THE UNIVERSITY OF WISCONSIN-EXTENSION CRANBERRY INTEGRATED PEST MANAGEMENT PROGRAM, WITH COMMENTS ON MONITORING METHODS IN RELATION TO PHEROMONE TRAP COUNTS FOR BLACKHEADED FIREWORM

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Introduction

The University of Wisconsin - Extension (UWEX) initiated a four year pilot Cranberry Integrated Pest Management (IPM) Program in 1986. Trained scouts monitored and reported insect, disease and weed levels on a weekly basis and the program coordinator made control recommendations as needed. Participating growers also received a newsletter every two weeks detailing pest activity in the state. Growers were charged a fee based on the number of acres scouted.

Program Objectives

The major objectives of the UWEX Cranberry IPM Program are:

1. *To improve pest detection through regular scouting.*
   Scouting allowed growers to be aware of pests before they reached damaging levels and learn what types of pests were the most problematic.

2. *Reduce pesticide usage.*
   Results of the UWEX questionnaire and a review of grower pesticide records indicate seventy-five percent of the IPM growers reduced their pesticide use by at least one application. Growers who did not reduce the number of applications stated that they “received better control” because of more timely pesticide applications.

3. *Collect additional information necessary to incorporate biological control into current IPM programs.*
   Critical biological information on the relationship between pests and their natural enemies is necessary in order to reduce pesticide usage even further. Regular scouting provides baseline information on the most common predators and parasites occurring in commercial marshes. Scout reports indicate hover fly and lacewing larvae feeding on tipworm and blackheaded fireworm larvae. In addition, an egg parasitoid (Trichogramma pretiosum) of blackheaded fireworm was collected in 1989. This tiny wasp is a parasitoid of cranberry fruitworm eggs, and had not previously been recorded on blackheaded fireworm.

4. *Assist in the development of commercial IPM scouting programs.*
   In 1986, UWEX offered the only cranberry IPM program in Wisconsin. Almost 160 acres were scouted in three counties. By 1989, two private companies and one grower cooperative (Ocean Spray) offered programs modeled after the UWEX program. In 1989, 1,800 acres were scouted in twelve counties; UWEX scouted less than ten percent of the acreage. Growers were strongly encouraged to participate in programs offered by the companies and grower cooperative.

Number of Participants

The number of growers participating in the UWEX IPM program varied yearly (Table I). A limited number of growers were offered the program in 1989, and former program participants were encouraged to join the privately offered programs.

Table 1. Number of UWEX Cranberry IPM Participants (1986-1989).

Year	Marshes	Acres	Counties
1986	7	158	3
1987	20	366	6
1988	25	525	6
1989	5	150	3

IPM OF THE FUTURE

In pilot IPM programs the number of pesticide applications are often reduced because of weekly pest status information provided by the IPM scouts. This information enables growers to treat only if necessary and time applications more precisely. In addition, the scout supervisor can recommend or suggest the most efficient and least environmentally harmful pesticide, or pesticide alternative. However, this is only the first phase of an IPM program.

IPM programs are dynamic. Research conducted by the University of Wisconsin and other universities will provide additional cost-effective methods for improved management of pests. Many of the following methods listed below will be part of future IPM programs.

(1) Improved sampling programs for insects and diseases.

(2) Increased reliance on predictive models. Three degree day models have been developed and are being field tested: blackheaded fireworm, cranberry girdler, and dodder. Cranberry tipworm will be the next model to be developed.

(3) Use of infrared photography to detect germinating weed seeds and areas damaged by diseases and insects.

(4) Increased reliance on biological control of weeds, diseases, and insects.

(5) Use of pesticide-resistant beneficial insects.

(6) Use of selective insecticides that will not harm beneficials. Such insecticides may include insect growth regulators and microbial pesticides.

(7) Development of a method for quickly analyzing pest insects to determine percent diseased or parasitized.

(8) Planting genetically engineered plants that are resistant or tolerant to pests.