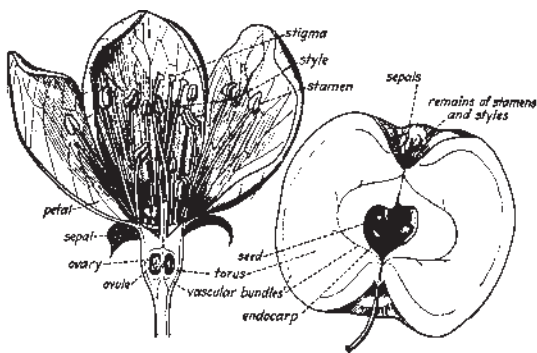


PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

SEPTEMBER 9, 2003



Smartfresh™ (1-MCP) Receives a Label for New Jersey

Robert Belding, Ph.D., Specialist in Pomology

We learned this week that Smartfresh, a plant growth regulator produced by Agrofresh Inc., a subsidiary of Rohm Haas Co. has been granted a label for postharvest use on apples in the state of New Jersey. 1-methylcyclopropene (1-MCP) is a very new and exciting plant growth regulator that very effectively blocks the activity of ethylene in the ripening/senescence of plants. MCP is used at very low concentrations (parts per billion) and has been favorably rated for its low toxicity.

This new plant growth regulator, discovered in the mid 1990's, can increase the effective storage life of apples, allowing farmers to sell their own apples longer into the spring. Currently March is about as long as we are able to store apples using conventional cold storage. Fruit storage reports indicate that fruit stored for 3.5 months in refrigerated storage were firmer by 3.65 pounds and when stored for 9 months, fruit were 3.7 pounds firmer than untreated fruit. Further, fruit had much better shelf life once they were removed from storage, indicating that new ethylene binding sites needed to be created at room temperatures for ripening to proceed.

Smartfresh attaches to the ethylene binding sites in plants but has 10 times the attractive force than does ethylene itself. Because of this attraction, both internal and external sources of ethylene will be displaced and will no longer have ripening activity within the plant.

Treatment of apples meant for long-term storage is done in a sealed, gas-tight room. The treatment only requires 24 hours after which the produce should be stored under normal refrigeration or under controlled atmosphere storage. The fruit will NOT require any additional treatments. Produce can be stored with other untreated produce and will not be affected by ethylene from other sources.

Smartfresh is applied by the use of a proprietary generator system that is designed to match the volume of the room being treated. Until now, only large storage rooms have been commercially treated, but this year small container treatment is also available. Pricing of the product is based on the volume of the room, and treatment is reported to cost \$18.50 per 100 cubic feet of treated space. To put that in perspective, the smallest unit available would be a 'SEA' container roughly 8 feet x

SEE SMARTFRESH ON PAGE 2

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Honeycrisp Fruit Rots

Win Cowgill, Agricultural Agent

Honeycrisp is one of the best new apples returning a premium price to growers. However it is becoming obvious that it is one of the toughest apples to grow. **Japanese beetles** love it, as do **white tail deer**.

A number of us pomologist types have observed many **fruit rots** this season on Honeycrisp. Dr. Jim Schupp, NYAES, Hudson valley notes, "Honey Crisp is very susceptible to rots. Washing or drenching the fruit after harvest may worsen the risk of losses due to rot by spreading the fungal spores throughout the bin. Avoid it if possible. If you must drench, use a fungicide labeled for post-harvest use."

Jon Clements, Tree Fruit specialist at UMASS noted extensive rots on Honeycrisp and took the pictures to the right.

Dr. Dave Rosenberger, Extension Plant Pathologist, NYAES, Hudson Valley, made the following comments and observations:

"The Spencer apple definitely had **bitter rot**, because there is no other common decay that will produce the pink-orange sporulation under damp conditions. The bitter rot spores can look rather black if the weather has been dry for a while prior to the observation. I'm fairly certain that the Honeycrisp has the same disease (bitter rot), but the pink-orange colored sporulation is less evident in the Honeycrisp photo. **Black rot** can sometimes produce black pycnidia in a circular pattern that would be similar to what the Honeycrisp photo shows, but the tight concentric rings in the Honeycrisp photo are more common with bitter rot.

Another diagnostic approach that can help separate black rot and bitter rot is to cut the apple in half through the middle of the rotten spot. Bitter rot decay generally extends toward the core in a sharply angular V-pattern, whereas black rot generally has a more rounded pattern of decay extending toward the core.

So far as I can tell, Honeycrisp is very susceptible to all summer and post harvest decays. When bitter rot pressure is high, this disease can be controlled only by applying Captan at the maximum label rate/A on a 14-day interval (or perhaps even more often if residues are removed by rain), or by applying Flint at the rate labeled for bitter rot (which I believe is 50% higher than the scab rate)."

My observations concur with Dr. Rosenberger's comments. Honeycrisp is often the only cultivar I can see with extensive rot in the New Jersey plantings I have observed. □



Photo Credits Jon Clements - Bitter Rot on Spencer Apple (above) and Honeycrisp Apple (below)

SMARTFRESH FROM PAGE 1

8feet x 20 feet long with a volume of 1300 cubic feet. That means this storage unit would contain 13 units of 100 cubic feet, so 13 units x \$18.50 puts the treatment price at \$240.50. Generators are calibrated at the factory and the Agrofresh service department handles the treatment if your business is within the service area. For contact information see www.agrofresh.com. For a copy of the label, you can contact me, or your Rutgers Cooperative Extension Agent.

1-MCP was first commercially used on cut flowers and uses are rapidly spreading across the world. At the meetings of the International Horticulture Society last year, at least 80% of all the postharvest talks were based on 1-MCP. Tests are now being conducted on other produce such as peaches and a label is expected for stone fruit in about 2 years. □

Apple Maturity Update and Storage Comments

Win Cowgill, Agricultural Agent, and Meredith Compton, North Jersey Tree Fruit Program Associate

Continued temperatures in the 50's and low 60's this past week continue to stimulate good red color development on Gala, Macs and Honeycrisp. Empire and Most Red Delicious strains have significantly increased red color this past week as well.

Gala harvest has begun in North Jersey and McIntosh harvest in North Jersey is starting. TRECO 42 Gala at the Snyder Farm was spot picked on September 8th for the first time with good sugar (brix 12) and pressure (12lbs).

McIntosh

North Jersey should watch their Mac's closely for Red Color development and drop. Applications of NAA can be used. See the accompanying article by Dr. Jim Schupp, "Getting the Most From the "Old" Stop-Drop: NAA" We like to target Macs for fresh market harvest at Starch of 5-6. They taste best at 6.

Location	County/Town	Cultivar	Sample Date	Pressure	Brix	Starch
Warren-Belvidere		Mac	9/5	15	9	4
Bergen County		Red Max Mac	9/5	16	8	4.5
Hunterdon-Rutgers Snyder		Rogers Red	9/7	16	9	4
Hunterdon-Pittstown -2		Mac	9/8	13.7	8.8	6.9

Gala

Background color has historically been one of the best indicators of maturity for Gala. Fresh market Galas should be harvested when the background color is turning from a yellow to a cream color. SI index with the Gala Starch chart from UMASS can be a guideline as well. <http://www.umass.edu/fruitadvisor/clements/articles/gala.jpg>.

Location	County/Town	Cultivar	Sample Date	Pressure	Brix	Starch
Bergen		Gala	9/5	22	8.5	3.6
Warren-Belvidere		Imperial Gala	9/5	14	7.5	8
Hunterdon-Rutgers Snyder		TRECO 42	9/7	18.6	12	6.9

Multiple pickings based on background color and over color must be used to get consistent fruit quality and increased size.

Dr. Jim Schupp, NYAES in the Hudson Valley, on our Apple-Crop Listserv this week warned, "I would add that here in the east we've had lots of rain of late. There are some reports that this may be increasing the risk of stem-end cracking on varieties such as Gala and Honeycrisp. This is another disorder that worsens on late harvested fruit, so this may be a season to focus more on the change in background color rather than red color. When the background color goes from green to cream, it is time to harvest these varieties. Waiting until the background is yellow may be increasing more than one risk factor."

Retain treated blocks may also have reduced stem end cracking on Gala.

Honeycrisp

Location	County/Town	Cultivar	Harvest Date	Pressure	Brix	Starch
Hunterdon- Pittstown-1		Honeycrisp	9/8	15	10	3.6
Hunterdon-Rutgers Snyder		Honeycrisp	9/7	18.4	10.5	3

According to Jon Clements, Tree Fruit Specialist in UMASS, Honeycrisp should be harvested at 16- 18 lbs pressure and 4-6 on the Cornell Starch Iodine chart. However, Honeycrisp is progressing rapidly and it is better to go early than late on this cultivar, as early as 3-3.5 on starch may be good this season. Honeycrisp harvested too mature can develop an off-flavor.

Storage of Honeycrisp-From Jim Schupp, "Based on work by Chris Watkins in NY, holding at 50°F for a week before cold storage is effective for reducing soft scald, but increases the risk of bitter pit. The recommended storage temperature for Honeycrisp is 37-38°F. Late harvested fruit is very susceptible to scald."

Cortland

Cortland is usually picked one week after Macs (remember Macs can be picked over 3 weeks if stop drop is used). We would guess around September 15 at the Rutgers Snyder Farm. They do not starch the best but it can be used as a guideline, a target a starch of 5-6.

Location	County/Town	Cultivar	Harvest Date	Pressure	Brix	Starch
Hunterdon- Pittstown-1		RedCort	9/8	15	10	1.5
Hunt. Pittstown-2 (Retain®)		Cortland	9/8	17	8.5	1
Hunt. Pittstown-2 (no Retain)		Cortland	9/8	16	8	2.4

Retain® Reminder: Retain® must be applied 28 days before anticipated harvest. If blocks were not treated with Retain®, it is too late for this season to apply for all but our October maturing apples, Suncrip®, Stayman, etc. □

Getting the Most from the “Old” Stop-Drop: NAA

Jim Schupp, PhD. Specialist in Pomology, NYAES, Geneva, NY

Reprinted from Scaffolds Fruit Journal, August 18, 2003 Volume 12 No. 23

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

The use of NAA (Fruitone N, K-Salt Fruit Fix) for control of preharvest drop has been overshadowed in recent years by that of ReTain, however ReTain use must be planned weeks prior to harvest. With the effective application time so close to the onset of drop, NAA offers a “rescue” treatment, should the threat of preharvest drop be increased due to unforeseen circumstances. Examples of such situations include unavoidable delays in harvest due to bad weather or labor issues, slow red color development, and overlapping harvest schedules of varieties with similar maturity windows, such as McIntosh with Macoun, or Empire with Delicious. While it is not the purpose of this article either to promote or condemn the use of ethephon (Ethrel, Ethephon II) to promote fruit coloring, those growers using one of these products also need to use NAA to prevent excessive fruit drop resulting from accelerated fruit maturation. The following tips and reminders are offered to help growers brush up on using NAA to best effect.

Timing NAA stop-drop sprays is a little like a game of chicken, requiring both steely nerves and a good understanding of your opponent. The label says to apply NAA when the first sound fruit begin to drop. A single spray of 10–20 ppm NAA offers drop control for about seven days from the date of application, but it takes two or three days to “kick in”. Apply NAA three days too early and the window of effective drop control is about halved. Apply three days too late and perhaps a quarter of the crop will be on the ground before the NAA takes effect!

Stem loosening coincides with the climacteric rise in ethylene that signals fruit ripening. Unlike ReTain, which delays drop by delaying fruit maturation, NAA stops drop by delaying stem loosening. Predictive degree-day models and the pattern of starch disappearance measured by the starch index test do not provide a precise guide to timing NAA stop-drop sprays. These techniques can indicate whether the threat of drop is earlier or later than normal, but more direct monitoring is required for the actual timing of the sprays.

Varieties such as McIntosh that are highly susceptible to preharvest drop require careful monitoring to determine when fruit drop is beginning. Limb tapping should be used to determine the onset of drop as fruit near maturity. Bump several scaffold limbs of three or four inches in diameter throughout the block on a daily basis. Use the palm of your hand with a short firm stroke,

striking the limb at its mid-point (just like golf, this skill improves with practice and experience). If zero to one apples per limb drop on average, it’s too soon to apply NAA. If the average is about two, check again later the same day or the next morning. When several apples drop in response to limb bumping, it is time to harvest within two days or apply NAA.

When NAA is used to control drop on ethephon-treated trees, the two may be tank-mixed if the fruit is to be harvested within seven days. If the fruit is to be left on the tree longer than seven days after the ethephon, then NAA should be applied three days after the ethephon.

Rates of 10–20 ppm NAA are usually needed to be an effective stop-drop. To obtain the maximum drop control, use a split application of 10 ppm in the first spray, followed by a second spray of 10 ppm five days after the first. Split applications can provide drop control for about 12 days from the date of the first application.

Research in Virginia showed that the deleterious effects of NAA sprays on fruit maturity and fruit softening were minimized in Red Delicious by making repeated applications of 5 ppm NAA at four weekly intervals prior to harvest. This “pre-loading” technique has recently been included as an application option in the Fruitone N label. I have not repeated this research on Delicious, but using this technique on McIntosh resulted in more advanced ripening and softening, not less! I do not recommend NAA pre-loading for McIntosh and other early season, high-ethylene varieties. I suggest that growers use caution when trying pre-loading on later varieties. Use it only on a trial basis until more is known about how varieties other than Delicious grown in different climates will respond.

As with thinning sprays, stop-drop sprays of NAA work best when applied with good coverage and plenty of water. Concentrating beyond 4X (less than 75 gallons of water per acre for 300 gallon TRV trees) may diminish the effectiveness. Use a non-ionic or organosilicone surfactant to enhance uptake.

When used as a stop-drop, NAA may advance ripening, especially at the maximum label rate of 20 ppm. The primary impact of this advance in maturity is reduced storage potential of the fruit, particularly in the loss of firmness. This effect is not consistent from year to year or block to block. The question then arises whether NAA-treated fruit has potential for CA storage or treatment with SmartFresh (1-MCP).

Perhaps the simplest way to answer the question with regard to CA is to remember the adage “garbage in, garbage out”. If the fruit was left on the tree to the bitter end of the drop control, is measurably softer than previously harvested fruit, and has elevated starch index values, then it should be marketed in the short term. On the other hand, if the fruit was harvested within a week after treatment and has good firmness and starch values

SEE NAA ON PAGE 6

Fruit IPM

Dean Polk, Fruit IPM Agent

Peach

Borers – Peach Tree (PTB) and Lesser Peach Tree Borers (LPTB): LPTB has been flying since mid May, while PTB has been flying since early June. There are 2 generations per year for LPTB and 1 generation per year for PTB. The lesser borer larvae are found in the Cytospora cankers on tree limbs, while the regular borer (sometimes called “greater” peach tree borer) is found from about 6” above ground in the trunk to a few inches underground on the crown and main roots. By now, most eggs have been deposited and young larvae have emerged. Some eggs are still hatching, with a few larvae left to emerge. Now is the time to start treatments for both of these pests. Insecticides are applied to the emergence site(s) – cankers on the limbs and the tree crown. Applications should be made that thoroughly cover and drench the cankers and bark. This means using a handgun, and not an airblast application. Apply from .5 to 1 gal. of spray material to each trunk, in addition to covering scaffold limbs to the drip point. Lorsban 4E continues to be the best material for this purpose applied at 1.5 qt/100 gal.

Insect Trap Captures

Tree Fruit – Southern Counties

Week End	LPTB	PTB	OFM	TABM-P	AM	CM	DWB	OFM-A	STLM	TABM
8/22	42	10	30	26	0.2	6	47	22	2034	8
8/29	43	11	27	11	0	2	104	16	132	10

Tree Fruit – Northern Counties

Week End	LPTB	PTB	OFM	TABM-P	AM	CM	DWB	OFM-A	STLM	TABM
8/22	0.5	0.2	17	3.1	0.1	1.6	2.0	—	1350	2.4
8/29	0.9	0.5	18.6	15.2	0.4	2.7	1.0	—	318	15.8
9/5	0.0	0.0	16.1	15.0	0.6	2.3	0.5	—	87.3	12.8

Blueberry – Atlantic County

Week End	CBFW	RBLR	SNLH	OB	BBM
8/22	—	—	.37	—	—
8/29	—	—	.33	—	—
9/5	—	—	.58	—	—

Blueberry – Burlington County

Week End	CBFW	RBLR	SNLH	OB	BBM
8/22	—	—	1.54	—	—
8/29	—	—	2.7	—	—
9/5	—	—	2.7	—	—

Last Insecticides for Other Pests: Most of the last insecticides for late varieties should have already been applied.

Tufted Apple Budmoth is 99% hatched in southern counties, and about 85 to 90% hatched in northern counties where it is not usually a problem. The last generation of **Oriental Fruit Moth (OFM)** is about 48% emerged in southern counties. Therefore, any very late varieties such as Parade are still exposed to OFM damage and should be protected. Significant OFM emergence will start to get underway in northern counties by mid to late week.

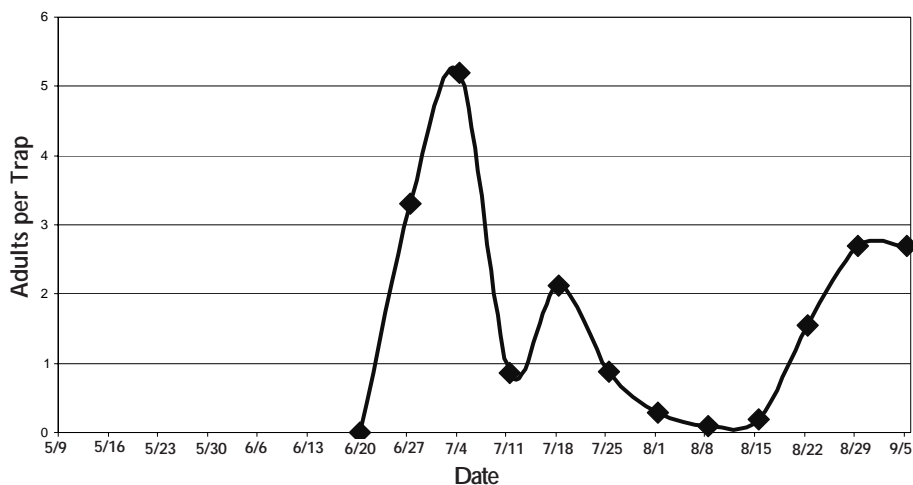
Apples

Apple Maggot (AM): We are normally done with AM at this time of year. However, late season apple maggot flies are present in increased numbers on some farms in northern counties. Since much of New Jersey is close to the southern end of the apple maggot range, they are sometimes easy to forget. Sprays should not be stretched if red sticky ball traps are capturing in excess of 2 to 5 flies per week.

Blueberry

Sharpnosed Leafhopper (SNLH): This insect is showing a flight peak on farms monitored by the IPM program. Since the flight is greater in Burlington County (compared to Atlantic Co.), a graph from Burlington County data is used to illustrate the flight. Most insecticide applications should have already been applied.

Sharpnosed Leafhopper Emergence - Burlington County - 2003



Peach Cider Beverage Debut

Robert Belding, Ph.D., Specialist in Pomology

Circle M Farm in Gloucester County, in cooperation with the Rutgers Food Innovation Research and Extension Center (FIRE) has introduced a Peach Cider beverage made from peaches. Santo John Maccherone, a New Jersey peach farmer has found a way to market a 'value added' product from small or otherwise underutilized peaches.

The beverage was a big hit when it was introduced at the September 3rd, Fruit Variety Showcase hosted by Jerome Frecon of Rutgers Cooperative Extension of Gloucester County. Folks attending the showcase taste tested the peach

cider and the consensus was very positive. Taste testers enthusiastically considered recipes using the Peach Cider Beverage straight up, or mixed with their favorite liquids.

The beverage can be purchased at over 15 retail locations in New Jersey including two major food chain stores, or wholesaled from Circle "M" Farms in Mullica Hill. □



NAA FROM PAGE 4

for CA storage for the variety (e.g., McIntosh with 14 lb pressure and a Cornell chart starch index rating of 6 or lower), there is little reason to expect it to perform differently than similar fruit that received no NAA.

The question of whether NAA stop-drop sprays have advanced fruit maturity may be most critical when using SmartFresh on McIntosh, where the maturity of the fruit is an overwhelming influence on whether the fruit will respond to 1-MCP. Quoting Dr. Chris Watkins in the Proceedings of the 2003 Apple Storage Workshop, "We do not have any data yet, but we assume that induced ethylene production that results from use of NAA will deleterious[ly] affect fruit responses to 1-MCP. If you use stickers [NAA stop-drop], your storage operator should be informed."

Finally, a comment about use of NAA on trees previously treated with ReTain. The use of both stop-drops at the respective correct times results in drop control that is superior to that obtained by using either one alone. Fruit treated in this manner, then left for an extended time on the tree, often have limited storage potential (see above); however, this combination can be an effective way of getting the ultimate in drop control. This drop control comes at a high price and should therefore only be used on high value fruit with little or no storage period, such as for a few rows of trees held for late picking in PYO blocks.

Submitted by Win Cowgill, Agricultural Agent. □

NJ Information Network for Pesticides & Alternative Strategies

Patricia D. Hastings, Program Associate,
Rutgers Cooperative Extension Pest Management Office

The New Jersey Information Network for Pesticides & Alternative Strategies (NJinPAS) is part of a grant-funded network designed to provide a structure to gather and transmit information on issues relevant to both current and transitional pest management strategies. Dr. George Hamilton, Specialist in Pest Management is the Coordinator of this program.

One of the key elements of this program is expedited delivery to New Jersey stakeholders of more timely pesticide-related information (such as regulation advisories, requests for comment, voluntary pesticide cancellations, pesticide security alerts, NJDEP WPS enforcement initiatives). So, NJinPAS set up and maintains nine listservs for growers, crop consultants, pesticide users, public interest groups, environmental groups, and Extension faculty and staff. There is a Network listserv for more general postings, plus 8 additional listserv subgroups for more specific distribution, including regulation notices or pesticide advisories. It is set up so that if you are on more than one listserv, you will not receive multiple postings. The information provided typically augments rather than duplicates the information you receive in the Plant & Pest Advisory, and it is maintained throughout the year.

The nine separate listserv categories for *open* enrollment are:

- Network;
- Institutions & Interiors;
- Mosquito;
- Fruit;
- Turf, Ornamentals, Greenhouse, & Nursery;
- Field & Forage Crops;
- Vegetables;
- School IPM; and
- Forests & Xmas Trees.

Contact Pat Hastings at 732-932-9801 if you would like to enroll. Or, you can enroll online @ <http://www.pestmanagement.rutgers.edu/NJinPAS/listservs.htm>.

There is an online archive of all open listserv postings made since October 2001; see <http://www.pestmanagement.rutgers.edu/NJinPAS/listservpostings.asp>. You may choose to view postings by date, title, listserv posted, or by topic. Better yet, you can do a **word search** of the titles and topics. So for example, you can look for a specific pesticide, crop, or agency. □

Damaging Exotic Stinkbug Enters New Jersey

George Hamilton, Ph.D., Specialist in Pest Management and
Peter Shearer, Ph.D., Specialist in Tree Fruit Entomology

The **brown marmorated stinkbug**, *Halyomorpha halys* (Stål) was first detected in Allentown, PA in 1996. Since that time it has spread throughout Lehigh, Northampton, Monroe and Pike Counties in Pennsylvania and occurs in large numbers wherever it is found. It was first detected here in New Jersey from a blacklight trap located in Milford (Hunderton County) in 1999. In 2002 it was again collected from a blacklight trap, in Little York and Phillipsburg and from plants in Stewartsville (Warren County). In addition, a homeowner from south-eastern Morris County brought an unknown stinkbug into the Morris County Cooperative Extension Office for identification. It was later confirmed as *Halyomorpha halys*. These reports are evidence that the insect is firmly entrenched in New Jersey and spreading.

This stinkbug has a large host range that includes peaches, plums, pears, raspberries and many ornamental plants including maple trees. This insect could become a serious agricultural pest. *Halyomorpha halys* is also a nuisance pest. It exhibits behavior similar to the **Asian ladybird beetle** and **boxelder bug**. Every fall, adults leave their host plants looking for hibernation sites. Unfortunately our homes provide a perfect place to spend the winter. This behavior can result in hundreds of adults aggregating on the sides of houses in late September and early October.

Halyomorpha halys adults can be distinguished from other stinkbugs by their large size (17 mm) and brown coloration (see photo). Adults also have characteristic whitish antennal segments, dark bands on the overlapping part of the rear wings and patches of coppery or bluish metallic-colored punctures on the head and pronotum (shield just behind the head). Juvenile *H. halys* are similar to adults but have very pronounced light and dark banding on the legs and antennae and reddish eyes (see photo).

Should you come across this insect or similar looking stinkbug please contact your local county cooperative extension office or the Rutgers Cooperatives Extension pest management office by phone (732-932-9801) or email (Hamilton@aesop.rutgers.edu). □



Brown marmorated stinkbug

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