlings were killed after the first 15 min of drying and an additional 10–30% after 96 hours. Germlings with appresoria were killed after 24 and 96 hours, too, but the attrition rate was lower than for germlings without appresoria. Even after 96 hours of drying, over 75% of ungerminated conidia and germlings were still able to penetrate the apple leaf during the second 24-hour-long wet interval.

Becker and Burr proposed the following rule based on their results: "If the interval of drying is less than 48 hours in length, the initial and subsequent intervals of wetting should be summed to calculate Mills infection periods." This rule is more conservative than the "typical" rule of 'summing wetting periods separated by less than either 8 hours of

continued...

sunny weather or 12 hours of cloudy weather.' Where did this rule come from? In a review of the scientific literature, MacHardy found NO scientific basis for the establishment of this rule. In fact, nearly all the research that has been conducted shows that a high proportion of both ascospores and conidia survive drying periods of 24 hours or more whether it is sunny or not. Has this rule worked in the field? Perhaps. If it has, though, it is not because spores have died after only 12 hours of drying.

Several other factors affect the amount of disease that develops after a predicted infection event. These include: (1) the amount of primary inoculum in an orchard, assessed via PAD counts in the fall; (2) the stage of development of ascosporic inoculum in the spring, assessed via squash mounts, spore traps, and degree day model calculations; (3) the time of day and season when rain and leaf wetness occurs because ascospore discharge occurs during daylight, whereas conidia can be disseminated anytime by splashing rain; and (4) whether the principal source of inoculum is ascospores or conidia.

MacHardy suggests a less conservative rule than Becker and Burr's to follow for combining successive wetting periods: "two successive wetting periods, the first started by rain, should be considered a single, uninterrupted wet period if the intervening dry period is less than 24 hr, regardless of weather conditions (sunshine, temperature, and RH) during the intervening dry period." This rule, in our opinion, should be the rule adopted by NY growers. This rule is easier to apply, slightly more conservative, and, most importantly, consistent with the results of research.

Since the Mills Table operates in hourly time steps, a question often asked is: "How do I handle wetting events less than one hour long?" Keeping in mind that ascospores can be detected in spore traps after only 1 hour of wetting (but their numbers increase dramatically after 2 to 3 hours of continuous wetting) and that conidia are instantly dispersed by rain and in films of water or dew, wetting events less than one hour long should be counted as a full hour-long wetting event. When deciding whether to round up or down the last hour of a wetting event (e.g., after a 4 hour and 20 min wetting event, do we call it 4 or 5 hours?), use the standard rounding rules. That is, round up if greater than 30 min and round down if 29 minutes or less.

Given the intermittent wetting periods that occurred over much of New York State last week, growers who did not apply protectant fungicides before the rains may decide to reconsider the scab infection risk using the 24-hour drying event rule for intermittent wetting periods. Unprotected blocks that were exposed to infections, as determined using the 24-hour rule, should consider the following strategies: (1) apply at least two applications of an SI-plus-protectant combination 10 days apart, (2) where the SI's are no longer working very well, week-old infections may be suppressed using two applications of either a maximum rate of SI-plus-protectant fungicide about 7 days apart instead of 10 days apart, or a combination of dodine plus a protectant. Recall that dodine may work better than the SI's in younger orchards that have seen little to no dodine use. Maximum rates of SI's may work better in orchards where dodine resistance may still be lingering. The objective of back-to-back sprays of SI's or dodine is to suppress any early infections before they can produce conidia.

References:

Becker, C.M., and Burr, T.J. 1994. Discontinuous wetting and survival of conidia of *Venturia inaequalis* on apple leaves. Phytopathology 84:372-378.

MacHardy, W.E. 1996. Apple Scab: Biology, Epidemiology, and Management, APS Press, St. Paul, Minnesota, pp. 545.

❖❖

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–4/28):	205.2	99.0
(Geneva 1/1-4/28/2002):	325	172
(Geneva "Normal"):	231	102
(Geneva 5/5 Predicted):	294	148
(Highland 1/1–4/28):	296	143

Coming Events:	**Ranges:**	
European red mite eggs hatch	157–358	74–208
Green apple aphid present	127–297	54–156
Obliquebanded leafroller larvae active	149–388	54–201
Oriental fruit moth first catch	129–587	44–338
Pear psylla first egg hatch	111–402	55–235
Spotted tentiform leafminer laying eggs	141–319	48–154
Redbanded leafroller 1st flight peak	180–455	65–221
McIntosh at pink	258–320	113–170
Red Delicious at pink	299–437	122–192
Peach at bloom	229–326	95–151
Pear at white bud	217–423	96–217
Plum at bloom	241–394	95–225
Sweet cherry at bloom	187–326	83–168
Tart cherry at bloom	257–448	122–251

Please note that we now include a predicted degree day accumulation for the next week, based on temperature forecasts supplied by SkyBit, Inc.for Geneva, in our degree day table under UPCOMING PEST EVENTS. Using crop phenology and weather data that we have collected over the years, we have used this value to predict about where crops should be next week (in Geneva) in the PHENOLOGIES table.

PHENOLOGIES

Geneva:

	4/28	5/5 (Predicted)
Apple(McIntosh):	early tight cluster	pink
Apple(Red Delicious):	half inch green	tight cluster to pink
Pear:	early green cluster	white bud
Sweet cherry:	early white bud	bloom
Tart cherry	bud burst	white bud
Plum:	early white bud	white bud to bloom
Peach:	half inch green	bloom

Highland:
Apple (McIntosh/Ginger Gold): early pink
Apple (Red Delicious/Golden Delicious):late tight cluster
Pear (Bartlett/Bosc):late green cluster
Peach: early bloom
Plum: green cluster
Apricot: bloom to petal fall

scaffolds
Dept. of Entomology
NYS Agricultural Exp. Sta.
Barton Laboratory
Geneva, NY 14456-0462

PEST FOCUS

Geneva:
Spotted tentiform leafminer and **redbanded leafroller** 1st catch 4/24.

Highland:
Redband leafroller and **spotted tentiform leafminer** flights began 4/17. **Oriental fruit moth** flight began 4/21.

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY

	4/21	4/24	4/28
Green fruitworm	0.3	0.2	0.4
Redbanded leafroller	0.0	0.3*	5.1
Spotted tentiform leafminer	0.0	7.8*	321
Oriental fruit moth	–	–	0.0
Lesser appleworm	–	–	0.0
San Jose scale	–	–	0.0

Highland, NY

	4/21	4/28
Green fruitworm	0.2	0.1
Redbanded leafroller	0.8	3.9
Spotted tentiform leafminer	13	7.2
Oriental fruit moth	0.1*	0.4

* first catch

This material is based upon work supported by Smith Lever funds from the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.