

Title: **APPLICATIONS OF NEW PEST STRATEGIES IN CRANBERRIES**

Principal Investigators:

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Objectives:

1. Implement new weed control alternatives in bearing and nonbearing cranberry beds.
2. Implement new insect control alternatives for blackvine weevil, black-headed fireworm and fall fruitworm in producing cranberry beds.
3. Implement new cranberry disease management alternatives for domestic and export markets for fresh fruit production in, and process fruit for the export market.
4. Evaluate grower implementation, success and failures of new reduced-risk pesticides.

Procedures and Results:

Objective 1: Numerous replicated trials using diluted vinegar (3 to 5% acetic acid) as a soil drench at rates of 3000 to 8000 gpa just prior to budbreak (mid to late April) to control of false lily-of-the-valley (*Maianthemum dilatatum*) were conducted. Efficacy and crop damage were not consistent and were highly dependent on soil moisture and stage of plant development. Nevertheless, acetic acid was a viable mean to control *Maianthemum*.

Replicated experiments were also conducted using numerous herbicides for perennial weed control, including Classic, Callisto, Hussar, Accent, Envoke, Osprey, Matrix, Upbeet, and Raptor. Matrix and Raptor appeared to be the most promising for providing weed control, although Raptor resulted in significant crop damage at some timings. Good control of silverleaf was obtained with combinations of multiple applications of 2,4-D in the spring and Callisto in the summer. Combinations of 2,4-D and Callisto, and Classic and Callisto, or Matrix and Callisto were more effective than either product alone or show promise for the more recalcitrant weed species.

Objective 2: Numerous research plots on cranberry girdler control with clothianidin were established. Data were too variable to be meaningful. A study evaluating time of insecticide application on the efficacy of fall fruit control was conducted for the third year in a row. Variation in insecticide timing had only subtle effects effect on compared

to the standard grower treatment. Replicated studies on winter and summer applications of clothianidin or imidacloprid for black vine weevil control were conducted. Both products provided control, but only at the 60 to 80% level, not adequate enough to eliminate weevil damage. Advaunt was evaluated for blackheaded fireworm control. Advaunt provided control of fireworm, but study conditions were not adequate to make comparisons with currently registered insecticides.

Objective 3: Six replicated field studies were conducted on growers' farms to compare early bloom fungicide (chlorothalonil and azoxystrobin) application with traditional fungicide application timings (fruit set). Fruit rot and keeping quality data are currently being collected.

Objective 4: Grower surveys and interviews were conducted on the value of reduced risked products recently registered. An emergency exemption for the use of Callisto on cranberry beds in OR and WA was received for May 2004 and 2005. This allowed for large-scale trials to be implemented on growers' farms. Growers were extremely satisfied with the weed control results. The efficacy rating for aster, lotus, silverleaf and rushes was good; for yellow weed and false-lily-of-the valley it was poor. No phytotoxicity was noted, except under extreme conditions. Full registration of Admire was obtained for weevil control. Large scale applications occurred in 2004 and 2005. Most growers had satisfactory control, but several farmers reported poor control (75% of growers were moderately satisfied and 12% were very satisfied with Admire). Apparently control is not adequate enough to prevent bed damage and continued re-infestation. Although 73% of growers were aware of the Abound fungicide label on cranberries, only 23% reported any use of the product.

Accomplishments and potential significance to the industry:

This project was responsible for the registration on Callisto on cranberries. This herbicide has had and will continue to have a huge impact on the cranberry industry in the PNW. Several weed species have gone from being major weed pests to non-significant pests. Increases in yield on weed-infested beds are up by 25 to 100%. Based on increase in grower returns in OR and WA for 2005, the project will increase cash farm value to the PNW by more than \$1,000,000/year.

Funding sources:

Washington State Commission on Pesticide Registration, Washington State Cranberry Research Commission, Ocean Spray, Cranberry Institute, Oregon Cranberry Growers Association.