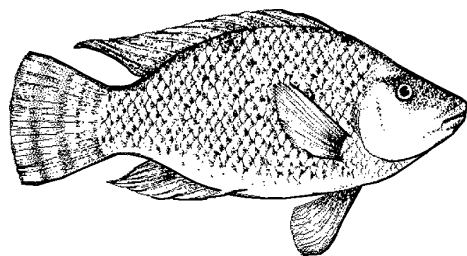


PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

JULY 21, 1999



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Irrigation Pond Water Quality

Raymond J. Samulis, Burlington County Agricultural Agent

As water supplies are running low due to the drought, the question arises: what constitutes good irrigation water? One factor to look at is the pH of the water. Typically, samples measured throughout Burlington County have a very wide range in readings. For example, on the Pine Barren farms it is not unusual to find pH readings in the 4.2 – 4.5 range. Since both cranberries and blueberries are ericaceous (acid loving) this does not pose much of a problem. Outside the Pinelands readings can be in the 8 – 9 pH range. If using this water for spraying, chemical hydrolysis can render some spray materials inactive.

The other interesting process I have observed occurs with irrigation water pumped from a well and then collected in a pond for temporary storage. When you measure pH in samples directly out of the well, the pH reads 6.4. That same water after it sits in the pond a few days can drop in pH to as low as 4.8! Apparently, iron in the water changes ionic composition when exposed to oxygen. If lime is added to the pond, the water clarifies and the iron settles out.

Another important parameter in water quality is dissolved oxygen. Drought conditions can result in lower oxygen levels, as well as heavy algae bloom. Irrigation systems, particularly trickle systems, can clog and become useless. The hazard here is not directly to the crops, but to fish in the ponds. Oxygen levels in these waters are highly influenced by time of the year, water temperature, and nutrient levels such as phosphorous and nitrogen. The situation becomes critical when there is little water movement, as well as limited inflow into the pond. Recently tested dissolved oxygen samples are predominately in the range of 5 – 7 mg/L, meaning good oxygen levels. Testing for nutrient levels of nitrogen, phosphorous and other elements, while increasing efficiency of fertilizer use will prove economical and cause less waste. As I write this article, citizen groups are being trained to walk streams and report suspected water quality problems. Legislatures are passing laws regarding farm water quality and the practices that influence it.

Competition for all uses of water will increase in the future in New Jersey. Water sampling is something not many farmers do, but the information obtained might be beneficial. □

Flower Drop in Vegetables

Stephen A. Garrison, Ph.D., Vegetable Crops

Recent periods of temperatures above 90°F in the day and 75°F at night, together with the drying winds are causing abscission of flowers and small fruits in snap beans, peppers, and tomato. Tomato flowers often remain on the plant but are not pollinated and may fail to enlarge. Keep plants watered to reduce moisture stress that can increase flower and fruit abscission. Expect split sets in these crops. Growers should observe snap beans and processing tomatoes to determine if the earlier or later set is larger and try to maximize yields in these single harvest crops. □

Recent periods of temperatures above 90°F in the day and 75°F at night, together with the drying winds are causing abscission of flowers and small fruits in snap beans, peppers, and tomato.

Vegetable Crops Diseases

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

✓ **Asparagus:** Irrigate fields during the drought to avoid stress caused by lack of moisture. Moisture stress predisposes the field to infection by **Fusarium root & crown rot**, which reduces the longevity of the planting.

✓ **Beans (snap): Pythium root rot** is present in some fields at this time. Infected plants completely wilt and die. The lower stem is brown and hollow. Application of Ridomil Gold 4E at planting is the control measure for this disease.

✓ **Carrot:** Maintain applications of Bravo as a foliar spray every 10 days for control of **leaf blights**.

✓ **Cole crops:** Apply Bravo or maneb as a foliar spray every 10 days for control of **Alternaria leaf spot** and **downy mildew**.

✓ **Cucumber:** Maintain applications of Bravo + Benlate or Topsin M every 7 days for control of **anthracnose, downy & powdery mildews**.

✓ **Eggplant:** Two to three weeks after the last application of mefenoxam (Ridomil Gold or Ultra Flourish) begin foliar applications of a copper fungicide + maneb + a spreader sticker for control of **Phomopsis** and **Phytophthora fruit rots**.

✓ **Muskmelon: Fusarium wilt** is present in some fields at this time. Infected plants completely wilt, and a black exudate is present along the base of the stem. No control is available at this time. Use resistant varieties and long crop rotations for control in future years. Maintain applications of Bravo or mancozeb as a foliar spray for control of **Alternaria leaf blight**.

✓ **Pepper: Phytophthora blight** continues to spread in several fields of black polyethylene mulch with drip irrigation in spite of the drought. Two - three weeks after the third and final allowable application of mefenoxam (Ridomil Gold or Ultra Flourish) begin foliar sprays of a copper fungicide + maneb + a spreader sticker every 7-10 days for control of aerial phase of **Phytophthora blight** and **anthracnose**.

✓ **Pumpkin and winter squash:** Alternate applications of Bravo and Quadris every 7-10 days for control of **foliar & fruit diseases**.

✓ **Squash, (summer): Phytophthora blight** is present in several fields at this time. Infected plants suddenly completely wilt. Maintain applications of Ridomil Gold/Bravo or Ridomil Gold/Copper as a foliar spray every 14 days for control.

✓ **Tomato: Bacterial canker** is present in some fields at this time. Avoid working in fields of staked tomatoes while the foliage is wet. Apply a copper fungicide + mancozeb as a foliar spray every 7 days to reduce spread. **Phytophthora blight** is present in some fields at this time. Infected plants completely wilt and a dark, girdling lesion is present at the base of the stem. Apply mefenoxam (Ridomil Gold or Ultra Flourish) via injection through drip irrigation for control, and avoid overirrigation. For all other fields, continue to alternate Bravo and Quadris every 7 days for control of **leaf & fruit diseases**.

✓ **Watermelon:** Maintain applications of Bravo + Benlate or Topsin M every 7-10 days for control of **anthracnose & gummy stem blight**. □

Pest Notes

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

✓ **General:** Sometime soon (within the next few weeks) experts say that the world human population will hit the 6 billion mark. It took over two thousand years to reach 1 billion, and only 200 years to add another 5 billion!

✓ **Asparagus:** High populations of **thrips** were reported on asparagus ferns over the last two weeks. Dimethoate was applied once, and the population was reduced to a low level. Thorough coverage of the ferns was key to the effectiveness of dimethoate in controlling the **thrips**.

✓ **Cabbage:** Although we have not yet caught any **cabbage looper moths** in the blacklight traps, the number of **imported cabbageworm** butterflies observed in fields is high. The larvae of this pest can be controlled using any of the biological insecticides (*Bt*'s), or any of a number of insecticides (consult the cabbage section of the *1999 Commercial Vegetable Production Recommendations of New Jersey*). Management of the

cabbageworm pests is easier if control measures are applied while larvae are still small. Control is always more difficult if larvae reach the later instars.

✓ **Corn (sweet):** The counts of both the **European corn borer** and the **corn earworm** being caught in the blacklight trap are slowly increasing. Although not at an economic level yet, the trap numbers can rapidly increase because of the hot, humid weather and the current storm fronts passing through southern New Jersey.

✓ **Potato (white):** **Wireworm** damage has been found on potatoes harvested in Salem County. The areas within a field that show damage vary greatly. **Wireworms** may live in the soil up to 5 or 6 years, depending on species, and migrate very little. Thus it would be important to monitor your fields to determine which field(s) show damage, and use a spring broadcast treatment for **wireworm** control. Diazinon, Di-Syston, and Mocap are all labeled in white potatoes for **wireworm** control using a broadcast application before planting. Plan now for next spring.

SEE PEST ON PAGE 5

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged above normal north and central, and below normal south. Extremes were 102 degrees at Canoe Brook on the 18th and 47 degrees at Charlotteburg on the 15th. Weekly rainfall averaged 0.17 inches north, 0.20 inches central, and 0.64 inches south. The heaviest 24 hour total was 0.99 inches at Pomona on the 12th to the 13th. Estimated soil moisture, in percent of field capacity, this past week averaged 56 percent north, 45 percent central and 43 percent south. Four inch soil temperatures averaged 71 degrees north, 73 degrees central and 72 degrees south.

Weather Summary for the Week Ending 8 am Monday 7/19/99

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	.00	10.66	-7.24	97	53	75.	2	1470	210	43
CANOE BROOK	.66	11.74	-7.25	102	54	78.	4	1683	419	61
CHARLOTTEBURG	.21	13.05	-6.12	100	47	72.	1	1216	194	48
FLEMINGTON	.00	8.96	-9.36	100	51	76.	2	1540	236	52
LONG VALLEY	.00	10.46	-9.15	96	51	72.	1	1289	191	46
FREEHOLD	.18	11.66	-6.17	101	55	78.	3	1721	314	48
LONG BRANCH	.33	12.46	-5.30	91	56	73.	-1	1510	180	30
NEW BRUNSWICK	.06	12.01	-5.65	99	53	77.	2	1620	133	57
PEMBERTON	.17	12.88	-4.77	101	50	76.	1	1695	250	22
TOMS RIVER	.25	6.60	-11.50	95	53	73.	-1	1485	145	27
CAPE MAY COURT HOUSE	.90	9.79	-5.95	90	57	72.	-4	1605	176	36
DOWNSTOWN	.54	14.57	-1.87	94	54	73.	-3	1636	74	35
HAMMONTON	.33	13.01	-4.37	95	53	73.	-3	1632	96	23
POMONA	1.01	13.00	-2.67	93	55	74.	-1	1594	169	44
SEABROOK	.30	15.56	-.32	92	56	74.	-2	1760	191	30
ATLANTIC CITY MARINA	.77	10.30	-4.70	83	62	72.	-2	1631	289	34
WOODSTOWN	.09	14.72	-2.92	97	50	74	NA	1755	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW Last Week 281 (Ending 7/12/99) This Week 235 (Ending 7/19/99)										

IPM Update

Kristian Holmstrom and Sarah Walker, Program Associates in Vegetable IPM

Cole Crops

While **flea beetle** is a pest of cole crops throughout the growing season, damage is usually minimal once warm weather arrives and plants are growing rapidly. This season, however, with prolonged periods of hot, dry weather, **flea beetles** have been observed doing considerable damage to the foliage of broccoli, cabbage and collards. **Flea beetle** injury is particularly damaging on young plants under stress, which may not be growing quickly enough to replace damaged foliage. Collards and kale are at high risk as well, as the leaves of this crop are the marketable portion. Scout fields 1-2 times a week, and treat if there are more than one **flea beetle** per plant and obvious damage is occurring. It is important to scout regularly even after treating a field, as **flea beetle** numbers increase rapidly.

Peppers

European corn borer (ECB) adult counts have increased throughout the state, and egg laying has been observed in plantings in Burlington and Salem Counties. All plantings with fruit should be protected on a 7-10 day schedule. Make sure to monitor later plantings for insect pests. **Flea beetles** were found in high numbers on young transplants this week. Though **flea beetles** are not usually a concern for peppers, the later plantings are stressed from the hot and dry conditions and will not be able to sustain insect feeding until they get established. Other pests to monitor on young transplants include **aphids, mites, and thrips**.

Snap Beans

ECB adult counts have increased throughout the state (see map). For processing and fresh market snap beans treat for **borers** when plantings are in the bud and pin stages. If blacklight trap counts are 2 to 5 per night in your area, treat weekly from the pin stage until harvest. **Potato leafhoppers** are active now, so monitor fields for the presence of adults and nymphs. Consider treating fields if **leafhoppers** exceed 100 per 20 sweeps prior to bloom or 250 per 20 sweeps during bloom. Check fields also for the presence of **mites** along field edges. If populations are detected early, spot treatments in the areas where **mites** are moving into fields may be effective in reducing **mite** problems.

Sweet Corn

Although the **ECB** catch has decreased in the Cohansey area, **ECB** adult activity is increasing overall throughout New Jersey. Whorl stage fields should be scouted at this time for **ECB** damage. Consider treating when 12% or more plants are infested with either **ECB** alone or in combination with **fall armyworm (FAW)**. The highest nightly **ECB** blacklight trap catches are:

Shirley	13	Georgetown	4	Hopewell	3
Hackettstown	11	Sewell	4	Millstone	3
Centerton	7	Woodstown	4	Mullica Hill	3
Cohansey	7	Denville	3	Pemberton	3

Adult **CEW** activity is increasing steadily throughout the state. Silking stage sweet corn plantings are at high risk for infestation at this time. The highest nightly **CEW** blacklight trap catches are:

Centerton	10	East Vineland	3	Indian Mills	3
Cohansey	5	Elm	3	Pedricktown	3
Shirley	5	Folsom	3	Seabrook	3
Elmer	4	Hackettstown	3	Tansboro	3

Larval **FAW** feeding is being found in all areas of the state. Whorl stage infestations are ranging above 20% in central counties as reported by Frank Spiecker of Garden State Pest Management. Note that **corn rootworm beetles** are now actively feeding on corn foliage. This damage can look like young **FAW** feeding. When scouting fields, it may be helpful to strip the leaves off of a few plants to see if **FAW** larvae are present. This will help in differentiating between the two types of damage. **Corn rootworm beetle** feeding on foliage is not an economic problem.

General Sweet Corn Spray Schedule

Silking corn:	North	4 – 5 days
	Central	3 days
	South	3 days

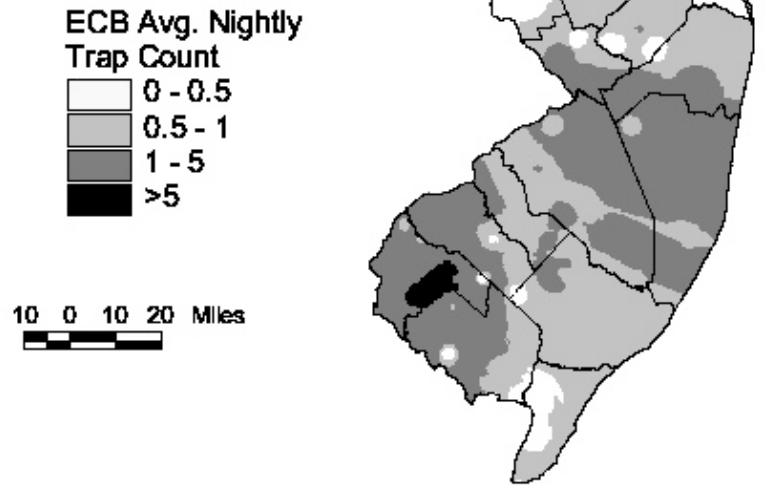
*These are general spray recommendations for large areas of the state. Growers can increase or decrease the intervals based on their own local situations.

Tomatoes

Tomato fruitworm (corn earworm) adult counts in both blacklight and pheromone traps have increased in the last week. Monitor fruit closely for the presence of larvae. For processing tomatoes, check 200 green fruit that are greater than 1 inch in diameter and consider a treatment if 5 fruit are damaged by **CEW** larvae. **Stinkbugs** are still active in blacklight traps, and fruit damage can be found in some plantings. Periodic treatments for this pest continue to be necessary.

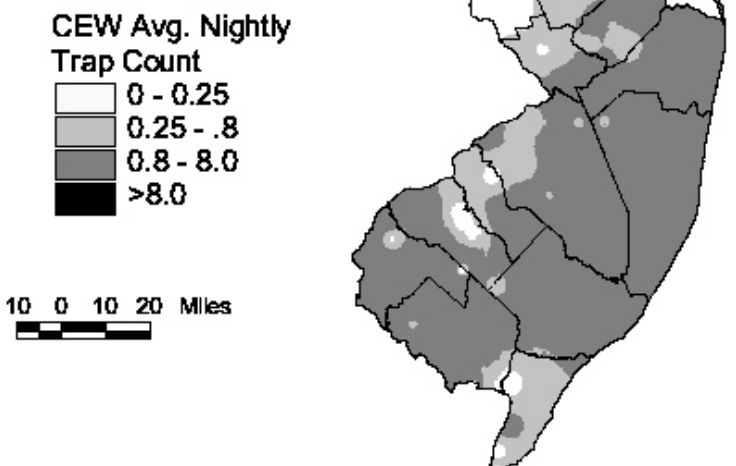
SEE **ECB** AND **CEW** DISTRIBUTION MAPS, NEXT PAGE

Distribution of Adult European Corn Borer for the Week Ending July 21, 1999



✓ **Tomato:** The number of **stinkbugs** caught in the blacklight traps is increasing. Monitor fields closely for **stinkbug** adults and nymphs in the field. If numbers are increasing, or damage increasing, sprays are warranted. Monitor 4E, Thiodan (or Endosulfan WP), Warrior IT, Baythroid 2EC, and Danitol 2.4EC are labeled for **stinkbug** control in tomatoes. Thorough coverage is important. □

Distribution of Adult Corn Earworm for the Week Ending July 21, 1999



This season, with prolonged periods of hot, dry weather, flea beetles have been observed doing considerable damage to the foliage of broccoli, cabbage and collards.

Data collected and processed by: Kris Holmstrom, Sally Walker, Marilyn Hughes
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