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Calendar of Events

January 23 Pruning Fruit Tree Session at the Master Gardener Discovery Garden. This session will focus on the proper pruning techniques for central leader and open center vase training systems for apple, pear, prune, and fig. We will also discuss Steep Leader and Spanish Bush training styles for cherry trees. This session will be Thursday, from 1pm-4pm. Bring your own pruning loppers and dress for inclement weather.

February 5 Weed Day at the Douglas County Fairgrounds. More information on the program will be out shortly for those needing pesticide recertification credits.

February 7 Pruning Ornamental Shrubs and Flowering Trees. This session will be at the Master Gardener Discovery Garden near River Forks Park. I will demonstrate and we will practice the proper methods of pruning ornamental shrubs. We will discuss what natural form each type of shrub has. Mound, cane, or upright shrub forms all require different pruning styles. We will also describe and practice how to renovate old or neglected shrubs and trees. The class will be on Friday, from 1pm-4pm. Bring your pruning gear and dress for inclement weather.

March 24 Pruning Japanese Style Gardens. This session will be held at the Master Gardener Discovery Garden near River Forks Park. I will discuss and demonstrate how to train trees and shrubs in the Japanese Style. Bring your own pruning loppers and shears and dress for rain. The class will be on Tuesday, from 1pm-4pm.

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This publication will be made available in accessible formats upon request. Please call 541-672-4461 for information. If you have a physical disability that requires special considerations in order for you to attend an event, please notify the office at 541-672-4461 no later than 2 weeks prior to event date.
Research from Michigan State University Looks at Improving Spotted Wing Drosophila Controls in Tart Cherry Crops by Pruning and Mowing

I am including this article again from Michigan State University for anyone who has had issues with the Spotted Wing Drosophila in their cherry trees. This research clearly showed an improvement in SWD control when opening trees through pruning to minimize shaded areas in the interior of a tree canopy. A reduction in shade lead to more light and higher temps in the tree canopy. Researchers at Michigan State University looked at ways to reduce the potential damage caused by SWD to the tart cherry crop through cultural practices. In earlier studies across the country researchers have shown that SWD do prefer mild temperatures and wet, humid air. As temperatures rise above 86F degrees and humidity falls below 20% SWD activity dramatically slows.

Typically tart cherry growers only prune their trees slightly every few years. As canopies get greater density the environment for the SWD is improved making damage from SWD more severe. In field tests where cherry tree structure was changed to be more open versus traditional tree density, and plots were mowed every two weeks to shorten permanent cover crops, damaged was reduced by 40% in unsprayed pruned test plots. In the field tests the SWD population counts were very dependent on temperature, humidity, and rainfall. Opening the tree canopies allowed the trees to dry more quickly after rains, warm up more quickly during the day to lessen the preferred cool temperature range for SWD and lower the humidity inside the tree canopy. Mowing the cover crop contributed to lowering the humidity in the orchard blocks too.

In our drier Oregon summer growing season there are still a few takeaways from this research that might help reduce pressure in our local cherry orchards from SWD. Keep cherry trees pruned well to warm up quickly within the canopy. Keep cover crops mowed short to minimize additional humidity in the orchard block. When irrigating cherry orchards with sprinklers, keep the water out of the tree canopy, and shorten the irrigation cycles to allow for rapid drying. Preferably set up orchards with drip irrigation where possible. All of these cultural practices along with SWD trapping and timely spray controls when fruit starts to color will help to minimize crop losses.

Researchers Determine Ideal Areas and Timing for Biological Control of Invasive Stink Bug

Corvallis, OR. – Biological control of the brown marmorated stink bug, an invasive pest that devastates gardens and crops, would be more effective in natural areas bordering crops or at times when certain insecticides aren’t being applied, according to a new Oregon State University study.

The study, published in the Journal of Economic Entomology, advances the understanding of using the samurai wasp for biological control of the brown marmorated stink bug, and has significant implications for Oregon’s growers of orchard fruits and nuts, said David Lowenstein, a postdoctoral research associate in Oregon State’s College of Agricultural Sciences and lead author on the study. Biological control is the use of beneficial insects to manage other insects, which means using less pesticides. The brown marmorated stink bug, which is native to east Asia, has a taste for more than 100 types of crops, including blueberries, wine grapes, cherries and hazelnuts. During the 1990s, it invaded the United States and is now found in 44 states, causing millions of dollars in crop damage.

With funding from the United States Department of Agriculture’s Specialty Crop Research Initiative, more than 50 researchers across the U.S. are studying the stink bug to find management solutions, including those at Oregon State. The stink bug was first detected in Oregon in 2004. Since then, OSU researchers have found the pest in 24 of Oregon’s 36 counties, and in all of the state’s major fruit-producing regions. The bug also causes nuisance issues when aggregating on the side of homes and sheds in the fall.

The samurai wasp, which is smaller than a pinhead, is native to the same region in east Asia as the brown marmorated stink bug. It lays its eggs inside stink bug eggs, preventing the stink bugs from hatching. Although it is unknown how it arrived in the U.S., surveys conducted in 2014-15 detected the wasp in several locations. It was discovered in Oregon’s Willamette Valley in 2016.

Oregon State study investigated the impacts of different insecticides, commonly used in orchard crops, on samurai wasp survival and reproduction. Some insecticides were highly lethal to the wasp and a few were compatible with using the wasp for biological control.

Lowenstein said the research was necessary for growers, especially those in Oregon’s hazelnut industry, who use insecticides but who also want to use the samurai wasp to control stink bugs. They want to know which insecticides will be less harmful to the wasp and when to spray, Lowenstein said.

“Since the discovery of the samurai wasp in Oregon, our research group at OSU has proposed biocontrol for managing...
the brown marmorated stink bug,” Lowenstein said. “We needed to validate the compatibility of this wasp in a commercial environment where insecticides are being used.”

The researchers studied samurai wasp compatibility with nine conventional and organic insecticides commonly used in integrated pest management in perennial crops, both in the laboratory and in three hazelnut orchards in the Willamette Valley.

They found that the active ingredients in two classes of insecticides – neonicotinoids and pyrethroids – killed more samurai wasps than the others, both in the field and in the lab. Both classes are “broad-spectrum” insecticides, which are designed to kill or manage a variety of insects.

However, more than 50% of wasps survived contact with insecticides that are better targeted to control chewing insects, such as filbertworm larvae, in hazelnut.

“For someone who wants biological control for samurai wasp, it’s best to time it when you aren’t applying chemicals unless you are using those more targeted compounds,” Lowenstein said.

Orchards may also benefit from biological control if samurai wasps are released in unsprayed areas adjacent to agriculture and in urban areas, where the samurai wasp is thriving. In the last 2½ years OSU has released the wasp at about 60 sites in the state. At about 40% of those sites the wasp has survived into the following season.

The wasp isn’t commercially available and OSU rears it primarily for research, but the insects can be distributed to an Oregon location upon request, Lowenstein said, adding that the samurai wasp isn’t harmful to people.

“There’s no way you are going to confuse this with a yellowjacket. They aren’t interested in stinging people,” he said. “If you have a samurai wasp on your property you won’t even know it’s there unless you are seeing its effect, which is less stink bugs.”

Oregon State hosts a website with the latest news about the brown marmorated stink bug, photos to help identify it, and instructions on how to report sightings. A fact sheet about the samurai wasp is available through the OSU Extension Service.

Nik Wiman, OSU Extension orchard crops specialist at the North Willamette Research and Extension Center (NWREC) in Aurora and Lowenstein’s advisor, is a co-author on the study. Other co-authors are Heather Andrews, an OSU faculty research assistant; and OSU horticulture graduate student Anthony Mugica, both members of the OSU orchards research lab.

The study was funded by the Oregon Hazelnut Commission, the Oregon Raspberry and Blackberry Commission and the United States Department of Agriculture National Institute of Food and Agriculture.

**Fruit Tree Pollination with Drones**

I recently read an article in the Growing Produce Newsletter online. It discussed recent work with drones to supplement or complement honey bee pollination of tree fruit and nut crops during wet cool springs.

The company doing research and experimentation is called Dropcopter, a Syracuse, New York based startup. During the past three years of trials the company reported increased yields of 25-50%.

Flowers from almond trees were collected by tree shakers when the trees were at full bloom. Then the pollen from the flowers was extracted and purified to remove any potential diseases that might be spread. This step is very important for crops like pears and apples that are susceptible to honey bee transmitted diseases. Collecting pollen from just a few trees provides sufficient pollen for an entire orchard. The article had a statement from the drone company manager who said “We can gather pollen at 100 times the rate that we need to”.

The pollen is dispersed from the drone at a specific rate that was determined through their tests. The drone delivery system can be adjusted for the amount of pollen release depending on the weather conditions. The drones fly about 10 feet above the tree tops and cover 20-25 acres an hour. The drones used in these tests could fly for about 25 minutes before needing to get more pollen and recharge.

In the test plots for pollinating almonds the goal was to pollinate all the blooms, so several passes over the orchard were employed. With apples or pears their work showed that the drone could focus on delivery of pollen at the time the king bloom was receptive and not when the remainder of the flowers were receptive. This process reduced the amount of thinning necessary for apples and pears. In cool weather conditions the drone delivered pollen very effectively when bees would typically not leave the hives.

Most commercial fruit and nut orchard managers should view the drone pollination equipment and process as a supplement to their normal bee pollination. The commercial site tests that were made in this study demonstrated you could rely on drone pollination alone if the weather turns wet and cold. However, during most years when rain and cold are not a persistent problem, the drone delivery system can be looked at as a way to boost yields if desired, and as a way to reduce the number of hives needed per acre at your site.

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**Weekly Pest Alerts for January through March 2020**

Weekly Pest Alert Comments are updated each week by Steve Renquist with current trends in pests in orchards, vineyards, and nut trees.

Find these online on the Douglas County OSU Extension webpage: [https://extension.oregonstate.edu/douglas](https://extension.oregonstate.edu/douglas)

Scroll down to “Announcements” and Weekly Pest Alerts….2019”. 