

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

APRIL 10, 2002



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Vegetable Crops Diseases

Stephen A. Johnston, Ph.D., Plant Pathology

✓ **New Web Site for Vegetable Disease Information:** <http://vegetablemndonline.ppath.cornell.edu/> is a newly established Cornell University Plant Pathology Vegetable Disease Web Page. Fact sheets of various vegetable diseases are present on the site, as well as additional disease pictures not included on the fact sheets. News articles and disease alerts will be posted during the 2002 production season. This will be a good site for anyone seeking to quickly identify diseases in their vegetables this summer.

✓ **Asparagus:** For new plantings, be sure to use disease-free crowns, and plant into a field without a history of asparagus production for at least 8 years to reduce the severity of **Fusarium Root and Crown Rot**. In order to reduce stress associated with production fields that can lead to an increase in severity of Fusarium Root and Crown Rot, adhere to the following recommended cutting regime. Do not harvest the year following establishment of the bed. Harvest for two weeks the third year. In subsequent years, stop harvesting by June 15th.

✓ **Beans, snap:** Apply Ridomil Gold 4E in a 7-in. band over the row after seeding or apply Ridomil Gold PC 11G as an in-furrow application for the control of **root rots**.

✓ **Beets:** Apply Ridomil Gold 4E as a soil surface application after seeding for control of damping-off. Observe fields for the presence of **Cercospora leaf spot**, which is characterized by small, circular, red lesions with gray centers. Once observed, apply Quadris 2.1F as a foliar spray for control.

✓ **Carrots:** In fields with **Root-Knot Nematode** populations, apply a soil fumigant (Vapam or Telone II) for control. Fields to be treated should be free of debris by moldboard plowing and discing prior to treatment. Allow 2-3 weeks between treatment and seeding.

✓ **Cole crops:** After seeding in the greenhouse, drench beds or flats with Terraclor for prevention of **damping-off** caused by Rhizoctonia. Improve the air circulation in the greenhouse, and apply Aliette alternated with maneb every 7 days as a foliar spray for control of **Downy Mildew**.

✓ **Corn, sweet:** All fields should be treated for **Flea Beetles** to reduce the transmission of **Bacterial Wilt (Stewart's Wilt)**. Several control options are available. Plant seed treated with Gaucho, apply Counter 20CR as an in-furrow or banded application at planting, or

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apply foliar sprays with an insecticide beginning at the spike stage of growth.

✓ **Cucumbers:** Select varieties with resistance to **angular leaf spot**, **anthracnose**, **mosaic viruses** and **scab** for spring plantings. Use a soilless mix that contains microbial antagonists (suppressive mixes) to reduce the incidence of **damping-off** during transplant production.

✓ **Eggplant:** Use a soilless mix that contains microbial antagonists (suppressive mixes) to reduce the incidence of **damping-off**.

✓ **Lettuce:** Increase the ventilation in the greenhouse, and apply Aliette alternated with maneb as a foliar spray every 7 days to control **Downy Mildew**. In young fields, reduce watering as much as possible to limit the incidence of **Corky Root**. Apply Ronilan or Rovral as a directed spray to the base of the plants once plants recover from transplanting or after thinning. Repeat 10 and 20 days later for the control of **Drop**. In some fields, plants are girdled at the soil line and dying. This is not a disease, and is the result of environmental stress.

✓ **Onions:** Now is the time to begin fungicide applications for the control of **Downy Mildew**, **Purple Blotch (Alternaria)** and **Blast (Botrytis)** on overwintered onions and leeks. Repeat applications every 7 days.

✓ **Parsley:** Soon after seeding, apply a soil surface application of Ridomil Gold 4E or Ultra Flourish 2E for the control of **Damping-Off**.

✓ **Peas:** Rotate to allow 4-5 years between pea plantings to reduce the severity of **root rot**. Apply Ridomil Gold 4E as a broadcast soil surface application following seeding for control of **damping-off** and **root rot**.

✓ **Peppers:** Avoid using fields that are poorly drained. However, if poorly drained fields must be used, select the variety, 'Paladin' or 'Aristotle', which have resistance to **Phytophthora blight**. Use seed that has been chlorine treated, or treat seed with Clorox if untreated to reduce incidence of **bacterial spot**. Use a soilless mix that contains microbial antagonists (suppressive mixes) to reduce the incidence of **damping-off**.

✓ **Spinach:** **Alternaria Leaf Spot** and **Anthracnose** are present in fields at this time. Apply Quadris 2.1F as a foliar spray, and repeat in 7 days. Do not make more than 2 sequential applications of Quadris to avoid the development of resistant strains of the pathogens. Observe fields for the presence of **white rust**. The disease is now present on the Eastern Shore of Virginia. Once observed, apply Quadris as a foliar spray. If additional applications are warranted, alternate Quadris with a low rate of a copper fungicide.

✓ **Squash, summer:** For fields with **Root-Knot Nematode** populations, apply a soil fumigant prior to planting. Use of Vapam HL or Telone II can be done by

soil injection; while Vapam HL can alternatively be applied via injection through the drip irrigation system. Regardless of the application method, allow 2-3 weeks between treatment and planting to avoid phytotoxicity to the crop.

✓ **Sweet Potato:** Use new or sterilized sand in seed beds for sprout production. Use seed potatoes that are free of **Scurf**, and dip potatoes in Mertect 340F prior to bedding for disease control. Maintain bed temperature between 80-85°F, and do not allow overheating to prevent collapse of the potatoes.

✓ **Tomato:** For staked tomato culture, thoroughly wash reused stakes and treat with a chlorine dip to reduce overwintering inoculum of **bacterial canker**. Use seed that has been chlorine treated, or treat with Clorox if untreated to reduce incidence of **bacterial leaf speck and spot**. Once seedlings have their true leaves, begin foliar applications of streptomycin, and repeat every 5-7 days until transplanting in the field to reduce bacterial diseases. Maintain adequate moisture levels and avoid sudden changes in temperature that result from leaving open vents and doors near young tender seedlings to avoid injury to transplants.

✓ **White Potatoes:** Use a seed piece fungicide treatment that contains mancozeb to protect against seed-borne **late blight** infections. In fields where **Rhizoctonia stem rot** is anticipated apply Tops MZ or MonCoat MZ as a seed piece treatment. □

Pest Notes

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

✓ **Asparagus** - as the asparagus tips emerge, watch for early buildup of **asparagus beetles**. These pests chew holes in tips as well as oviposit directly on the tips. Beetles will likely be out earlier than normal because of the light winter and the current warm soil temperatures. Lannate, malathion, methoxychlor, Ambush, Pounce and Sevin are all labeled and effective against asparagus beetles. Harvest frequently to reduce the damage caused by these pests.

✓ **Sweet Corn** - *Beware of flea beetles this spring.* Average temperatures from December thru March were above normal, increasing the likelihood of high populations of flea beetles and of significant **bacterial wilt** disease problems in corn. This disease, transmitted by flea beetles, causes white to yellow streaks in leaves of newly emerged plants, and the plant frequently dies. Later, during tasseling, the bacterium causes **leaf blight**, predisposing the plant to other diseases such as **stalk rot**. Because of the mild winter, it is most likely that flea beetles will be quite numerous. Varieties of sweet corn susceptible to **Stewart's Wilt** disease should be protected using either a seed treatment, a soil-applied systemic insecticide, or foliar sprays after plants emerge and there are 6 or more beetles per 100 plants. Gaucho (imidacloprid) is available as a commercially-applied seed treatment; Counter and Furadan are available as in-furrow applications; and Asana, Lannate, Lorsban, Ambush, Pounce, Sevin and Warrior are available as foliar applications for flea beetle control. Virginia reports that foliar sprays are less effective than in-furrow and seed-treatment applications. New York reports that the most effective method of controlling flea beetles is by using Gaucho (seed treatment) because one treatment effectively controls the beetle and costs less than multiple applications of other insecticides. For more information, see pages C84 and C87 of the 2002 Commercial Vegetable Production Recommendations for New Jersey. □

Do You Have a Goose Problem? Resident Canada Geese Management Options

Rutgers Cooperative Extension, in cooperation with USDA-APHIS-Wildlife Services, will hold an informational meeting to discuss the issue of resident Canada geese in New Jersey. Topics to be discussed include:

- ◆ Why the population of resident Canada geese is so large in New Jersey
- ◆ Who is responsible for the management of Canada geese in New Jersey
- ◆ All available management options for Canada geese within New Jersey

Who should attend? **Anyone who has a problem or concern with Canada Geese.**

- Homeowners
- Golf courses
- Corporate park grounds officers
- Municipal Officials
- Park and Recreation Managers
- The Agricultural Community

Meetings:

- ◆ Mercer and Hunterdon Counties: **April 16th, 7-9 pm, South Hunterdon High School**
- ◆ Passaic and Bergen Counties: **April 18th, 7-9 pm, Stephen Fong Technical Center**
- ◆ Cape May and Atlantic Counties: **April 23rd, 6-8 pm, Flanders Banquet and Conference Center**
- ◆ Monmouth and Middlesex Counties: **April 25th, 7-9pm, Freehold Gardens Hotel**
- ◆ Somerset and Union Counties: **May 1st, 7-9 pm, Union Vo-Tech**
- ◆ Warren and Sussex Counties: **May 2nd, 7-9 pm, Hackettstown High School**
- ◆ Cumberland and Salem Counties: **May 6th, 7-9 pm, Elmer Grange Hall**
- ◆ Gloucester County: **May 7th, 7-9 pm, Gloucester County Office of Government Services**
- ◆ Essex and Hudson Counties: **May 15th, 6-8 pm, Robison Center, Rutgers-Newark**
- ◆ Camden County: **May 23rd, 7-9 pm, Camden County Cooperative Extension Office**

For questions or more information on the programs please contact your local Rutgers Cooperative Extension office or David Drake, Extension Wildlife Specialist, 732-932-1509 x 10. □

DEP Makes Changes to Pesticide Regulations

George Hamilton, Ph.D., Specialist in Pest Management

In November of 2001, the New Jersey Department of Environmental Protection (DEP) put into place several changes to the New Jersey Pesticide Control Act. Some of these changes affect how licensed private and commercial pesticide applicators keep their records.

Application Records

In the past, private and commercial pesticide applicators were required to keep a master application list, records of each application and if a pesticide storage was maintained, a list of restricted use pesticides in the storage area and a pesticide inventory. Due to the changes in the Act, some additional items must now be kept.

Private and commercial pesticide applicators are now required to keep for every application (new items are underlined):

1. The date of application (if a specific REI is listed on the label or labeling the date of application also includes the hour completed).
2. The re-entry time and date.
3. The place of application (the specific address, municipality and county)
4. If the application is to an agricultural crop, the place of application includes:
 - a. the name and address of the farm,
 - b. the specific field, greenhouse or land treated (include municipality and county),
 - c. the crop, commodity or stored product that was treated, and
 - d. the size of the area treated.
5. The brand name(s) and corresponding EPA Registration Number(s).
6. The total amount of each pesticide concentrate or formulation used.
7. The total amount of diluent used.
8. The full name and pesticide applicator number of the person making the application or for agricultural applications the handler card number of the handler making the applications.
9. The site of application (non-agricultural applications only).

Private and commercial applicators must also keep a Master Application List of all the pesticides they apply that includes the brand name of the pesticide, its active ingredient name (common chemical name if available) and the product's corresponding EPA Registration Number.

These records must be recorded within 24 hours after the application and maintained for at least three years (number of years has been increased from 2 to 3 years for all agricultural applications).

Storage Area Records

If a private or commercial applicator maintains a storage area at his or her farm or business the applicator must (new items are underlined):

1. maintain a list of the Restricted Use pesticides stored that includes their Brand Name and EPA Registration Number, and
2. maintain an inventory (Brand Names and amounts) of the pesticides stored or likely to be stored during the year, and
3. send a copy of the inventory, with explanatory letter, to the local fire company along with the actual location of the storage area, and
4. The inventory shall be updated and sent to the local fire company by May 1 each year.

These records, including copies of each year's letter to the fire company, must be kept for three years. If the pesticides are for personal use at an applicator's personal residence or if the materials are stored for less than 7 days, these requirements do not need to be done.

Additional Records (New)

For commercial applicators, records of all "on-the-job" training records for all employed commercial pesticide applicators and operators must be kept and maintained for three years.

The application records for any pesticide applied under a New Jersey or Federal Experimental Use Permit (EUP), FIFRA Section 18 Emergency Exemption or Section 24(c) Special Local Need (SLN) registrations shall be clearly designated so they stand out from the other application records. In addition, these records must also contain the products EPA SLN Product Registration Number, EPA Section 18 File Symbol Number or State/EPA EUP number.

Local or county health inspectors who only use general use pesticides as flushing agents, such as pyrethrum sprays, to check for insect infestations as part of their normal job duties are exempt from record keeping requirements. □

Trickle Irrigation Tips for Strawberries

David Handley, University of Maine

Reprinted from University of Maine Vegetable & Berry News, No. 3, March 5, 2001.

In recent years many strawberry growers in the Northeast have begun using trickle irrigation in strawberry beds. While trickle is considered an essential component of growing strawberries in a raised bed plastic mulch system, it is also becoming more popular for matted row system production. In the past, the conventional wisdom has been that since overhead (sprinkler) irrigation is necessary for frost control in strawberries, there's no need to install a trickle system as well. However, several factors have now led growers away from this view, and trickle irrigation is more often seen in the fields. Some of the reasons for making the investment in trickle include the relatively low cost of a system compared to other types of irrigation, less labor moving pipes around, less water needed to meet the plants needs, and the ability to fertilize through the system.

During the growing season, strawberries can use 15,000 gallons of water per acre per week for optimum growth. During the fruit development period, this amount can triple. If nature doesn't provide this amount of water, the plants are likely to have slower growth and lower yields. Supplying this much water to strawberry fields with overhead irrigation presents the problems of having to move pipe from field to field, having a dependable source of high volumes of good water, and a big enough pump to move it. The overhead system also wets the entire plant surface which, while good for frost control, can encourage the development of diseases, and requires lots of water to get sufficient moisture down into the soil to the roots.

Trickle irrigation systems require relatively low volumes of water. For example, a source providing as little as 10 gallons per minute can irrigate 1/2 acre of strawberries per day. A 50 gallon per minute source can irrigate up to three acres per day. This means that smaller sources of water, such as wells, can be used to irrigate, and a much smaller pump can be used than is required for overhead irrigation. Because less water is used with trickle, growers can also consider using municipal supplies, if other sources are not available. The water is brought to a field from a pump through plastic pipe ranging in diameter from one inch to six inch (1 1/2 to 2 1/2 is common). Larger diameter pipe requires higher pressure (larger pump, more water) to push liquid through. Elevation will also affect water pressure. For every 2.4 feet of elevation the water has to climb, one pound per square inch (psi) of pressure is lost. This pipe is

usually buried and outlets are set up around the field according to the planting scheme. A lateral pipe is attached to the outlet and runs along the surface, perpendicular to the strawberry rows. This pipe is usually flexible (e.g., "lay-flat") so that it can be run over by equipment and customers. Trickle tape is attached to the lateral pipe so that a line is running down the center of each row of strawberries. This line can be buried about 2 1/2 inches below the soil surface prior to planting, or laid on the surface. While burying the lines can add to the cost of installation, it reduces problems with the lines being damaged by animals, people and machinery.

Most trickle tape is designed to adjust the water pressure for even distribution along the length of the row, and can even compensate for changes in elevation through the field, provided they are not extreme.

The amount of water pressure available will determine how much of a field can be irrigated at a time. If lots of pressure is available, whole fields may be irrigated at once. If the pressure is weaker, then the field must be divided up accordingly and one section is watered at a time. But this can be accomplished with the simple switching of a few valves, rather than disassembling and moving lots of pipes.

The water used in a trickle system must be clean; otherwise the system will easily clog. Clean sources of water, such as a well or a municipal supply will require very little filtering, and the system would be relatively inexpensive. Other sources such as ponds may require more elaborate filtering systems, which can become a major part of the total outlay. Fertilizer injectors can be placed near the pump and used to run liquid forms of nutrients through the system. Fertilizing in this way can provide more accurate distribution of nutrients in a more readily available form.

Growers who have adopted trickle irrigation in strawberries have generally been pleased with the amount of labor it has saved them. It has also made them more likely to water the plants when they need it, resulting in improved growth and yields. Trickle irrigation technology has become less expensive and easier to use over the years, and now may be the time to consider a system for your strawberry fields.

Submitted by Jerome L. Frecon, Agricultural Agent. □

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much below normal. Extremes were 80 degrees at Toms River on the 4th and 18 degrees at Charlotteburg on the 7th. Weekly rainfall averaged 0.26 inches north, 0.08 inches central, and 0.23 inches south. The heaviest 24 hour total reported was 0.63 inches at Atlantic City Marina on the 3rd to 4th estimated soil moisture, in percent of field capacity, this past week averaged 96 percent north, 95 percent central and 96 percent south. Four inch soil temperatures averaged 45 degrees north, 48 degrees central and 48 degrees south.

The following table contains meteorological information since the start of the growing season March first. The table is updated each Monday and the following is an explanation for each column.

Week=total rainfall for the previous 7 days ending Monday morning

Total=total rainfall since March 1st

Dep=departure from normal of rainfall since March 1st. A negative sign indicates below normal and no sign indicates above normal.

Mx=highest temperature for that 7 day period

Mn=lowest temperature for that 7 day period

Avg=average temperature for that 7 day period

Dep=departure from normal of the average temperature for that 7 day period

Total=total number of growing degree units since March 1st

Dep=departure from normal of growing degree units

%fc=percent of field capacity (soil moisture)

Weather Summary for the Week Ending 8 am Monday 4/ 8/ 2

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
BELVIDERE BRIDGE	.28	4.28	-.59	67	21	42.	-5	27	27	100
CANOE BROOK	.24	4.60	-.99	77	22	43.	-4	46	46	100
CHARLOTTEBURG	.21	4.44	-.82	66	18	40.	-4	21	21	89
FLEMINGTON	.29	5.13	-.13	71	23	42.	-5	40	40	96
LONG VALLEY	.30	4.27	-1.31	66	21	39.	-6	16	16	100
NEWTON	.24	2.88	-1.70	68	21	41.	-4	26	26	95
FREEHOLD	.01	4.81	-.61	77	25	44.	-4	56	56	94
LONG BRANCH	.00	5.18	-.46	68	27	44.	-4	28	28	90
NEW BRUNSWICK	.05	4.70	-.35	77	25	44.	-5	45	45	98
PEMBERTON	missing									
TOMS RIVER	.20	6.38	1.05	80	24	44.	-4	59	59	91
TRENTON	.16	4.26	-.66	76	23	44.	-6	54	54	95
CAPE MAY COURT HOUSE	.17	5.82	1.04	76	29	45.	-5	62	62	95
DOWNSTOWN	.20	4.59	-.32	78	25	44.	-6	53	53	94
GLASSBORO	.00	4.86	-.28	76	32	46.	-4	58	58	89
HAMMONTON	.20	4.81	-.13	79	25	45.	-5	62	62	91
POMONA	.35	6.01	1.12	76	23	44.	-5	59	59	98
SEABROOK	.08	4.44	.14	78	28	45.	-5	57	57	93
ATLANTIC CITY MARINA	.63	5.33	.79	61	29	45.	-4	36	36	95
SOUTH HARRISON	.12	4.65	.05	76	29	45	NA	64	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW										
Last Week	63	(Ending 4/1/02)								
This Week	37	(Ending 4/8/02)								

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