

# PLANT & PEST ADVISORY

CRANBERRY EDITION \$1.50

MAY 15, 1998

## Insect Management

*Sridhar Polavarapu, Ph.D., Entomology and IPM*



✓ **Blossom Worm:** First and second instar blossom worm larvae are being seen in several cranberry bogs at this time. The young larvae feed on terminal buds. Mature larvae can cause serious crop losses by nipping off the buds and flowers. According to Dr. Henry Franklin, each Blossom worm can destroy as many as a hundred cranberry blossoms during the course of larval development. Serious damage to uprights can be avoided by controlling the early instar larvae. Blossom worm overwinters as an egg laid on fallen cranberry leaves or pieces of dead vines on the bog floor. Eggs hatch in mid-May to late May. The newly hatched larvae are yellowish green in color. After they pass their early stages, they turn chocolate brown in color with a whitish stripe along the length of the body on each side. Fully mature larvae are 1.5 inches long. Pupation occurs in late July to early August in a cocoon made of silk and sand just below the surface of the soil. Moths begin to appear in early September. Egg-laying occurs in October. There is only one generation of Blossom worm each year. Blossom worm larvae also feed on several broadleaf weeds, especially leatherleaf. Larvae become nocturnal after they complete the early larval stages. It is therefore important to sweep for this insect in the evening/night hours to obtain assessment of larval populations. Daytime sweep samples can seriously underestimate blossom worm populations. Insecticide applications are most effective against small larvae. Insecticide treatments may be required only if total number of Blossom worm, Gypsy moth, and False armyworm larvae exceed an average of 4.5/25 sweeps. If populations exceed this threshold, consider applying an insecticide in the following 5-10 days.

✓ **Confirm 2F for Blackheaded Fireworm management:** Few early instar larvae have been found in the past week. Most if not all overwintering eggs should have hatched by now. Blackheaded fireworm larvae in our bogs at the Research Center (drawn on March 30) are close to pupation as of May 15. Larvae at this stage can be controlled very effectively with insecticides. Confirm 2F, a Molt Accelerating Compound (or MAC insecticides) has been recently registered under Section 18 of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) in the State of New Jersey for the control of Blackheaded fireworm. In order to use this product you should have a copy of the label in your possession at the time of insecticide application. Also, you should

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complete the necessary paper work the manufacturer is requiring before the purchase of the product. Please call the Research Center if you have any questions. The use rate of Confirm 2F is 16 fl oz per acre. The Restricted Entry Interval (REI) is 12 hours and the Pre-harvest Interval (PHI) is 30 days (The Section 18 label that Rohm and Haas has printed may state the PHI as 28 days. This is incorrect.). A maximum of four applications are allowed per year. Bogs with a history of Blackheaded fireworm, more than likely, may have an infestation this year also. This is a good time for finding Blackheaded fireworm infestations as most overwintering eggs may have already hatched. If your bog requires an insecticide application, consider an application in the following 3-7 days. Insecticide options include Confirm 2F, Diazinon, and Orthene.

✓ **Spotted Fireworm:** Larvae are appearing inside the bogs now. In Chatsworth and surroundings, most of the larvae in the bogs are in fourth and fifth instar stages. Larvae in our Research Center bog are in fifth and sixth instar stages at this time. As the larvae mature and web themselves more tightly, insecticides become less effective. Parasite larvae are beginning to exit from Spotted fireworm larvae at this time.

✓ **Sparganothis Fruitworm:** Larvae are beginning to appear in the bogs at this time. Larval emergence from overwintering sites will continue over the following 7-10 days. Most larvae are in early larval stages. Sparganothis fruitworm has two generations each season in New Jersey. This insect can be controlled very effectively with post-pollination application of insecticides. Unless populations are extremely high, control measures may not be necessary against the larvae during the first generation. □

## Cranberry Pollination

*Raymond J. Samulis, Burlington County Agricultural Agent*

Recent studies conclude that bees are directly responsible for pollination of over 19 billion dollars worth of the United States' agricultural crops. The importance of bees is well-documented and nothing new. In fact, as early as 1957, Phil Marucci's studies of pollination showed that an average bog had over 20 million blooms present. Only half or less of these flowers produce fruit that make it to harvest. For comparison, in tree fruits only 15% of the blooms need be pollinated in order to get a full crop. Research has also shown that if all blooms in a bog were pollinated, the theoretical yields are near 450 barrels.

The vast majority of a cranberry crop is produced in a short two week window of pollinating time. This makes the importance of maximizing the use of bees even more critical. Conditions like we had the past two weeks can be devastating to cranberry fruit set.

As with other fruit crops, cranberries can experience a marked "blossom blast" after flowers are present. This mostly results from adverse weather conditions that are beyond our control. It has been suggested, however, that oxygen deficiency in June can also affect pollination and produce blossom blast.

The formation of cranberries after pollination is the result of pollination and the influence of plant hormones that are produced from seed formation. Many scientists have studied the application of supplemental plant hormone to enhance fruit set. During 1994, I conducted an experiment to look at the effect of current commercial hormones on fruit set and yield of cranberries. I could greatly increase the number of berries, but that was at the expense of fruit size and anthocyanin content. The result was abundant "pea" sized berries that had delayed pigmentation.

Recent studies in Florida have shown that bees experience a process of "co-evolution" in nature populations. This has resulted in cases of natural bee poisoning from certain wild plant species, and has caused adaptation of the bees to tolerate the natural toxins. This is an interesting concept that may be partially responsible for the decline of the wild bee population in New Jersey, even though most of the blame has been on varroa mites and tracheal mite infestations.

Conventional wisdom tells us that strong bee colonies are the name of the game in assuring cranberry pollination. Weather, the other major pollination factor, is not controllable. Recently, studies were done to look at the potential use of bee attractants. Some of these attractants use insect pheromones that are extremely potent in attracting bees. However, documentation showing the beneficial effects to crop yields and quality are highly variable and questionable. Most people agree that the cost of using these materials, approximately \$25 per acre, would better be spent on additional bee colonies. Bottom line - be sure bee colonies are healthy, have adequate frames and brood, and are available in the field during that all important two week window of opportunity. □

# Weekly Weather Summary

*Keith Arnesen, Agricultural Meteorologist*

Temperatures averaged slightly below normal. Extremes were 77 degrees at Seabrook on the 8th, and 43 degrees at Freehold on the 5th. Weekly rainfall averaged 4.17 inches north, 4.87 inches central, and 2.83 inches south. The heaviest 24 hour total was 2.60 inches at Toms River on the 8th to 9th. Estimated soil moisture, in percent of field capacity, this past week averaged 99 percent north, 97 percent central and 79 percent south. Four inch soil temperatures averaged 60 degrees north, 60 degrees central and 61 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)

<b>Weather Summary for the Week Ending 8 Am Monday 5/11/98</b>										
WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD	BASE50 MON	
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	4.70	17.36	8.29	73	52	59.	1	254	146	100
CANOE BROOK	3.59	15.86	5.87	72	52	59.	1	363	271	100
CHARLOTTEBURG	5.12	17.51	7.67	71	48	56.	1	229	184	100
FLEMINGTON	3.90	17.68	8.15	74	53	59.	1	296	196	100
LONG VALLEY	3.55	16.14	5.94	68	54	58.	2	224	160	100
NEWTON	MISSING									
FREEHOLD	5.40	17.92	8.46	69	43	57.	-2	335	199	100
LONG BRANCH	5.85	21.95	12.17	64	52	57.	-1	238	126	100
NEW BRUNSWICK	3.96	17.26	8.07	72	53	58.	-2	313	153	100
PEMBERTON	3.43	14.47	5.41	75	52	60.	0	445	289	100
TOMS RIVER	6.99	23.29	13.78	72	48	58.	-2	372	251	100
TRENTON	3.58	16.79	8.22	71	52	58.	-3	310	127	100
CAPE MAY CRT HOUSE	1.68	12.09	3.78	68	52	59.	-1	322	163	100
DOWNSTOWN	2.63	13.07	4.51	76	53	61.	0	398	205	100
GLASSBORO	3.03	11.92	2.87	74	52	60.	-1	384	201	100
HAMMONTON	3.33	13.34	4.53	75	52	60.	0	362	186	100
POMONA	4.37	17.55	9.23	72	51	59.	0	338	199	100
SEABROOK	2.09	14.14	6.41	77	52	61.	0	404	208	100
ATLANTIC CITY MARINA	2.69	17.38	9.52	67	52	58.	0	270	131	100
WOODSTOWN	2.47	10.69	2.38	76	55	62	NA	433	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW										
Last Week 124 (Ending 5/4/98)										
This Week 149 (Ending 5/11/98)										

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