

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

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Innovations in Fresh-Cut Produce Technology, Part I

Lou Cooperhouse, Director, Rutgers Food Innovation Center

Innovations in fresh-cut processing technology are helping to propel tremendous growth in this segment of the produce industry during the years ahead. Value-added cut fruits and vegetables effectively respond to consumer desires for convenience, variety, quality and healthy alternatives.

The pre-cut lettuce industry served as the pioneer of the fresh-cut industry, and is an outstanding example of the dramatic growth that can be achieved in a very short time period. Prior to 1990, one would have thought it inconceivable that consumers would purchase bagged, branded lettuce, however current sales of bagged lettuce products dominate the value-added produce category today with estimated US sales in 2004 of greater than \$2 billion. Cut lettuce products will continue to account for a significant portion of category sales volume for the near term, but their success has opened the door for *new opportunities in packaged fruit and vegetable products*. The convenience of product use, and the variety offered by prepackaged items, has changed consumer purchasing behavior and created “halo” effects for other prepackaged products such as pre-cut fruits and vegetables.

In the fresh-cut segment, varieties marketed to date have been dominated by pineapple, melon (including watermelon, cantaloupe, and honeydew), citrus products (including grapefruit and oranges), and grapes. Frequently packaged in polyethylene (PET) containers, these fruits typically achieve shelf lives of just two to four days. Because of this short shelf life, it is estimated that about two-thirds of retail sales to date originate from products that are cut by hand and packaged at store-level, or within localized facilities that service supermarkets. In the past few years, and in the years ahead, this category is *projected to evolve considerably because of advances in technology*. New fresh-cut fruit offerings are now available such as pre-cut melons in foodservice and party trays with a 10-14 day shelf life.

Pre-sliced apples offer an interesting case study in how advances in technology have opened up new markets for fresh-cut produce. Pre-sliced apples are currently being marketed with a 3-4 week shelf life, in which a blend of additives (such as calcium chloride and ascorbate) provides for an extension of shelf life by inhibiting respiration and the oxidation process, and in which packaging is in a simple 2-4 mil

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polyethylene (PE) bag. Sliced apples are also currently being marketed with up to a 7 week shelf life, and sold together with caramel sauce in two-compartment thermoformed trays, by firms that use similar rinse solutions but also utilize modified atmosphere packaging. Researchers have also demonstrated that 10 weeks of shelf life is possible for apple slices in syrup, using anti-browning agents together with ultra high pressure processing as will be discussed.

Numerous interactions impact the flavor characteristics, sensory acceptability, and therefore the attainable shelf life of fresh-cut produce such as variety, source, season, initial maturity, optimum processing maturity, slicing and cutting equipment, chemical or other treatments and dips, packaging environment, temperature management, shipping, and handling. Research has shown that in order to achieve optimum quality and flavor, fruit, for example, must be harvested at just the right stage of ripeness. *Fruits destined for processing should generally be harvested specifically for that use, and this is typically not the harvest maturity required for the fresh market.*

The achievement of food safety with fresh-cut fruits requires an understanding of sanitation of the exterior surface. The rind of cantaloupe melons, for example, can effectively harbor microorganisms and therefore be relatively difficult to sanitize. Foodborne illness attributed to *Salmonella* contamination, for example, has been linked periodically to a number of fruit products, most typically due to cross contamination from cutting equipment, shipping ice or hydrocooler water.

A wide array of technologies is now available to manufacturers of fresh-cut, value-added fruit products. Various methods have been researched over the years to determine optimal reduction of bacterial contamination. It has been clearly determined that the combination of multiple hurdle techniques will ensure microbiological safety, extend shelf life, and enable successful marketability. This may include usage of technologies like steam treatment, disinfectants, or irradiation of exterior surfaces, and use of disinfectant wash aids, antimicrobial additives, modified atmosphere packaging, heat pasteurization, or ultra high pressure processing for fresh-cut products. These aids may include usage of a chlorine solution, peroxyacetic acid, or ozone for fresh-cut operations, and these particular technologies typically result in a 90-99% reduction in total bacteria counts.

Historically, use of antimicrobial agents such as sorbates and benzoates have also been utilized in fresh-cut fruits, such as fruit cocktails, fruit beverages, fruit desserts, pie fillings, etc. These preservatives have long been proven to be effective against yeasts, molds, and certain bacteria. In many food products, sorbate and benzoate are used together to provide greater protection against a wider variety of microorganisms, however this is most effective if the pH of the product is below 4.5.

New technology innovations for value-added fruit products include ultra high pressure (UHP) processing (also referred to high hydrostatic pressure, or HHP) which imparts pasteurization with little to no heat. First generation refrigerated products treated with UHP have included juices, fruit preserves, guacamole, and salsa. Premium refrigerated orange, apple and other juices are now utilizing this process, as an alternative to thermal pasteurization processes. Application of this technology ensures that processing meets or exceeds government safety standards, while providing product with the "fresh" flavors common to an unheated product. Value-added produce, especially cut-fruit products, may retain excellent quality characteristics and achieve extended shelf lives if processed using UHP technology. However, this technology may have product limitations as it can effect changes in structurally-fragile foods like strawberries and lettuce, and result in cell deformation and cell membrane damage resulting in softening and/or browning. However, the incorporation of anti-browning agents such as ascorbate, in conjunction with high-pressure treatments in apple slices in syrup, for example, has shown to result in a shelf life of up to ten weeks.

Irradiation has been an extremely controversial, but a very effective method of food preservation over the years. In fact, fruits were the first item sold using this technology. Pint containers of the nation's first irradiated food, fresh strawberries, were first sold in North Miami Beach in January, 1992. The irradiated strawberries had a 21-day shelf life compared with 7 days for nonirradiated strawberries. In March of 1992, Carrot Top, a grocer in Northbrook, Illinois, made national headlines too as it expanded the breadth of irradiated products to its customers. Carrot Top offered mushrooms with a 3-week shelf life without browning, vine-ripened tomatoes with a 3-week shelf life that didn't get moldy and didn't need ethylene treatment, and onions that didn't sprout for more than 3 months. This era witnessed the launch of a very aggressive campaign by a few vocal groups that fought against the introduction of this technology. Vocal opposition has now dramatically declined, and more than a decade has passed since the first irradiated foods were introduced. Consumers are beginning to find irradiation to be a more accepted technology to combat their concerns about contracting foodborne disease. The emergence of food irradiation using electron beam and X-ray facilities, which do not involve radioactive substances, has made this a more palatable proposition for the consumer as well.

The packaging stage of manufacturing offers a number of highly-differentiated options for the food processor as well. Packaging hurdles include modified atmosphere packaging (MAP), clean room packaging, and utilization of appropriate packaging materials and packaging systems. Modified atmosphere packaging via reduced-oxygen may be a technology chosen to help a

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Vegetable Disease Update

Andy Wyenandt, Ph.D., Post Doctoral Associate
in Vegetable Pathology and Michelle Infante-
Casella, Gloucester County Agricultural Agent

✓ **Cucurbits – Downy Mildew** – continues to be a huge problem in cucurbit plantings. *Growers should take great precautions* to keep Downy mildew under control. If Downy mildew has been a problem in fields, growers should scout and continue on a weekly fungicide maintenance program. There are a number of fungicides labeled for control of Downy mildew and many will help control other important diseases in cucurbits. For information on control of Downy mildew and other important diseases of cucurbits please see the *2004 New Jersey Commercial Vegetable Production Recommendations Guide*.

Powdery mildew – Powdery mildew typically occurs from mid-July until the end of the season. The diagnostic characteristics of Powdery mildew are *pure white 'fuzzy' growth on both the upper and lower leaf surface, petioles and stems*. Symptoms typically begin on older, lower leaves and can develop and spread rapidly under dry, humid conditions. Control of Powdery mildew begins with regular scouting for symptoms and weekly fungicide applications. Fungicide resistance management of the fungus which causes Powdery mildew is critical. Fungicides with a high risk for resistance development such as the strobilurins (Cabrio, Flint, Amistar, Quadris) should be rotated on a weekly basis with fungicides of a different chemistry (Chlorothalonil + Nova). Nova (myclobutanil) is also included as high-risk and should be tank mixed. Growers need to read and follow restrictions on labels carefully. For more information on control of Powdery mildew and other important diseases of cucurbits please see the *2004 New Jersey Commercial Vegetable Production Recommendations Guide*.

Angular leaf spot - symptoms are distinct and easily diagnosed. Small water-soaked *lesions* develop on leaves and expand until they are *delimited by larger secondary veins* in leaves resulting in angular lesions. After time these lesions turn brown and infected tissue drops-off resulting in 'shotholes'. Angular leaf spot can be spread by splashing rain, insects, on the hands of workers and on farm machinery. Working in the field when the foliage is wet favors the spread of the disease. The disease can also be spread by blowing wind and in irrigation water. Best management of Angular leaf spot begins with clean-seed and planting in fields that has been out of cucurbit production for at least 2 years. Cultivating when foliage and soil are wet and irrigating with overhead irrigation should be avoided. There are cucurbit varieties with resistance. Add label rate of fixed copper + mancozeb to fungicide maintenance program and repeat applications every 7 days.

✓ **Peppers – Phytophthora blight** continues to be a problem in many pepper fields, especially in low-lying areas. To control the crown rot phase apply mefenoxam (1 pt Ridomil Gold 4E/A or 1 qt Ultra Flourish 2E/A) through the drip system. Additionally, now that fruit are forming on the plant, plants are susceptible to the stem and fruit rot phase, especially with warm and moist weather conditions. Protect the upper portion of the plant with fixed copper sprays or Ridomil Gold Copper sprays. Make 3 to 4 applications at a 10-14 day intervals. See page F70 of the *2004 Commercial Vegetable Production Recommendations* for more details.

✓ **Blossom End Rot – Tomato and pepper fields** showed some fruit with blossom end rot last week due to hot dry conditions and lack of calcium uptake by plants. During hot dry periods be sure to keep moisture levels constant in the soil with proper irrigation. Calcium is taken up by roots through "mass flow" meaning it is taken up with soil water through small root hairs. Therefore, soil water must be present for calcium uptake. With Monday's heavy rains many fields may not need irrigation anytime soon.

✓ **Tomato – Bacterial spot and speck** – Symptoms of spot and speck include small, water-soaked spots with a 'greasy' appearance on infected leaves. These lesions will expand and will often form yellow 'halos' at the margins. Lesions may spread and form large, irregular necrotic areas on leaves. On mature plants infections are most evident on older leaves. Bacterial spot and speck will both *infect green fruit*. Bacterial spot development is favored by high moisture, relative humidity and warm temperatures (75 to 90 degrees) and bacterial speck is favored by cooler, moist conditions (65 to 75 degrees). Bacterial spot produces slightly raised water-soaked spots that with age become 'scabby' and are 1/4" in diameter. Bacterial speck produces much smaller lesions (1/16") that are black and slightly sunken. Control of both spot and speck begins with proper crop rotation (2-3 years without tomatoes or peppers) and in the greenhouse with clean seed and/or transplants and proper greenhouse sanitation. Culturally, avoid overhead irrigation and *do not work* in fields when plant surfaces are wet. Control of spot and speck should begin in the greenhouse and carry into the field soon after transplanting with a weekly spray program, especially if either has been a problem in the past.

✓ **Late Blight Update** - In recent weeks Late Blight was found in western and southeast Pennsylvania and southern New York on tomatoes and potatoes. Weather this past week brought cooler, wetter weather to the area and growers should continue to scout their fields on a regular basis and continue preventative fungicide application programs. If Late Blight is suspected in a tomato or potato field, contact Dr. Andy Wyenandt, 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

✓ **Asparagus:** Asparagus ferns in fields throughout southern New Jersey have damaging levels of **Japanese beetles**, stripping foliage from the plants. This damage will weaken the plant for the upcoming winter, and will reduce plant yields next spring. Severely weakened young plants may not survive the winter. Apply carbaryl or permethrin (Ambush, Pounce) to the foliage to manage both **Japanese beetles** and **asparagus beetles**. Thorough coverage of foliage is required for effective control.

✓ **Melons:** Monitor for **striped and spotted cucumber beetles** in melons and other cucurbit crops for new or increasing colonies of beetles and **squash bugs**. Heavy rainfalls reduce the effectiveness of foliar spray applications, and it is best to closely monitor before and after sprays are applied. Squash bug oviposition has started, and the optimal spray timing for squash bug is when eggs begin to hatch (do not target adults, but target early nymphal stages for best IPM practices). Sprays should be started when more than 1 egg mass per plant is found. Use either Asana, Capture, Ambush, Pounce or Sevin as a control material for either squash bugs or cucumber beetles. NOTE: with current high temperatures and high humidity, **aphid** population density may increase rapidly after 2-3 sprays of a pyrethroid, even if different brand names of pyrethroids are alternated. Alternate a pyrethroid with carbaryl, or use an aphicide (such as Fulfill) or a material that will control aphids such as Actara, Lannate or Thionex if the aphid population rapidly increases.

✓ **Sweet corn:** Kris Holmstrom of Rutgers IPM reports that **fall armyworm** populations are appearing on corn in Morris County. This pest is generally brought into New Jersey on storm fronts and wind currents, and can appear any time from June thru September in New Jersey. In the whorl stage it can be quite devastating, destroying the emerging tassel or even the entire whorl. FAW also enters the developing ears from almost any location (husk, tip, body) and causes much damage to the kernels. Several materials are now labeled for FAW that are very effective, including Avaunt, the "new" pyrethroids (Baythroid, Fury, Mustang Max, Warrior), and Lannate or Larvin.

✓ **Tomatoes:** **Stink bug** populations are increasing in tomatoes and peppers throughout the southern portion of the state. These pests are highly mobile and difficult to detect or monitor, and often only the damage is first observed. If damage is seen, use Actara, Baythroid, Fury, Mustang Max, Thiodan, or Warrior for control of stink bugs. One of the more effective stink bug materials is Monitor, and New Jersey still has a special label (24-c) for Monitor on tomatoes to control stink bugs (NOTE: a copy of this label MUST be in possession of user at time of application).

Disease Forecasting for Asparagus

Andy Wyenandt, Ph.D., Post Doctoral Associate in Vegetable Pathology

A disease forecasting system (Tom-Cast) is currently under evaluation at 3 locations in southern New Jersey for important foliar diseases of asparagus. **Cercospora blight**, **Purple spot** and **Rust** can all cause premature defoliation in asparagus plantings which can result in reduced vigor and yield the following harvest season. Tom-Cast is currently used by tomato growers to help time fungicide applications. The Tom-Cast disease forecasting measures leaf wetness and temperature during a 24 hour period and assigns a disease severity value (DSV). DSV's are accumulated over time and fungicide applications are applied according to a chosen DSV threshold. Currently, DSV thresholds of 15, 20 and 25 are being evaluated for use in asparagus production in southern New Jersey. Asparagus growers who are interested in learning more on how the system works or receiving weekly updates on DSV accumulations through fax or via e-mail may contact Andy Wyenandt at (856) 455-3100 ext. 4144 or at wyenandt@aesop.rutgers.edu. □

Also, Joe Mahar of Rutgers IPM reports that **tomato hornworms** have been damaging foliage and fruits on tomato plants in several commercial fields. These pests are best managed while still small (early instars), and can easily be controlled using any number of various pest control materials, including the Bt's (Cutlass, DiPel, Ketch, Lepinox, Mattch, Prolong, XenTari, etc), or some of the new, more specific chemistry insecticides such as Avaunt, Intrepid, Confirm, or SpinTor. Monitor fields closely to manage this pest before it becomes large in size when it is capable of damaging many fruit.

✓ **General Alert:** Several outbreaks of **beet armyworm** have been observed on farms in eastern Virginia. Crops reporting damage include peppers, cucurbits and tomatoes (although the beet armyworm will attack many other vegetable crops, such as leafy greens, spinach, lettuce, onions, potatoes, and cabbage crops). Virginia specialist T. Kuhar reports that beet armyworms are highly attracted to **pigweed** plants. Infestations begin on these plants and larvae quickly move to nearby vegetable plants, often in large numbers. Beet armyworms on peppers generally feed on leaves on the upper 1/3 of the plant at first, the damage often appearing as leaf miner damage when larvae are small. As they grow, they make large holes in the leaves and move into the fruit. For the past several years, pyrethroids have not been effective against the beet armyworm, and some older materials such as Lannate and Larvin have only provided moderate control. Most effective treatments are the new Bt products, Avaunt, SpinTor, Intrepid or Proclaim. These materials should be applied while beet armyworm larvae are still small for best results. □

IPM Update

Kristian Holmstrom, Program Associate in Vegetable IPM

Sweet Corn

European corn borer (ECB) activity is increasing in all parts of New Jersey. Trap catch information from parts of the central counties is missing from today's maps, so data have been extrapolated to cover those regions. Over the past week, there was a slight decline in the volume of individual catches owing to a few cooler, rainy nights. The numbers of traps reporting catches has increased, however. In the northern counties, catches are still low, but are becoming more consistent. The highest catches remain on the Salem-Cumberland County border (see ECB map). The second ECB flight is underway throughout the state, and while feeding is absent to low in most areas, it will begin shortly on whorl stage sweet corn shortly. Continue to check all plantings weekly for the presence of ECB and other pest 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 still wise to treat for ECB if larvae are present. The highest average nightly **ECB** blacklight trap catches are:

Centerton	8	Elmer	2	Little York	1
Beckett	4	Bayside	1	Newton	1
Shirley	4	Elm	1	Tabernacle	1
Burlington	2	Folsom	1	Woodstown	1

Fall armyworm (FAW) feeding is increasing with whorl stage sweet corn plantings affected in all counties. In the northern counties, feeding percentages are quite low, but will likely increase over the next week. 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.

Corn earworm (CEW) catches continue to be light throughout southern New Jersey, but are more frequent, and with more locations recording catches. The most consistent catches are presently in the Hammonton area, but moths are being captured all over the southern counties (see CEW map). Thus far, only a few individuals have been recorded north of Trenton. The current gradual rate of increase will probably continue until greater emergence to our south coincides with strong southerly air movement. When that happens, we could see significant CEW increases in New Jersey. North Carolina IPM is recording increasing catches (including some that are quite high), and Delaware IPM and Maryland Dept. of Ag. are recording light CEW catches in parts of those states. 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 (blue on the web) represents a population requiring a 5-6 day silk spray schedule and the crosshatched areas (green on the web) represent a 3-4 day silk spray schedule. The highest average nightly **CEW** blacklight trap catches are:

Beckett	1	Eldora	1	Hammonton	1
Belvidere	1	Fishing Creek	1	Milford	1
Centerton	1	Folsom	1	Mullica Hill	1
E. Vineland	1	Green Creek	1	Pedricktown	1

General Sweet Corn Spray Schedule

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

Recent wet weather favors **corn leaf rust**. Some varieties are susceptible to this pathogen. While scouting for insects, be sure to look at lower leaves for pustules on the surface. As pustules mature, they will burst, releasing reddish colored spores. If this disease is first found in the seedling or whorl stage, consider a fungicide application to limit spread on plants. Rust infections, if allowed to progress on susceptible varieties, can stress plants and reduce ear size.

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.

Brown stinkbugs have been increasing in blacklight traps recently, and adults have been found in a few tomato plantings and in sweet corn tassels. These pests can cause significant injury to tomatoes; particularly when very dry conditions are prevalent. July is typically the month when adults enter irrigated tomato fields, mate and deposit eggs on the plants. Later in July, adults and nymphs cause the large yellow spots on the fruit. Be-

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neath 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.

Peppers

With ECB adult numbers increasing in the south, peppers will again need regular protectant insecticide treatments. On the ECB map, areas shaded in green (web version) or crosshatched (in the newsletter) indicate adult ECB populations that require weekly preventive sprays to minimize fruit injury. Monitor local ECB populations to determine when to begin regular preventive insecticide applications.

Aphids are present 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.

Another **cyclamen mite** infestation has been detected over the past week. This one, in Morris County, is in addition to those already found in Warren and Hunterdon County pepper plantings last week. This pest is not visible to the naked eye, but may be identified by the symptoms it causes on peppers. Look for dramatic distortion of the youngest leaves on affected plants. This distortion resembles herbicide injury and is often accompanied by bud proliferation (10-20 or more buds in a cluster), and heavy scarring (russet) on fruit, stems and buds. In both cases, a microscope was used to identify cyclamen mite. If proper magnification is available, remove several buds from affected areas and look for a clear to slightly white, elongated mite. Miticides that are used for **two-spotted spider mite (TSSM)** control will be effective against cyclamen mite.

There are reports of **beet armyworm (BAW)** on a few southern New Jersey farms. This pest comes up from southern states and occasionally causes injury to peppers and tomatoes in our state. Look for foliar injury to the leaves near growing terminals. If this is found, look for

small greenish caterpillars curled up in and around the buds. If allowed to linger on the plants, the worms will grow, becoming dark colored, and can cause significant injury to pepper fruit.

Pumpkins

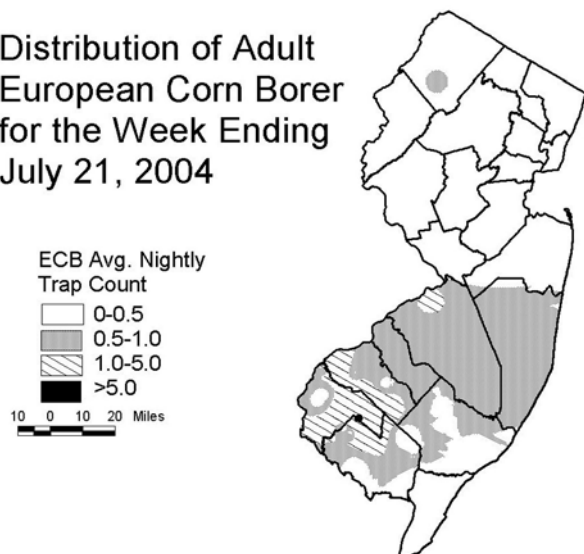
Squash bugs are now active in some pumpkin fields. These large brown-gray insects feed on the plants with straw-like mouth parts. Egg masses are copper colored with eggs laid in regular rows. Generally they are not a significant pest once vines begin to run. At the 0-4 true leaf stage, they can cause 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.

Cucurbit downy mildew (DM) was discovered on pumpkins at the Snyder Research and Extension Farm in Hunterdon County this week. The infection was low level, in that only a few plants were symptomatic, but sporulation was occurring. Now that DM has been found in southern and northern New Jersey, it is safe to assume that the organism is present in most areas, and growers should begin their regular protectant fungicide programs if they have not already done so. It is critical to check fields at least weekly for the presence of sharp yellow spots on the upper leaf surface. The veins will be yellow on the underside of the leaf. Shortly after these symptoms appear, dark colored spores will be produced along the sides of veins in infected tissue. This disease can rapidly defoliate fields, and should be treated quickly. The regular protectant program for **powdery mildew** will minimize downy mildew infection, but it must be adhered to strictly.

Snap Beans

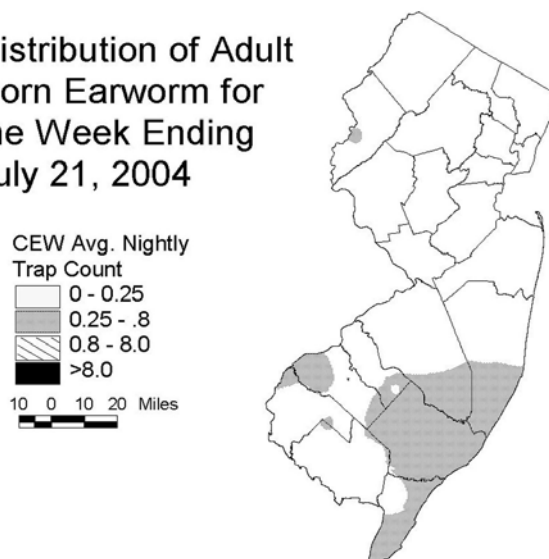
With ECB adult activity increasing, particularly in southern New Jersey, it is important to monitor local catches and treat snap beans to prevent injury and contamination from ECB larvae. If local traps indicate ECB adult activity, treat beans in the bloom stage, and again when they reach the pin pod stage. After this, consider treating at weekly intervals if local traps average 2.5 moths per night.

Distribution of Adult European Corn Borer for the Week Ending July 21, 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 21, 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 below normal, averaging 68 degrees north, 71 degrees central and 73 degrees south. Extremes were 89 degrees at Canoe Brook on the 18th, and 56 degrees at Charlotteburg and Freehold on the 13th and 17th. Weekly rainfall averaged 4.12 inches north, 3.78 inches central, and 4.42 inches south. The heaviest 24 hour total reported was 5.85 inches at Glassboro on the 12th to 13th. Estimated soil moisture, in percent of field capacity, this past week averaged 96 percent north, 93 percent central and 91 percent south. Four inch soil temperatures averaged 71 degrees north, 73 degrees central and 75 degrees south.

Weather Summary for the Week Ending 8 am Monday 7/19/ 4										
WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
BELVIDERE BRIDGE	3.40	16.86	-1.04	85	60	69.	-4	1514	254	100
CANOE BROOK	3.27	20.19	1.20	89	59	70.	-4	1660	396	99
CHARLOTTEBURG	4.56	20.82	1.65	81	56	67.	-4	1403	381	100
FLEMINGTON	7.43	25.05	6.73	85	60	69.	-5	1568	264	100
LONG VALLEY	3.29	18.50	-1.11	80	58	66.	-5	1346	248	100
NEWTON	2.77	17.95	.46	83	59	68.	-4	1426	302	100
FREEHOLD	3.26	20.44	2.61	88	56	70.	-5	1703	296	95
LONG BRANCH	3.46	18.18	.42	84	63	71.	-3	1516	186	83
NEW BRUNSWICK	3.88	20.53	2.87	87	62	71.	-4	1663	176	100
TOMS RIVER	4.49	20.92	2.82	85	61	72.	-2	1743	403	69
TRENTON	3.79	17.10	.33	87	62	71.	-5	1734	185	79
CAPE MAY COURT HOUSE	3.18	16.46	.72	85	61	73.	-3	1658	229	78
DOWNSTOWN	3.71	18.59	2.15	87	61	72.	-4	1806	244	100
GLASSBORO	7.22	27.80	10.31	87	65	73.	-3	1917	376	100
HAMMONTON	3.16	19.99	2.61	88	61	73.	-3	1868	332	100
POMONA	3.92	16.63	.96	86	62	73.	-2	1775	350	74
SEABROOK	5.32	22.93	7.05	86	64	74.	-2	2015	446	100
SOUTH HARRISON	2.87	22.07	4.43	86	63	72	NA	1911	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW Last Week 253 (Ending 7/12/04) This Week 222 (Ending 7/19/04)										

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fresh-cut processor achieve a much longer shelf life. However, because MAP results in a dramatic change in the *time* it takes for product to spoil, and the *type* of bacteria that will cause this spoilage, it creates significant additional risk as well. However, incorporation of other barriers and microbiological challenge studies will minimize such risks.

The growth of the fresh-cut produce industry was the catalyst that helped the packaging industry evolve, and the refrigerated foods category evolve as a whole. Films, for example, may contain enhanced barriers to oxygen, moisture, and/or light, and some may have antifog capabilities to reduce condensation. Laminated materials are widely used in the industry today, that are manufactured by bonding two or more layers together with adhesives in which each layer performs a particular role. Microperforation is a technology that can be used with high-respiring fresh-cut produce, and offer high moisture vapor transmission rates for products like cauliflower.

Many technology alternatives are now available. Application of these technologies will enable the marketability of a wide array of new product offerings for consumers in the years ahead. Improvements in product shelf life and safety, and the integration of improved refrigeration units in supermarket produce sections, will enable the birth of new product categories and new markets.

The Rutgers Food Innovation Center provides assistance to agricultural and food processing industries in the New Jersey region, and assists clients that are interested in developing value-added products. The Food Innovation Center provides its clients a full range of services that include business development, market development, product and process development, workforce development and training, regulations and manufacturing support, and quality assurance and food safety systems. For further information, contact the Rutgers Food Innovation Center at 856-459-1125, visit the website at www.fire.rutgers.edu, or email me at cooperhouse@aesop.rutgers.edu. □

NOFA-NJ Twilight Meeting: Vegetable Pest ID Series

**Hopewell Farm, Hopewell, NJ
Wednesday, July 28, 2004
4:30 – 8:00pm**

Join NOFA-NJ and Rutgers Cooperative Extension for an exciting, hands-on workshop about identifying the pests on your early season vegetable crops. Joseph Ingerson-Mahar (RCE Vegetable IPM Coordinator) and Kristian Holmstrom (RCE Vegetable IPM Program Associate) will lead both a talk and tour of this diversified, vegetable farm. After a brief overview of the role of Integrated Pest Management in organic farming, as well as the importance of and methods for pest ID, the RCE team will walk the farm, covering the primary crops for seasonally-specific pests, and answering any questions that participants may have.

Event Schedule

4:00-4:30 pm- Bring "Unknowns" from your farm for consultation

4:30-5:30 pm- Optional Brown Bag Dinner. Drinks provided.

TALK

5:30 pm - Review of IPM and how it applies to organic farmers

5:40 pm - Field Scouting and Demo

6:00 pm - Importance of Pest ID and Use of Thresholds

6:15 pm- Monitoring Pests Using Traps

WALK

6:30 - 8:00 pm - Current Pests in Various Crops. Walk the farm, identifying crops and pests to discuss individually.

To register, call Northeast Organic Farming Association of NJ at (609) 737-6848 or email mazzara@nofanj.org.

Late season event will be September 21 at Cherry Grove Organic Farm in Lawrenceville, NJ. □

Presidential Major Disaster Declaration

On July 16, 2004, President Bush declared a Presidential Major disaster in New Jersey due to damages and losses caused by severe storms and flooding that occurred from July 12, 2004, and continuing. The Presidential Major disaster declaration number is M1530. As a result of this major disaster, Burlington and Camden Counties were declared eligible for Federal disaster assistance, including Farm Service Agency (FSA) emergency (EM) loans for eligible family farmers.

In addition to the two declared counties named above, five other New Jersey counties are named as contiguous counties where eligible family farmers may qualify for FSA EM loan assistance, pursuant to section 321(a) of the Consolidated Farm and Rural Development Act. Those counties are: Atlantic, Gloucester, Mercer, Monmouth, Ocean

Also, in accordance with section 321(a) of the Consolidated Farm and Rural Development Act, Bucks and Philadelphia Counties in the adjacent State of Pennsylvania are named as contiguous disaster areas where eligible family farmers may qualify for FSA EM loan assistance.

EM loan application will be received through March 16, 2005, for physical and production losses. For the purpose of determining loan security values for these loan applications, the beginning date of the incidence period is July 12, 2004. □

Food & Education Project Seeks Local Farm Product for Schools Request for Proposals

- Can be a broker or individual farmer
- Must meet the specs described below in the Buying Guide
- No contracts required

Buying Guide

½ cup eating portion (example, the core of the peach does not count)

Suggested products and sizes

Apples: Size 140-175

Peaches: Size 84

Nectarines: Size 84

Pears: Size 150

Plums: Size 115

Price: \$0.08-\$0.10 for product and delivery

Product: To be served within 2 days

Numbers

School year: 13,000- 15,000

Summer: Peak 30,000

June-July: 30,000

Toward the end of July numbers drop to close to 10,000

The average is about 20,000

Summer feeding runs until the 1st week of September

Contact Name & Phone: Maria van Hekken - 610-530-2584 – mariavhm@aol.com

The Food Trust, 1201 Chestnut Street, 4th Floor; Philadelphia, PA 19107, T: (610) 530-2584 F: (610) 530-2586, www.thefoodtrust.org. □

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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

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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.

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