

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

JULY 7, 2004



INSIDE

Marketing Matters	1
Vegetable Diseases Update	2
Late Blight found in PA	2
Pest Notes	3
IPM Update	4
Weekly Weather Summary	6

Marketing Matters

Rick VanVranken, Atlantic County Agricultural Agent

Last week's newsletter announced the availability of a new USDA grant program to help farmers develop ideas for value-added products or enterprises. The term 'value-added' covers a broad range of products and services that transform the raw output of a farm and create something for which consumers are willing to pay higher prices. Typically, what comes to mind is making pies, or jellies and jams, from leftover fruit. And the fact is that many successful farm markets, like Delicious Orchards in Monmouth County, got started that very way.

Why does value-added seem so attractive? It almost seems like a case of $1+1=3$, where the farm produce costs \$1 and it costs another dollar to create the 'value-added' product. Looks great if the consumer is willing to spend \$3 on something that cost \$2 to produce. If you can turn cull apples into cider, the equation might be $0+1=3$, since the cull apples would have no value otherwise. The trick is making sure the equation works. The current estimates that the USDA's Economic Research Service uses is $\$0.18+\$0.82=\$1.00$. The equation is balanced (a basic rule in math) and the 82 cents includes all the expenses of creating value-added products, including the profits of the enterprise(s) adding that value.

So, who gets that \$0.82 now? A recent ad for an insurance company claims they have 'gotten rid of the middleman...next time you call, ask what they did with him[her].' In a value-added enterprise, you become the middleperson. If you begin processing your farm products into pies, jams or bagged salads, you have taken on the role of the processor, one of those middle level enterprises. Similarly, if you begin delivering your farm products to local grocers or restaurants, you have become a jobber or broker, especially if you add even more value by picking up some of your neighbor's produce to supplement the variety you can offer. Ultimately, if you become the retailer, you receive the entire \$1 the consumer spends, but that has its own set of costs.

If you have an idea for a value-added enterprise, now is a great time to look at developing it. The role of the USDA grants and the Rutgers Food Innovation Research and Extension Center is to help you figure all the parts of the equation to be sure all the costs, excluding profit, are less than \$1. □

Vegetable Disease Update

Andy Wyenandt, Ph.D., Post Doctoral Associate in Vegetable Pathology and Wes Kline, Ph.D., Cumberland County Agricultural Agent

✓ Chinese Cabbage - Downy Mildew

– This week Downy mildew was seen for the first time on Chinese cabbage. Symptoms on the *upper leaf surface* include purple, yellow or brown lesions that may have an angular appearance. 'Fluffy' or 'Downy' white fungal growth will appear on the *undersides* of lesions during cool, wet weather. Heavy fogs, prolonged dews and cool days and night temperatures favor the development of Downy mildew. Downy mildew may predispose plants to bacterial soft rot infections. Control of Downy mildew begins with allowing good aeration in planting beds, avoiding the use of overhead irrigation, and fungicide applications every 7 to 10 days at first sign of disease or when favorable weather conditions persist. There are a number of fungicides labeled for the control of Downy mildew. Please see page F16 and F17 of *2004 New Jersey Commercial Vegetable Production Recommendations* for specifics on different cole crops.

✓ **Cucumber/Zucchini – Downy Mildew** – has been making its way onto different cucurbits over the past few weeks. Growers should be scouting their fields on a regular basis for symptoms and applying fungicides on a weekly basis to prevent Downy mildew as well as other important foliar diseases of cucurbits. □

Late Blight found in Pennsylvania

Andy Wyenandt, Ph.D., Post Doctoral Associate in Vegetable Pathology and Wes Kline, Ph.D., Cumberland County Agricultural Agent

This past week **Late Blight** was found on tomatoes in Southeast Pennsylvania (Lancaster Co.). *To date, Late Blight has not been found in New Jersey.* Tomato growers in our area should already be on a preventative (weekly) fungicide maintenance program, which includes chlorothalonil (Bravo, Echo, Equus) or mancozeb (Dithane, Manex II, Manzate, Penncozeb) for other foliar diseases (**Early blight, Septoria leaf spot**). These same chemicals are protectant fungicides against Late blight. If you are *NOT* on a preventative program *start it now.* *If Late Blight is suspected in the field, switch your fungicide maintenance program to include one of the following:*

Acrobat – 6.4 oz/A 50WP/A plus a protectant fungicide (chlorothalonil or mancozeb), OR

Gavel – 1.5-2 lb 75DF/A
OR,

Curzate 3.2-5.0 oz 60 DF/A (this is a special local needs label (24c) which must be in your possession at the time of application
OR,

Tanos 8 oz 50W/A plus a protectant fungicide.

Dr. Alan MacNab (Penn State University) made the following comments on the different fungicides for tomato Late Blight:

1. Acrobat 50WP has some systemic activity and must be tank mixed with a protectant like chlorothalonil or mancozeb.
2. Tanos 50WP has some systemic activity and must be tank mixed with a protectant like chlorothalonil or mancozeb.
3. Curzate 60DF has some systemic activity and must be tank mixed with a protectant like chlorothalonil or mancozeb.
4. Chlorothalonil is an excellent protectant.
5. Mancozeb is a good protectant.
6. Gavel 75DF is not a systemic, but is an effective protectant.
7. Prophyt, a new material, is a useful material for Late Blight, but there is little research on its performance.

If Late Blight is suspected in a tomato or potato field, contact Dr. Andy Wyenandt at Rutgers Agricultural Research and Extension Center at 856-455-3100 ext. 4144 or your local county agricultural agent. For more information on rates please see the *2004 New Jersey Commercial Vegetable Production Recommendations*. □

Pest Notes

Gerald M. Ghidui, Ph.D., Specialist in Vegetable Entomology

✓ **Cucurbits:** Cucumber beetles have been building up in cucurbit crops (pumpkins and others) in central Jersey. High populations of beetles can result in feeding scars on the rinds, leading to an increase in black rot and other diseases. Foliar sprays of a pyrethroid (such as Ambush, Pounce, Capture, Asana) or a non-pyrethroid (such as Sevin or Thionex) will effectively reduce the adult population.

✓ **Pepper:** In plots at RAREC, overspraying of peppers with a pyrethroid has led to the start of an aphid population increase. Make sure to rotate the CLASS of insecticides you select for your aphid and corn borer management program to avoid overspraying with any single insecticide class. This will reduce the possibility of aphid flare-ups as well as reduce the risk of insecticide resistance in pests such as corn borer and others. Insecticide class of each brand-name material is listed in Table D-6, "Toxicity of Pesticides" under the 'Type Class' column, of the *2004 Commercial Vegetable Production Recommendations for New Jersey*.

Virginia reports very high flight activity of the **beet armyworm** adult moths, although they have not yet found larvae. These pests readily attack pepper, and damage often appears first on the very upper 1/3 of the plant canopy. The early feeding damage is similar to that of a leaf-roller, with skeletonizing of the leaves between the veins. Later damage is heavy defoliation and fruit entry. If the favorable weather holds out, expect to see beet armyworm moths soon in this area. Management materials for beet armyworm include Avaunt, Confirm, Intrepid, Lannate, SpinTor, and Proclaim (Note: pyrethroids have not been effective against this pest).

✓ **Tomato:** Wes Kline, Cumberland County Agricultural Agent, reports that larvae of the **tomato and tobacco hornworm** moths are being found in high numbers on tomato plants in Cumberland and Salem Counties. These pests feed on leaves, stems and fruit of tomato plants. Fruit damage appears as large gouges in green and red tomatoes, often accompanied by molds and bacteria that enter the wound and soften the fruit. To confirm hornworms, look for entire stems and branches stripped and devoid of leaves, and it is often easy to spot the larvae around this area. Larvae have the characteristic "horn" or spike on the tail end of the body. Both the tomato and tobacco hornworms damage plants in the same manner and the larvae actually look very similar to each other (there are several slight differences, such as the color of the "horn", and the pattern of the side markings). Many materials are available for management of these pests, including Asana, Avaunt, a wide range of Bt's

(biological insecticides), Baythroid, Confirm, cryolite, Danitol, Fury, Mustang/Mustang Max, Guthion, Intrepid, Lannate, Monitor, Proclaim, SpinTor, and Warrior. Note that when using a Bt (an insecticide with *Bacillus thuringiensis*), insect-growth regulator insecticides (Intrepid, Confirm, Proclaim) and some new-chemistry insecticides such as Avaunt, that the time for death of the insect to occur after spray application may be 5-7 days (however, feeding generally stops after the first day).

Thrips populations have exploded in many mid-Atlantic areas, and Virginia and Maryland report heavy thrips numbers in tomatoes. Check the tomato flowers by gently squeezing the flowers over a white or yellow card, and examine for thrips; or, look for thrips damage on the fruit. If thrips or their damage is found, use Guthion, Monitor, Provado or SpinTor for management. High volume, high pressure is recommended to agitate the leaves and flowers and force the spray material to the location of the thrips (generally in the flowers and leaf axils).

✓ **Potato (sweet):** Rutgers IPM reports heavy activity of the **oriental beetle** in blacklight traps throughout southern New Jersey, with many females being trapped. This suggests that these pests will be depositing eggs in the soil at this time, and hatching larvae can cause severe damage to the developing potatoes. Larvae will remain in the ground thru the winter, and emerge next year at the end of June. Several states recommend the application of foliar sprays of carbaryl at the base of the plant to reduce the numbers of adult beetles before they can deposit eggs. □

IPM Update

Kristian Holmstrom, Program Associate in Vegetable IPM

Sweet Corn

Blacklight trap catches of **European corn borer (ECB)** moths are very low throughout most of the state. Slightly higher catches have occurred in the Salem-Cumberland County border and in northern Burlington County, (see ECB map). These pockets of adult activity may signify the beginning of a second flight, but they are quite low at this time. Feeding in some central and northern sweet corn plantings is still high, so be sure to check all plantings weekly for the presence of ECB injury both in the tassels and on the leaves. If feeding exceeds 12% in a 50 plant sample, consider treating. As plantings progress to full tassel, it is critical to treat for ECB if larvae are still present. Consider treating silking plantings weekly unless silking spray schedules need to be tightened should local **corn earworm (CEW)** catches increase. The highest average nightly **ECB** blacklight trap catches are:

Allentown	2	Georgetown	2	Farmingdale	1
Centerton	2	Shirley	2	Hammonton	1
Crosswicks	2	Cinnaminson	1	Little York	1
Folsom	2	East Vineland	1	Sykesville	1

Fall armyworm (FAW) is active in parts of southern New Jersey. Look for heavy “window-pane” type feeding on whorl and seedling corn. This feeding is caused by young FAW. As the larvae grow, the feeding becomes more ragged, with large holes and accumulations of droppings in the whorl. When FAW is present, thorough spray coverage is critical. Be sure to use as much water with the spray material as possible, and increase pressure to permit the insecticide to penetrate the layer of caterpillar droppings.

We are beginning to pick up a few consistent CEW catches in the border area between Salem and Cumberland Counties (see CEW map). These individuals are an indication that an adult flight is beginning in the state. Virginia is reporting the beginnings of a flight in the eastern half of that state now. As emergence in areas to our south progresses, watch for sharp increases as would be expected on southerly breezes that precede weather fronts. It is important to monitor local blacklight trap catches now, as CEW adults can increase quickly and will cause considerable injury to silking sweet corn. The shaded area on the CEW map represents a population requiring a 5-6 day silk spray schedule. The highest average nightly **CEW** blacklight trap catches are:

Centerton	2	Eldora	1	Hammonton	1
Cohansey	1	Elm	1		
East Vineland	1	Fishing Creek	1		

General Sweet Corn Spray Schedule

Silking Corn:North	7 days
Central	7 days
South	5 - 6 days

Tomatoes

With warm weather and enlarging fruit on many plants, it is a good idea to check at least weekly for the presence of **flower thrips**. These small insects can cause what we have come to call “gold fleck” on the surface of ripening fruit if they are not controlled by the time fruit are enlarging. The easiest way to detect thrips when populations are reasonably low is to tap flower clusters. Use an index card or other small light colored surface. Place the card beneath an upper canopy flower cluster and tap the cluster with your finger. If the small, yellow colored flower thrips shake out onto the card at more than half of the sites inspected, or thrips populations have been increasing, consider treating to minimize cosmetic injury to ripening fruit.

Be sure to check plantings for **two-spotted spider mite (TSSM)**. TSSM will cause a whitish pin-spot or “stipple” on the upper surface of infested leaves. They often start at field edges, or where tomatoes border eggplants (eggplants are a common host for TSSM). When scouting, be sure to check older leaves for the presence of TSSM colonies. Consider spot treating if they are found in specific locations in the field.

There has been a moderate increase in the number of adult **brown stinkbugs** caught in blacklight traps recently. These pests can cause significant injury to tomatoes; particularly when very dry conditions are prevalent. As adults enter irrigated tomato fields, they will mate and deposit eggs on the plants. Later in July, adults and nymphs cause the large yellow spots on the fruit. Beneath these spots the fruit tissue is hard and pithy. If adults or nymph groups are found in the field, or fruit injury is increasing, consider treating to minimize damage.

Tomato hornworm and **cabbage looper (CL)** may now be found in tomato plantings. Both feed on foliage and the hornworm also feeds on green fruit. Look for holes in foliage in the case of CL, and entire leaves stripped of leaflets and significant damage to green fruit in the case of hornworm. Both pests are potential problems on tomatoes, but rarely do enough damage to warrant treatment. In high tunnels, hornworm may be a significant problem, and hand removal may be advisable.

Peppers

With **ECB** adult numbers low, the threat to peppers is reduced. In areas where activity has increased, weekly preventive insecticide treatments may be justified. On the ECB map, areas shaded in green (web version) or crosshatched (in the newsletter) indicate adult ECB populations that require preventive sprays to minimize fruit injury. Monitor local ECB populations to determine

SEE IPM ON PAGE 5

when to begin regular preventive insecticide applications.

Aphids are on the increase in some fields at this time. Prior to fruit set, aphid infestations are often controlled by predators and parasites. If they become heavy while fruit are enlarging, however, their sticky droppings can render fruit unmarketable. Scout weekly, and if aphid colonies are on the increase and fruit is present, or if droppings are being deposited on fruit, consider treating.

Root and stem rots are present in some fields. The typical disease on peppers is **phytophthora crown rot**. This is characterized by consecutive plants wilting down following periods of high soil moisture and warm temperatures. A dark lesion will be present at and just above the soil line. Anything that can be done to eliminate conditions of high soil moisture will help in limiting this disease. Cultural practices include high raised beds with dome-shaped tops, filling in the holes around transplants with soil to prevent water accumulation, and improving drainage to eliminate areas of standing water. The variety 'Paladin' is resistant to the crown rot phase of phytophthora.

Pumpkins

Newly emerged pumpkin plantings must be scouted at least once a week for the presence of **cucumber beetles**. If an imidacloprid formulation or Furadan was used at planting, cucumber beetle should not be evident for the first few weeks. If not, there is a risk that cucumber beetles may transmit **bacterial wilt** to plants between

emergence and 4- true leaves. Check 5 consecutive plants each in 10 random locations. If cucumber beetles are present at 5 or more sites, consider treating to minimize disease transmission.

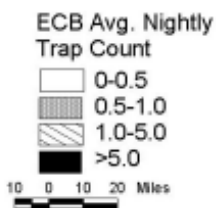
Squash bugs are now active in some pumpkin fields.

These large brown-gray insects feed on the plants with straw-like mouth parts. Egg masses are copper colored with eggs laid in regular rows. Generally they are not a significant pest once vines begin to run. At the 0-4 true leaf stage, they can cause some damage to plants, but this stage is largely over in New Jersey by the time squash bug adults are active again in the fields. On younger plants, consider treating if squash bugs or egg masses average one per plant.

Cole Crops

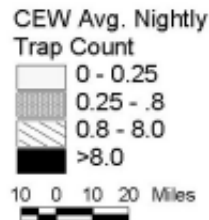
Very high infestations of **imported cabbageworm (ICW)** and **diamondback moth (DBM)** larvae are now common in cole crop plantings throughout the state. When scouting, be sure to also check the youngest leaves on plants as this is where ICW often feeds. For broccoli, cabbage and cauliflower, consider treating when greater than 20% are infested prior to heading or 5% are infested when heads are present. For collards, kale and mustard, consider treating if greater than 10% of the plants are infested at any time. On new transplants or newly emerged seedlings, do not let **flea beetles** infest more than 50% of the plants without treating to suppress them. They will cause significant injury to young plants if allowed to build up to high numbers.

Distribution of Adult European Corn Borer for the Week Ending July 07, 2004



Data collected and processed by: Kris Holmstrom, Marilyn Hughes
Rutgers Cooperative Extension & Center for Remote Sensing

Distribution of Adult Corn Earworm for the Week Ending July 07, 2004



Data collected and processed by: Kris Holmstrom, Marilyn Hughes
Rutgers Cooperative Extension & Center for Remote Sensing

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged near normal, averaging 70 degrees north, 73 degrees central and 73 degrees south. Extremes were 93 degrees at Belvidere on the 4th, and 46 degrees at Belvidere on the 4th. Weekly rainfall averaged 0.45 inches north, 0.79 inches central, and 0.28 inches south. The heaviest 24 hour total reported was 1.30 inches at Freehold on the 4th to 5th. Estimated soil moisture, in percent of field capacity, this past week averaged 77 percent north, 60 percent central and 39 percent south. Four inch soil temperatures averaged 68 degrees north, 71 degrees central and 72 degrees south.

Weather Summary for the Week Ending 8 am Monday 7/ 5/ 4										
WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
BELVIDERE BRIDGE	.26	13.33	-2.62	93	46	70.	-1	1229	276	54
CANOE BROOK	.25	16.92	-.14	91	58	73.	1	1350	405	76
CHARLOTTEBURG	.71	16.21	-1.05	87	53	69.	1	1127	380	68
FLEMINGTON	.60	17.08	.73	89	54	71.	-1	1269	291	75
LONG VALLEY	.25	14.75	-2.74	84	54	68.	-1	1089	275	74
NEWTON	.63	15.09	-.53	87	53	69.	-1	1138	305	70
FREEHOLD	1.56	17.16	1.16	91	56	74.	1	1390	316	84
LONG BRANCH	.85	14.40	-1.61	84	60	72.	0	1198	196	58
NEW BRUNSWICK	1.13	16.48	.80	90	56	73.	-1	1339	195	93
TOMS RIVER	.16	16.08	.08	87	56	72.	-2	1408	404	36
TRENTON	.26	13.13	-1.57	92	56	74.	0	1389	196	40
CAPE MAY COURT HOUSE	.00	13.21	-.92	83	61	72.	-1	1318	234	15
DOWNSTOWN	.59	14.78	.28	87	57	72.	-2	1475	265	44
GLASSBORO	.25	20.14	4.51	90	61	75.	1	1568	379	34
HAMMONTON	.54	15.85	.54	89	60	74.	0	1527	345	47
POMONA	.04	12.68	-1.17	85	57	72.	-1	1422	335	24
SEABROOK	.25	17.58	3.61	90	62	75.	1	1658	441	46
SOUTH HARRISON	.06	18.78	3.10	90	61	74	NA	1565	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW										
WES KLINE — GDD BASE 40 PINEY HOLLOW										
Last Week 214 (Ending 6/28/04)										
This Week 227 (Ending 7/5/04)										

FIRST CLASS
POSTAGE PAID
PERMIT #576
MILLTOWN, NJ 08850

Rutgers Cooperative Extension - NJAES
U.S. DEPARTMENT OF AGRICULTURE
Rutgers - The State University of New Jersey
Plant & Pest Advisory
18 College Farm Road
Cook College
New Brunswick, N.J. 08901-8551

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION CONTRIBUTORS

Rutgers Cooperative Extension Specialists

Gerald M. Ghidui, Ph.D., Vegetable Entomology

George Hamilton, Ph.D., Pest Management

Joseph R. Heckman, Ph.D., Soil Fertility

Bradley A. Majek, Ph.D., Weed Science

Andy Wyenandt, Ph.D., Vegetable Pathology

Rutgers Cooperative Extension County Agricultural Agents

Atlantic, Richard W. VanVranken (609-625-0056)

Burlington, Raymond J. Samulis (609-265-5050)

Cape May, Russell Blair (609-465-5115)

Cumberland, Wesley Kline, Ph.D. (856-451-2800)

Gloucester, Michelle Infante-Casella (856-307-6450)

Hunterdon, Winfred P. Cowgill, Jr. (908-788-1338)

Mercer, Daniel Kluchinski (609-989-6830)

Middlesex, William T. Hlubik (732-745-3443)

Monmouth, Bill Sciarappa, Ph.D. (732-431-7260)

Morris, Peter J. Nitzsche (973-285-8300)

Salem, Peter R. Probasco (856-769-0090)

Warren, William H. Tietjen (908-475-6505)

Vegetable IPM Program (732-932-9802)

Joseph Ingerson-Mahar, Vegetable IPM Coordinator

Kristian E. Holmstrom, IPM Program Associate

Newsletter Production

Jack Rabin, Associate Director for Farm Services, NJAES

Cindy Rovins, Crop Management Communications Editor

Rutgers Cooperative Extension (RCE) provides information and educational services to all people without regard to sex, race, color, national origin, disability, or age. RCE is an Equal Opportunity Employer.

Pesticide User Responsibility: Use pesticides safely and follow instructions on labels. The pesticide user is responsible for proper use, storage and disposal, residues on crops, and damage caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact RCE in your County.

Use of Trade Names: No discrimination or endorsement is intended in the use of trade names in this publication. In some instances a compound may be sold under different trade names and may vary as to label clearances.

Reproduction of Articles: RCE invites reproduction of individual articles, source cited with complete article name, author name, followed by Rutgers Cooperative Extension, Plant & Pest Advisory Newsletter.

For back issues, visit our web site at: www.rce.rutgers.edu/pubs/plantandpestadvisory.