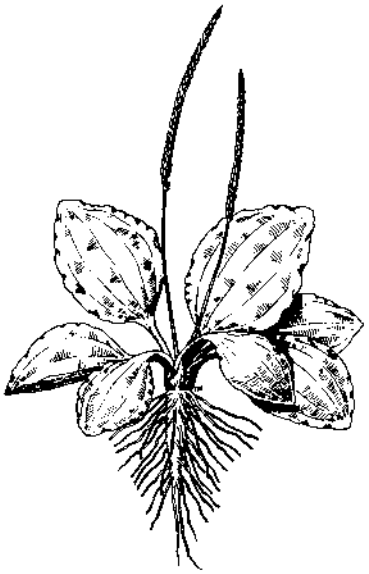
RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION $1.50 JULY 14, 2004



INSIDE

Weed Control

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

Cabbage and Peppers, Bell and Non-Bell Types

A new section 24C Special Local Needs label for the use of Dual Magnum has been issued for use to control weed in cabbage and peppers, bell and non-bell types. The new label is similar to the old section 24C label for cabbage and bell peppers, but with the addition of certain non-bell pepper types to the label. To obtain a label an indemnification agreement must be signed agreeing not to hold the manufacturer responsible for crop damage.

In cabbage, apply 0.5 to 1.33 pints of Dual Magnum per acre (0.48 to 1.27 lb a.i./A) pre-transplant or post-transplant in transplanted cabbage, or postemergence in seeded cabbage when the crop has 3 to 4 true leaves. Dual Magnum controls **annual grasses** and certain small seeded **broadleaf weeds** preemergence (germinating from seed). In seeded cabbage, control emerged weeds prior to application. Use the lower rate on coarse textured soil low in organic matter, and higher rates only on medium or fine textured soils. Use overhead irrigation within two days of planting and spraying to activate the herbicide if rainfall does not occur. See the label for additional information and restrictions.

In peppers, Dual Magnum can be used to control weeds in *bell peppers, chili peppers, Cubanelle peppers, and Tabasco peppers*. In peppers grown on plastic mulch, Dual Magnum may be applied as a preplant non-incorporated spray to the top of preformed beds as the last step before laying plastic mulch, and as a banded application between strips of plastic mulch. In peppers grown on bare soil without plastic mulch, Dual Magnum can be applied as a pretransplant surface applied spray immediately before transplanting, or as post-transplant directed spray. Use 0.5 to 1.33 pints of Dual Magnum per acre (0.48 to 1.27 lb a.i./A). Apply the lower rate on coarse textured soil low in organic matter, and higher rates only on medium or fine textured soils. Use overhead irrigation within two days of spraying bare soil or soil strips between plastic mulch to activate the herbicide if rainfall does not occur. See the label for additional information and restrictions.

Obtain a copy of the label and indemnification agreement from your county agent, read, sign and have the agreement notarized, and mail it with the fee to the VGANJ (address on label). The label is valid when it is returned, signed by the VGANJ. *You must have a copy of the valid label to use Dual*. Consult the Commercial Production Recommendations additional information. ❑

Pest Notes

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

✔ **Cucurbits:** Large numbers of **spotted and striped cucumber beetles** have been reported in fall cucumbers and pumpkins. These beetles can quickly defoliate plants and also transmit **bacterial wilt**. When the number of beetles is high, the adults can severely damage the rinds of melons, squash, and pumpkins. The pyrethroids (Asana, Capture, Pounce, Ambush), Lannate, Sevin, and Thiodex are effective, but may also affect pollinators. Actara (thiamethoxam) is also effective, but is significantly less toxic to bee pollinators.

Also, **squash bugs** can be found ovipositing on cucurbits (squash, cukes and pumpkins) at this time, and populations of squash bugs may be higher in no-till. If more than 1 egg mass is found per plant, control methods should be initiated for this pest (eggs appear as clusters of bronze, oval, small hard objects on the leaves). Management of this pest is best obtained by targeting the small, whitish/grayish nymphal stages, usually found on the leaf undersides. Ambush, Pounce, Capture, and Sevin are labeled for squash bug control on cucurbits. Also, a neem-based insecticide (azadirachtin product such as Azatin, Ecozin, Neemix, etc) may be less harmful to the beneficials, and will still effectively control squash bug nymphs.

✔ **Sweet potatoes:** The flight of the **Oriental Beetles** is nearly complete, and egg laying will still continue for a short time. Small **grubs** will hatch from the eggs, and the grubs can cause severe damage to the sweet potato roots. There is only one generation per year, and the developing grubs remain in the soil until next June-July. Nothing new has been labeled for control of soil pests on sweet potatoes. However, trials at the Blueberry Research Center showed that Admire was highly effective against the **Oriental beetle** in blueberry trials. Admire is labeled in sweet potatoes for **aphids**, and Actara (similar neonicotinoid material) is labeled in sweet potatoes for **leafhoppers**, so there is potential that these materials may be used for **Oriental beetle** control (testing is being conducted for this purpose). Also, southern states (North Carolina) received a Section 18 for the use of Capture as a foliar spray for beetle control. This is another possibility for New Jersey for next year. In past years, growers have applied carbaryl (Sevin) as a labeled foliar spray for **tortoise beetle** and **flea beetle** control when adults were present, and this would likely work on Oriental beetles as well. Rutgers IPM is continuing to monitor Oriental beetles, and research with mating-disruption is showing promise. However, timing is important and multiple sprays would be required because of environmental degradation (rain, etc). But at this time there is nothing that could be applied for effective larval (grub) control.

✔ **Tomato**: County agricultural agents have reported infestations of **two-spotted spider mites** in tomatoes in fields throughout southern New Jersey from Cumberland and Burlington Counties. Leaves turn yellowish and chlorotic, and mites are found in high numbers on the leaf undersides. Damage from mites often goes unnoticed until too late, when plants are severely injured and yields are reduced, and damage increases rapidly with the arrival of hot weather. Once webbing begins, it is difficult to control spider mites. If the plants look off-color, look closely on the leaf undersides to determine if mites are the reason, and apply either Kelthane or AgriMek for control. Danitol is also labeled, but is more of a management material before a mite outbreak, and is less of a "rescue" treatment. Use high-pressure, high-volume for adequate coverage of the foliage to the leaf undersides.

Also, **stink bugs** have been increasing in numbers in tomato fields. Timing of spray applications is important, and first spray should be applied when feeding damage on fruit is first detected (generally mid-July for this area). Damage is more severe, and appears earlier, in fields near wheat or soybeans. Effective sprays include Actara, Baythroid, Thiodan, Monitor, and Warrior. After application, monitor fields for stink bug activity or fresh damage appearing on the fruit. ❑

Strawberry Update

Pete Probasco, Agricultural Agent

Now is the time to order your strawberry tips for the fall planting season. In our variety trial this year in Salem County, Chandler was once again the best variety at 15,869 pounds/acre. We are still recommending the Ovation variety for a late season variety (about 2 weeks later than Chandler). Plants are hard to find of the Ovation variety. Another variety to try is strawberry festival. This is a Florida variety that is earlier than Camarosa and replacing a lot of the Camarosa acreage in Florida.

Tips should be propagated in a screen house for better air movement and to keep the plugs dryer. Last year our plugs got too wet and Phytophthora developed during the propagating season. If you can make a mix with better drainage by adding either vermiculite, pearlite or pinebark, you will be better off. Setting the trays on pallets is another trick to use to keep the plugs from getting too wet. ❑

Vegetable Disease Update

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

✔ **Cucurbits – Downy Mildew –** continues to be a huge problem in older cucurbit plantings. *Growers should take great precautions* to keep Downy mildew out of new plantings. If Downy mildew has been a problem in fields on older plantings, growers should continue on a weekly fungicide maintenance program until harvest is completed. Growers do not want Downy mildew to spread from older plantings to newer ones. After harvest, older plantings should be worked under to reduce sources of potential inoculum, especially if newer plantings and other cucurbits are nearby. 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.*

✔ **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.

✔ **Late Blight Update -** In recent weeks Late Blight has been found in western and southeast Pennsylvania and southern New York on tomatoes and potatoes. This week's weather is bringing cooler, wetter weather to the area and growers should continue to scout their fields on a regular basis and continue preventative fungicide application programs. ❑

Downy Mildew still Causing Problems on Cucurbits

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

A few weeks ago **Downy Mildew** was found on Butternut and Spaghetti squash in areas of Cumberland County. Downy mildew has now been confirmed in many areas in South Jersey. Downy mildew is not uncommon, but what is though, is that it has *shown up so early* in the growing season and over the past few weeks has developed during dry, hot weather. *The rains over the past day or two have brought ideal weather and conditions for Downy mildew development*.

Without adequate control, major losses can occur in cucumber, melon, squash and pumpkin. Symptoms of Downy mildew in early stages of infection include small, slightly chlorotic to bright yellow lesions on upper leaf surfaces. Symptoms typically show up first on older leaves and progress to newer growth. As lesions expand, they may become more yellow and/or brown and necrotic. The margins of lesions are irregular and angular and are bound typically by leaf veins. In wet conditions when leaf wetness is favored by rainfall and high relative humidity, the fungus will produce *dark*-grayish fuzzy spore (sporangia) masses on *the lower leaf surface*. These dark grayish-green spore masses are a diagnostic characteristic of Downy mildew. Downy mildew can spread easily with air currents and by splashing rain and water.

Control of Downy mildew begins with a preventative fungicide maintenance program. There are a number of fungicides labeled for control of Downy mildew and many will help control of important diseases in cucurbits. Growers who have not begun weekly maintenance programs should do so immediately in cucurbits crops, especially in pumpkin and winter squash. For information on control of Downy mildew and other important diseases of cucurbits please see the *2004 New Jersey Commercial Vegetable Production Recommendations Guide*. ❑

IPM Update

Kristian Holmstrom, Program Associate in Vegetable IPM

Sweet Corn

Blacklight trap catches of **European corn borer (ECB)** moths are increasing in parts of southern New Jersey. Highest catches have occurred again on the Salem-Cumberland County border, with moderated activity extending to the northeast into Atlantic, Burlington and Ocean Counties (see ECB map). This adult activity indicates that the second ECB flight is underway in the southern counties. ECB feeding in most sweet corn plantings is low now, but 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	9	Shirley	3	Cohansey	2
Folsom	5	Tabernacle	3	Indian Mills	2
Allentown	4	Beckett	2	Wall	2
Hammonton	3	Cedarville	2	Woodstown	2

Fall armyworm (FAW) is active in parts of southern New Jersey, and has been found in isolated pockets in Morris County this 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 are increasing in their consistency throughout southern New Jersey. The highest catches have occurred in Gloucester and Salem Counties, but light adult activity extends through Atlantic and lower Burlington Counties (see CEW map). These moths are an indication that an adult flight is beginning in the state. North Carolina IPM is recording light to moderate catches, and Delaware IPM and Maryland Dept. of Ag. are recording light CEW catches in parts of those states. 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 (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	Crosswicks	1	Hammonton	1
Centerton	1	E. Vineland	1	Seeley Lake	1
Cinnaminson	1	Elm	1	Sewell	1
Cohansey	1	Folsom	1	Tabernacle	1

General Sweet Corn Spray Schedule

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

Recent cooler and 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. 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

SEE IPM ON PAGE 5

IPM FROM PAGE 4

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 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.

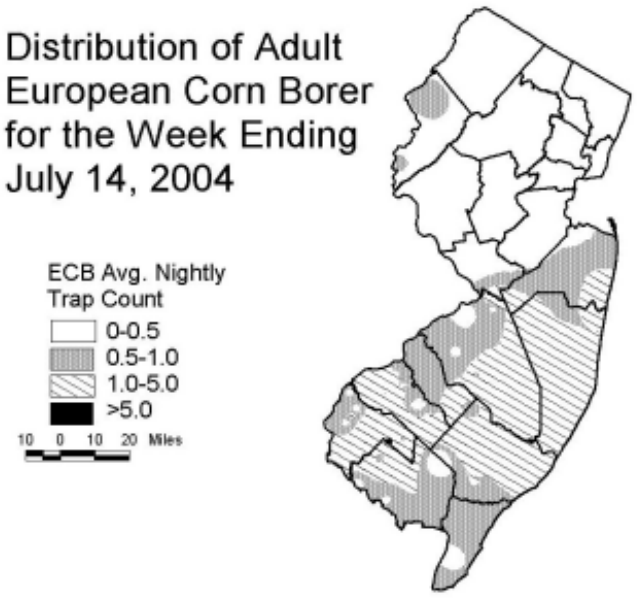
Aphids are on the increase in some fields at this time. Prior to fruit set, aphid infestations are often controlled by predators and parasites. If they become heavy while fruit are enlarging, however, their sticky droppings can render fruit unmarketable. Scout weekly, and if aphid colonies are on the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

Cyclamen mite infestations have been detected in one Warren and one Hunterdon County pepper planting this 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.

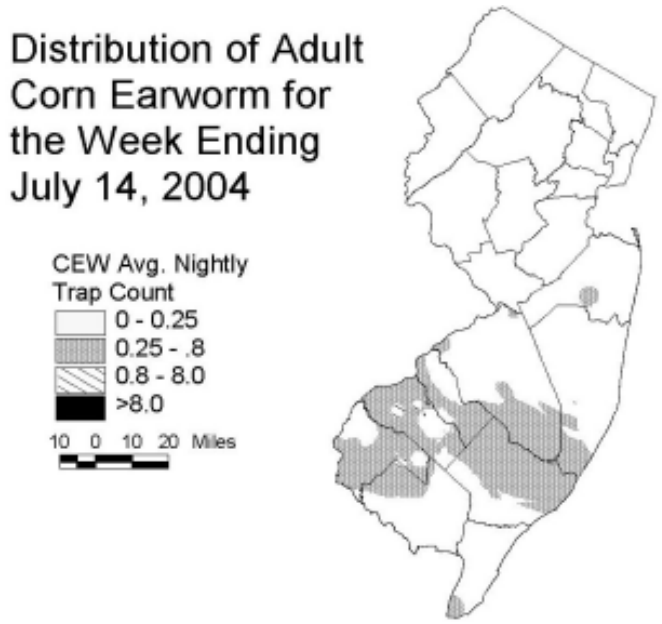
Pumpkins

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.

Recent wet weather has created an excellent environment for the spread of **cucurbit downy mildew**. This disease has been reported in southern New Jersey for the past two weeks. As yet, it has not appeared in Mercer and counties to the north. This could change quickly with warm wet weather. 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. For pumpkin and winter squash fields that are 3-4 weeks away from powdery mildew infections (based on age of plant), it is very important to scout regularly if the protectant program is to be delayed. If downy mildew is reported in any of the northern counties, it would be best for growers in those areas to begin the regular program even if powdery mildew has not reached the action threshold of 1 lesion per 50 older leaves.



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



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 72 degrees north, 75 degrees central and 76 degrees south. Extremes were 93 degrees at several locations on the 6th, and 45 degrees at Belvidere on the 9th. Weekly rainfall averaged 0.21 inches north, 0.21 inches central, and 0.28 inches south. The heaviest 24 hour total reported was 0.65 inches at Hammonton on the 9th to 10th. Estimated soil moisture, in percent of field capacity, this past week averaged 63 percent north, 63 percent central and 38 percent south. Four inch soil temperatures averaged 71 degrees north, 75 degrees central and 75 degrees south.

Weather Summary for the Week Ending 8 am Monday 7/12/04

	RAINFALL			TEMPERATURE				GDD BASE50		MON
WEATHER STATIONS	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	.13	13.46	-3.46	93	45	72.	0	1382	279	52
CANOE BROOK	.00	16.92	-1.11	93	50	73.	0	1515	414	56
CHARLOTTEBURG	.05	16.26	-2.46	86	55	72.	2	1285	404	54
FLEMINGTON	.54	17.62	.28	91	54	73.	0	1433	296	69
LONG VALLEY	.46	15.21	-3.34	86	58	70.	0	1231	279	63
NEWTON	.09	15.18	-1.37	89	57	73.	2	1299	325	59
FREEHOLD	.02	17.18	.27	89	56	74.	0	1561	324	71
LONG BRANCH	.32	14.72	-2.16	90	61	74.	1	1367	205	50
NEW BRUNSWICK	.17	16.65	-.02	91	58	75.	1	1516	204	73
TOMS RIVER	.35	16.43	-.62	92	56	75.	1	1587	415	36
TRENTON	.18	13.31	-2.43	93	61	78.	3	1583	216	33
CAPE MAY COURT HOUSE	.07	13.28	-1.66	91	58	75.	0	1497	245	16
DOWNSTOWN	.10	14.88	-.59	90	57	75.	0	1654	272	37
GLASSBORO	.44	20.58	4.02	92	56	76.	1	1755	394	44
HAMMONTON	.98	16.83	.49	92	57	76.	1	1710	355	59
POMONA	.03	12.71	-2.05	93	56	77.	3	1611	359	20
SEABROOK	.03	17.61	2.68	91	60	77.	2	1849	459	30
SOUTH HARRISON	.42	19.20	2.54	90	60	77.	NA	1754	NA	NA

WES KLINE — GDD BASE 40 PINEY HOLLOW
Last Week 227 (Ending 7/5/04)
This Week 253 (Ending 7/12/04)

Farmer to Farmer Education Series High Tunnels at Muth Family Farm

Thursday, July 15, 2004
6:00 – 7:30 pm
Muth Family Farm
1639 Pitman-Downer Rd.
Williamstown, NJ

Please join us for this timely educational workshop about integrating a high tunnel system on your farm, sponsored by NOFA-NJ.

Bob Muth, a former County Agricultural Agent, is excited to share all that he has learned in the 2004 growing season. Earlier this year, he installed two 14 x 200 ft. tunnels for the organic production of 14 varieties of great-tasting tomatoes and 3 varieties of specialty melons.

Topics to be covered include costs and installation, marketing considerations, water use, pest management, and pollination.

Event Schedule

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

5:30-6:00 pm: Bob Muth will offer a brief tour of Muth Family Farm

6:00 pm: NOFA-NJ Welcome

6:05pm: Bob Muth will share everything that he has learned about high tunnel production.

Topics will include:
- What's your market?
- Effective Planning for maximum return
- Costs and Installation
- LESSONS LEARNED
- Do's and Don'ts
- High Tunnel Options
- Varietal Variation
- Pest Management
- Water regulation
- Pollination

Pre-register - this event is limited to 30 participants
Northeast Organic Farming Association of New Jersey
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Phone: (609) 737-6848
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