### Title: Sustainable Cranberry Production

## ****Project Leader:**** Hilary Sandler

##  Project Overview

## The cranberry industry in Massachusetts faces many challenges.  In the past ten years, growers have gone from receiving record high prices for their fruit to record low prices.  Although the industry has rebounded, the focus to remain economically competitive and environmentally sustainable has sharpened.  It is anticipated that the industry may lose some acreage due to attrition and that smaller growers may sell their land.  As with all farmers, energy costs are rising quickly, impacting the bottom line.  Growers must develop and adopt innovative technology to remain competitive.  Exporting fruit for international markets is also more challenging given the pressure imposed by restrictive thresholds for pesticide residues. Growers must understand the biology of cranberry pests to properly utilize new management tactics. Additionally, they must contend with increasing urban pressure on the farm's margin as many parties compete for resources.  The goal of the UMass Extension Sustainable Cranberry Project is to provide cranberry growers with pertinent and timely information so they may sustain their operations in Southeastern Massachusetts.

## Activity Summary - 2012

* Annual Meeting - Cranberry Management Update(1)
* Bogside Workshops (1)
* Cranberry diagnostic and management recommendation services(1)
* Cranberry Station Newsletter(1)
* Cranberry station Website (1)
* Maintaining & Enhancing Native Pollinator Habitat - Best Management Practice fact sheets(1)
* Development of research-based Best Management Practices relating to canopy management and reduced herbicide and phosphorus inputs(1)
* Graduate Student Applied Research Advising(1)
* Impacts of Pest Management on Pollinators - workshop(4)
* Irrigation automation - workshop(1)
* Pesticide Safety - workshop(1)
* Research project in support of reduced-risk pesticide registration(1)

### *Educational contacts*

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| --- | --- | --- |
|  | Adult Contacts | Youth Contacts |
| In Person | 1,043 | 0 |
| Indirect Contacts (Print, Web, etc…)  | 958 | 0 |

## Narrative Summary – 2012

**Evaluation of Automated Irrigation Cycling in Cranberry Frost Protection.** A new research project funded by USDA NRCS-CIG Program will evaluate automated frost cycling. Automated frost cycling offers an opportunity to reduce the amount of water usage and at the same time realize additional energy savings because the pump will not be continuously running during a frost night. We currently do not have best management practices (BMPs) for frost cycling regarding temperature set points and the optimal irrigation water volumes to be applied.

**Further studies on upright dieback in cranberry.** Upright dieback caused by *Phomopsis vaccinii* occurs in all areas where cranberries are grown. Although the worst case scenario in some beds involves 20% symptomatic uprights, cranberry yields did not appear to be impacted. A three year study examined the ratio of vegetative to fruiting uprights affected by the disease and its relationship to yield in that bed. Several transects were walked in each bed in order to get 20 representative samples of uprights in a unit area. The ratio of vegetative to fruiting uprights varied from 1:1 to 1000:1, and the ratio within a single bed varied significantly within the three year period. Just prior to harvest, similar transects were walked in order to determine yields. Yields were largely not impacted by the disease, even when the ratio of uprights was 1:1. Both vegetative and fruiting uprights were sampled, stripped of their leaves and 1-cm pieces were surface sterilized and plated on ACMA. Fungi were identified at three weeks. *Phomopsis* incidence was high in both types of uprights, but generally higher in the fruiting uprights. *Fusicoccum putrefaciens* was also cultured from both types of uprights at significantly lower levels, but usually equivalent for each upright type. When uprights were sampled the following spring, *Fusicoccum* was isolated much more frequently than *Phomopsis*. Because both of these fungi also cause cranberry fruit rot, fungicide applications for control are still warranted.

 **Sustainable reduction in use of phosphorus in MA cranberry.** It has been suggested that, even when following the current Extension fertilizer recommendations, P output from MA cranberry farms may exceed environmental mandates.  To respond to this challenge, growers have been introduced to the use of low P fertilizers developed and tested by peers.  Growers were recruited to implement a P fertilizer program using 10 lb/acre or less P (half the recommendation) and share the results with researchers and other growers. At the site of the earliest adopter of the reduced P program, after 7 years of an average seasonal P application of 10 lb/acre, crop yields were increased (compared to prior years), P concentration in harvest floods was reduced by >80%, and P concentration in winter floods was reduced by ~90%.

**Efficacy Trials with the new insecticide, Altacor, through chemigation.**  Confirmation of good efficacy of new compound through a number of chemigation systems was assessed against cranberry fruitworm.  Over a dozen sites were visited and egg/berry collections were made as well as harvest damage assessments.  Heavy pressure populations with good chemigation systems were managed with the new compound.  Results will result in transition from organophosphate insecticides to "bee-friendly" compounds applied during late bloom to manage the primary cranberry pest.

### Collaborating Organizations

### Cape Cod Cranberry Growers Association

### Cranberry Institute