http://ipm.osu.edu/fruit/index.html

THE OHIO STATE UNIVERSITY Newsletter Extension

Fruit ICM News

Volume 8, No. 26
July 22, 2004

In This Issue:

ReTain® is Now Labeled for Stone Fruit Except Cherries

Source: John Strang and Joe Masabni, Kentucky Extension Fruit and Vegetable Specialists

ReTain is now labeled on stone fruit (except cherries) in addition to apples and pears. ReTain, commonly known as aminoethoxyvinyl-glycine, aviglycine HCl, or AVG is a growth regulator produced by fermentation. This product is marketed by Valent USA Corporation. On peaches it can slow the maturation process of the fruit, increase fruit size, maintain fruit firmness, reduce fruit drop, improve fruit quality, and lengthen fruit storage potential. It does this by reducing ethylene production, which is a plant hormone that promotes fruit ripening.

On peaches, nectarines, and plums one pouch of ReTain should be applied per acre, 7 to 14 days prior to the anticipated beginning of the normal harvest period. ReTain may be used on stone fruit with or without an adjuvant. ReTain should be applied under slow drying conditions in the morning or evening to promote absorption. Applications should not be made when the fruit is hot. Spray solution pH should be between 6 and 8, and this product should not be used on trees that are under stress. This material should not be applied if rain is expected within 8 hours of application. The preharvest interval for ReTain on stone fruit is 7 days.

Editor's Note: The ReTain label is available at http://www.cdms.net/ldat/ld4CL001.pdf.

Quintec, a New Powdery Mildew Fungicide for Grapes

Source: John Hartman, Kentucky Extension Fruit Specialist, Fruit Facts, July 2004

Quintec (quinoxyfen) fungicide is a new protectant fungicide labeled for control of powdery mildew in grapes. Quintec is normally applied on a 14 to 21 day schedule starting early in the season before powdery mildew infections begin. The fungicide is not to be used within 14 days of harvest and no more than 5 times per season. In Kentucky, Quintec would likely be used in combination with a black rot fungicide; it is compatible with other commonly used fungicides and insecticides. Based on information from the national Fungicide Resistance Action Committee, this fungicide has a chemistry and mode of action different from other fungicides such as strobilurins and sterol biosynthesis inhibitors. Thus, it can be alternated with these fungicides to help prevent fungicide resistance development by the powdery mildew fungus. Quintec is manufactured by Dow AgroSciences.

Editor's Note: The Quintec label is available at http://www.cdms.net/ldat/ld6CK001.pdf.

Ohio Apples Expected Early

Source: Tom Sachs, Executive Director, Ohio Fruit Growers Society

Early bloom, plentiful rains, and adequate warmth should bring Ohio's apple crop to maturity sooner than normal. As growers get ready for an early harvest, apple lovers can anticipate nicely sized and great tasting fruit. According to George Lawrence, Lawrence Orchards, Marion, Ohio, "Apple growers will have an early crop of Ginger Gold and Paulared, probably after the first week in August, followed by Red and Golden Delicious in early September."

Farm markets and grocery stores that buy local produce also are looking forward to supplying consumers with Ohio apples, and nutritious conscious consumers seeking to add color and variety to their diet will not be disappointed with this year's crop. According to the Produce For Better Health Foundation, "Eating five or more servings of colorful fruits and vegetables a day is part of an important plan for healthier living. That's because deeply-hued fruits and vegetables provide the wide range of vitamins, minerals, fiber, and phytochemicals your body needs to maintain good health and energy levels, protect against the effects of aging, and reduce the risk of cancer and heart disease." Apples are an important addition to a colorful, nutritious diet.

Summer Management of Foliar Diseases of Strawberry

Source: Bill Turechek, Dept. of Plant Pathology, Cornell University, Geneva, NY via Massachusetts Berry Notes, July 16, 2004

Foliar diseases on strawberry are often overlooked because most do not become noticeable until after harvest or renovation. However, serious outbreaks of any of the diseases discussed below can seriously impact the vigor, winter hardiness, and even the production of a planting. At this point, it is not well understood when the most critical time is to manage disease or how much foliar disease a strawberry planting can tolerate. We are currently researching these questions with support from the North American Strawberry Growers Association and the New York IPM Program. Until we have a better understanding, though, we currently work under the assumption that severe infection in the summer (greater than 30% disease) is enough to impact the health of the plant and possibly result in the damage discussed above (this is based on some preliminary work done in my lab). In problem fields, I suspect that one or two well-timed fungicide applications in the summer months may be all that is needed to keep disease from reaching levels that may impact production.

Leaf spot is caused by the fungus *Mycosphaerella fragariae.* It is one of the most common and widespread diseases of cultivated strawberry. It is also the cause of black seed; a disease of the fruit that

can occur when warm and wet conditions occur during bloom. Prior to the development of resistant cultivars, leaf spot was the most economically important disease of strawberry. However, since many commercially grown cultivars are not completely resistant to leaf spot, this disease is still significant on a number of cultivars including 'Honeoye','Idea', 'Marmolada', 'Raritan', 'Kent'.

Leaf scorch is caused by the fungus *Diplocarpon earlianum*. It is a common disease of strawberry throughout the northeast. Epidemics occur normally from August to October. Leaf scorch can markedly reduce vegetative growth, weakening plants and resulting in a sharp reduction of growth of shoots and roots, a reduction in the number and vigor of crowns, and quite possibly fruit yield. Severely infected plants may die from environmental stresses, such as heat, cold, or drought. Like leaf spot, losses vary depending upon cultivar susceptibility.

Leaf blight is caused by the fungus *Phomopsis obscurans*. The disease affects primarily older foliage in late summer and, like leaf scorch, can result in reduced plant vigor and yield in the following season. (It also can cause severe defoliation in nursery production areas in the southeastern US.) Leaf blight is particularly destructive to slow-growing or weak plants. It seldom damages young, runner plants, and rarely attacks the fruit in the Northeast like it does in the South. The spread of *P. obscurans* is favored by frequent rains, overhead irrigation, and heavy dews. Little spread occurs during hot, dry weather in the summer, although symptoms may continue to develop during this period.

Powdery mildew is caused by the fungus *Spaerotheca macularis*. Disease severity is most pronounced in areas that experience high humidity and moderate temperatures through the growing season, such as the coastal and Great Lakes regions of the US. Like most of the foliar diseases mentioned, severe outbreaks of powdery mildew can weaken plants, leading to an increase in winter-injury and a reduction in yield. The disease has been prevalent after renovation in plantings in Geneva the past few years.

Angular leaf spot is caused by the bacterium *Xanthomonas campestris pv. fragariae*. In New York, it doesn't appear the disease is as widespread as the others addressed so far. The disease severely affects the foliage, and has the potential to attack the calyx (i.e., the sepals on fruit) or the crown of the plant. In planting of Kent in Geneva, the angular leaf spot pathogen was isolated from a number of fruit calyxes showing the symptoms of "brown cap". How prevalent this is across NY, and whether this organism was the primary cause or secondary invader has yet to be determined. Nonetheless, the disease is often left uncontrolled (mainly because there are no real control options) and, seemingly, this has little impact on the planting the following year.

Management of foliar diseases: Once the leaves begin to regrow after renovation, there are a number of options growers have to effectively manage disease. Nova 40W is labeled for control of leaf spot, leaf blight, and powdery mildew and is very effective against these diseases; I have not seen data to support its efficacy against leaf scorch. Applications should begin when disease appears and continue on a 14 to 21 day schedule or, better yet, when conditions favor disease development. Often, the first application can wait until after harvest.

If disease pressure was serious prior to renovation, growers should make a note to consider beginning treatment before renovation next year. If repeated applications are necessary, it is recommended that Nova 40W be alternated with a tank mix of Topsin-M plus Captan.

If anthracnose fruit rot was (or has been) a problem, growers should use a fungicide that also has activity against this disease, such as Captan or Quadris. The fungus is capable of attacking the petioles of young leaves as they emerge after renovation. Fungicide applications at this time serve to protect the leaves from attack and reduce the pathogen population that can overwinter and cause outbreaks next season. Quadris has good activity against anthracnose and powdery mildew. In trials conducted in Ohio, Quadris

was shown to have excellent activity against leaf blight as well. Captan will have good to excellent activity against anthracnose as long as coverage is maintained.

Fixed copper products are the only real option for managing angular leaf spot. Copper can be applied on 14-21 day schedule, but growers should be aware that as few as 3 successive applications of copper can result in phytotoxicity on some varieties, quite possibly doing more damage than disease itself. The collectiveexperience of many small fruit pathologists in the Northeast is that treatment is often not necessary, as this disease can appear in epidemic from one year but often not the next.

Lastly, a number of cultural practices can be used to help manage disease. New plantings should be established in sites with light, well-drained soil, with good air circulation and full exposure to the sun. In matted-row systems, runner plants should be carefully spaced when filling rows, and the entire planting should be kept free of weeds to improve air circulation and reduce drying time for leaves. Removing and burning all debris at renovation (after harvest) helps to reduce overwintering inoculum of all leaf pathogens. (*From the New York Berry News, Vol. 13, No. 7, July 2004*)

Battling Botrytis in Fall Raspberries

Source: Annemiek Schilder, Michigan State University via Massachusetts Berry Notes, July 16, 2004 (From the Michigan Fruit Crop Advisory Team Alert, Vol. 18, No. 13, July 15, 2003)

Botrytis gray mold, caused by the fungus *Botrytis cinerea*, is one of the most important diseases affecting fall raspberries. Fall raspberries are usually at greater risk of infection than summer raspberries because of the prevailing weather conditions, such as lower temperatures, heavy dews, and frequent precipitation. Cool, wet weather is conducive to development of the fungus and infection of the fruit. If the weather remains similar to what it has been, Botrytis will be problematic in raspberries this year.

Symptoms

Typical symptoms include a brown discoloration of the fruit and the presence of a gray fuzzy mold, which can rapidly develop and spread to neighboring healthy berries. Symptoms tend to be more severe inside the canopy and on clusters that are closer to the ground. Even if berries look perfectly healthy at harvest, they can change to a moldy mass within 24 to 48 hours.

Biology of the fungus

Botrytis cinerea is a ubiquitous fungus, which is able to grow and sporulate profusely on dead organic matter. It overwinters in old infected canes and plant debris. The spores are airborne and can travel long distances in the wind. When the spores land on plant surfaces, they germinate and can invade the plant tissues directly or through wounds. Production of spores and infection are favored by prolonged periods of wetness or high humidity and moderate temperatures (60 to 75 degrees F). When wet conditions prevail during the bloom period, withering flower parts may become infected by the fungus and lead to latent infections of the young berries. Such infections become active as the berries ripen. Overripe berries and bruised berries are particularly susceptible to infection.

Control

Cultural methods are very important for control of Botrytis gray mold. Choosing a site with good airflow can reduce humidity in the canopy considerably. Low-density plantings/narrow rows and trellising can also reduce a buildup of humidity. Good weed control and moderate use of fertilizer to avoid lush growth

are also important. Selecting a resistant cultivar or, at a minimum, avoiding highly susceptible cultivars will help to reduce the need for control measures. During picking, avoid handling infected berries, since spores can be transferred on hands to healthy berries. Timely harvesting and rapid post-harvest cooling can also help to reduce losses to Botrytis gray mold. Several fungicides are labeled for control of Botrytis in raspberries. Fungicide sprays during bloom are important to prevent pre-harvest infections, while postharvest infections can be reduced by spraying close to harvest.

Several efficacious fungicides are available: Elevate (fenhexamid) is a reduced-risk fungicide with locally systemic properties. It has a 0-day PHI and provides good control of pre- and post-harvest gray mold. Switch (cyprodinil and fludioxonil) is a recently registered fungicide with protectant and systemic properties. It has also performed well in raspberry trials in Michigan. Switch has a 0-day PHI. A maximum of four sprays (and two consecutive sprays) is allowed for both Switch and Elevate. Switch and Elevate are in different chemical classes and may be alternated with each other or with Captan [not in MA], Rovral, or Nova to reduce the risk of resistance development.

Late Season Raspberry Pests

Source: Greg English-Loeb, Cornell University via Massachusetts Berry Notes, July 16, 2004 (*From the New York Berry News, Vol. 13, No. 7, July 2004*)

As fruit ripens, **tarnished plant bug** continues to represent a threat, as do **cane borer** and **picnic beetles. Potato leafhoppers** (both adults and immatures) continue to show up in New York farms. They feed on a lot of different crops, including many small fruits like strawberries, raspberries, and grapes. Typical symptoms include yellowing of leaf margins and distorted and possibly stunted leaves. Raspberries are pretty sensitive to potato leafhopper feeding. The adult potato leafhopper is iridescent green and wedge-shaped, while the nymph is usually green and moves sideways in a unique manner when disturbed.

The adult **raspberry crown borer** makes its appearance in late July and August. The adult is a very attractive moth that superficially resembles a yellow jacket. You may notice the adults resting on foliage during the day. It's the larvae, though, that cause the major problem. Reddish-brown eggs are placed on foliage in August and September. After hatching the larvae find a protected place near the base of the cane to spend the winter. The next spring the larvae enter the crown and roots where they spend the next year. In the second year the larvae continue to feed until early summer, at which time they form pupae and then emerge as adults in late summer to start the cycle over again. During the growing season look for withering, wilting, and dying canes, often with half-grown fruit. Destroying these canes, including the crown, may help reduce crown borer populations.

Currently there is only one insecticide labeled for raspberry crown borer (Guthion) and it will not be available after 2005. It is best used in the spring against larvae at the base of canes.

I should also mention **twospotted spider mite (TSSM)** as a potential pest. These tiny spider-like arthropods can become very numerous on foliage, causing white stippling on leaves. They seem to be most problematic in dry sites and/or in mild growing areas such as the Hudson Valley and Long Island. Look for the white speckling on the leaves that indicates some feeding by spider mites. As of a few years ago there is now a miticide registered in New York for control of TSSM (Savey WP). Predatory mites can also provide control of TSSM.

Finally, late in August or September keep an eye out for injury on canes originating from egg laying activity of **tree crickets**. The female inserts eggs in canes, leaving long rows of punctures that can weaken the cane.

Degree Day Accumulations for Ohio Sites July 21, 2004

Location	Degree Day Accumulations Base 50F	
	Normal	Actual
Akron-Canton	1426	1468
Cincinnati	1931	1958
Cleveland	1398	1521
Columbus	1638	1899
Dayton	1698	1808
Kingsville	1287	1352
Mansfield	1419	1490
Norwalk	1402	1586
Piketon	1883	1944
Toledo	1400	1572
Wooster	1333	1590
Youngstown	1294	1382

Pest Phenology

Coming Events	Degree Day Accum. Base 50F
San Jose scale 2nd flight begins	1000 - 1294
Dogwood borer flight peak	1001 - 1327
Codling moth 2nd flight begins	1018 - 1540
Apple maggot 1st oviposition punctures	1021 - 1495
Obliquebanded leafroller 1st flight subsides	1034 - 1434

Thanks to Art Agnello, Cornell Entomologist

Fruit Observations & Trap Reports

Insect Key

AM: apple maggot
CM: codling moth
ESBM: eye-spotted budmoth
LAW: lesser apple worm
LPTB: lesser peachtree borer
OBLR: obliquebanded leafroller
OFM: oriental fruit moth
PTB: peachtree borer
RBLR: redbanded leafroller
SJS: San Jose scale
STLM: spotted tentiform leafminer
TABM: tufted apple budmoth
VLR: variegated leafroller

Site: Waterman Lab, Columbus
Dr. Celeste Welty, OSU Extension Entomologist

Apple 7/15 to 7/22/04	
Redbanded leafroller	28 up from 6
Spotted tentiform leafminer	2162 down from 3040
San Jose scale	32 down from 731
Codling moth	12.0 down from 17.0
Lesser appleworm	15 down from 16
Tufted apple budmoth	0 down from 1
Variegated leafroller	7 up from 3
Obliquebanded leafroller	1 down from 2
Apple maggot (3 traps)	0 down from 4

Site: Holmes, Wayne, and Wayne Counties
Ron Becker, IPM Program Assistant

Apple: 7/14 to 7/21/04	

Redbanded leafroller	Holmes: 2 down from 4
	Wayne: 1.0 down from 2.7
	Medina: 0.8 down from 1.5
Spotted tentiform leafminer	Holmes: 180 up from 120
	Wayne: 420 up from 60
	Medina: 135 up from 135
Oriental fruit moth	Holmes: 0 same as last wk.
	Wayne: 0 same as last wk.
	Medina: 0 same as last wk.
Codling moth	Holmes: 1.3 up from 0.7
	Wayne: 5.2 up from 0.2
	Medina: 0.5 up from 0.1
Lesser appleworm	Wayne: 5 up from 2
Peach: 7/7 to 7/14/04	
Peachtree borer	Holmes: 1 up from 0
	Wayne: 3 down from 4
	Medina: 0 same as last wk.
Lesser peachtree borer	Holmes: 0 same as last wk.
	Wayne: 1 down from 6
	Medina: 0 same as last wk.

Ron's comments: aphid & European red mite in several blocks, some tissue feeding leafminers.

Site: West District; Huron, Ottawa, Richland, and Sandusky Counties
Lowell Kreager, IPM Scout/Technician

Apple 7/13 to 7/20/04	
Apple maggot (3 trap sum)	0.0 same as last week
Codling moth	0.8 up from 0.4
Lesser appleworm	2.4 down from 2.5

Oriental fruit moth	1.3 up from 0.8
Redbanded leafroller	1.4 down from 15.6
San Jose scale	0.0 same as last wk
Spotted tentiform leafminer	277 down from 382
Peach 7/13 to 7/20/04	
Lesser peachtree borer	2.7 up from 1.7
Oriental fruit moth	1.7 down from 2.1
Peachtree borer	0.2 up from 0.0
Redbanded leafroller	2.2 down from 28.6

Site: East District; Erie and Lorain Counties
Jim Mutchler, IPM Scout/Technician

Apple 7/13 to 7/20/04	
Apple maggot (3 trap sum)	0.3 up from 0.0
Codling moth	0.6 down from 0.8
Lesser appleworm	6.0 up from 5.9
Oriental fruit moth	4.6 up from 3.7
Redbanded leafroller	2.6 down from 6.4
San Jose scale	115 up from 18
Spotted tentiform leafminer	350 down from 725
Peach 7/13 to 7/20/04	
Lesser peachtree borer	3.3 down from 6.3
Oriental fruit moth	4.8 up from 4.3
Peachtree borer	6.0 up from 2.8
Redbanded leafroller	3.0 down from 6.0

The Ohio Fruit ICM News is edited by:

Ted W. Gastier
Extension Agent, Agriculture
Tree Fruit Team Coordinator

Ohio State University Extension Huron County
180 Milan Avenue
Norwalk, OH 44857
Phone: (419)668-8210
FAX: (419)663-4233
E-mail: gastier.1@osu.edu

| Back |