

Kim Patten

Cranberry Pest Management

Weeds, disease and insect problems continue to cause high losses in cranberries produced in southwest Washington. Programs were conducted by WSU Extension to develop new pest control alternatives and implement them into the industry. A new herbicide, Callisto, effective in killing both annual and perennial weeds while not injuring cranberries, has now been used by the industry for four years, resulting in major saving to the industry and a reduction of total herbicide use by the industry of >150,000 pounds in the last four years. The herbicide is derived from a plant extract, poses no environmental concerns, and does not cause any crop damage. Another herbicide is scheduled for registration in early 2010. Two new reduced-risk insecticides, Assail and Avaunt, were registered in 2008. WSU research has shown that they have provided excellent control of Blackvine Weevil, almost entirely eliminating this as a priority pest. There was almost no weevil damage reported in 2009. Another new reduced risk insecticide, Delegate, was found to provide excellent control of fireworm when applied with a chemigation system. It is a new valuable tool to replacement OP insecticides and to help solve the water quality problems they create. New variety plantings were installed to find varieties most resistant to fruit rot. One of these was found to have very good keeping quality and high yield. It will be very suitable for fresh fruit production and will be named and released to the industry for large-scale trials. It will be called Willapa Red.



Two new insecticides, Assail and Avaunt, were evaluated and registered on cranberries for Black Vine Weevil control. These insecticides have resulted in a major improvement in weevil control for the industry and will result in a cost-savings of millions of dollars over the next several years. Photos show the damage (L) caused by the weevil larvae (R).

Cranberry Production Systems

Surface water contamination concerns continue to be a problem in the Grayland growing area. Best management practices (BMP's) to reduce surface water contamination have been implemented by growers, but the problem has not disappeared. Several new reduced-risk insecticides have just been registered for use on cranberries in the past year. WSU's data on these indicate that they can be cost-effective replacements for high-risk pesticides. Efforts to increase area-wide use are underway.

A new variety, Willapa Red, was released in 2009 to help keep the industry competitive. Willapa Red consistently has the highest yields and lowest fruit rot of cranberry germplasm evaluated by WSU. It t sets a good crop regardless of the weather during pollination. Once this new selection get implemented into the industry, it should help increase or maintain yield during the many years when the industry has cool wet June weather.



AQUATIC WEED & PEST CONTROL

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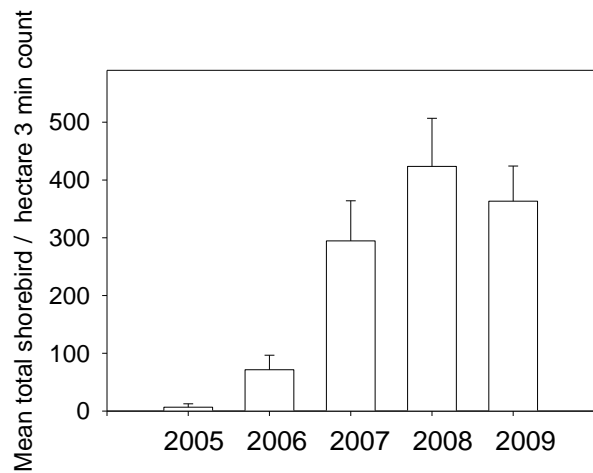
Aquatic Invasive Plants

Research was conducted by WSU Extension on methods to improve efficacy of Spartina control and means to expedite restoration of Spartina-affected mudflats. The use of those methods has resulted in total Spartina acreage decreasing from 10,000 acres to less than 50 acres. Shorebird usage of the affect tidelands has increased dramatically and are now at leveled off at peak usage.

WSU's current work on Spartina is developing a cost-effective plan to achieving final eradication. Although County, state and federal control efforts have been aggressive, they continue to miss plants, thus prolonging any chance of eradication.

Spartina has become a problem for Willapa Bay. Over the last decade, WSU Long Beach has tested and registered a chemical control that is extremely effective. This has allowed for a large and very successful control effort across Willapa Bay over the past two years. Within the next several years we will have achieved eradication. This figure shows the increase in shorebird foraging that occurred at Palix River Tidelands following Spartina control.

Mean spring migration of shorebirds on Palix River mudflat following Spartina cControl



Palix River meadow was ~ 600 acre of solid Spartina. The meadow was treated with imazapyr by air in fall 2004, boom sprayed in 2005, and spot sprayed in 2006 to 2009. Data are mean total shorebird species \pm standard error. Counts were taken on 3 to 5 days during peak spring migration on 6 -1 ha plots just prior to tidal coverage.

A number of aquatic weeds threaten river systems and lakes in the area, as well as freshwater wetland sites. Rapid growth of these invasive weeds can cause dramatic changes in both the physical and biological characteristics of freshwater habitats. New controls have been developed for these aquatic and riparian weeds in Pacific County. Their use has helped remove Parrotfeather Milfoil from south county drainage ditches and helped remove Bohemian knotweed from the riparian zones of the Willapa and Naselle Rivers.

Parrotfeather Milfoil and Bohemian Knotweed and other aquatic and invasive weeds have become ever more problematic. Research trials on the best way to control these weeds are being developed. Photo shows Parrotfeather Milfoil is starting to take over and plug the South Main Drainage ditch in Long Beach.



Shellfish pest management

Ghost and mud shrimp are overtaking prime oyster grounds in Willapa Bay and Grays Harbor, creating an ecological and economic disaster. WSU Long Beach is studying the efficacy of alternative control methods for these pests, seeking more specific and environmentally benign methods. Carbaryl, the traditional pesticide being used, has created public relations and marketing problems for the industry, and will not be available for use in the future. Over \$500,000 in research monies was obtained for alternative control research and development in the past 2 years. A new alternative chemistry was found with good efficacy and is in the process of being registered. Larger-scale trails were implemented in 2008 and 2009. This process requires complex coordination with state

and federal regulators, numerous scientific teams, the industry and numerous other stakeholders. The chances of having an alternative chemistry available for burrowing shrimp control by 2012 are good.



Burrowing shrimp are causing major losses in shellfish production. In 2012, carbaryl will no longer be available for control of burrowing shrimp. A major research effort is being conducted on alternative controls for burrowing shrimp.

Photo shows oyster shells sinking in burrowing shrimp affected tidelands.