

**PLEASE BE ADVISED:**

In 2020, crown rots, southern blight, root-knot nematodes, tomato spotted wilt virus, and alfalfa mosaic virus plant samples are of special interest. *If you think you have any of these diseases in your field, please let me know so I can collect samples.*

*UCCE is still here working for you! I wish you all well during these unprecedented times.*

## **Cover Crop Survey**

*Please consider participating in the following survey being conducted by the Western Cover Crops Council. Your answers will help improve outreach and inform cover crop incentive programs to better serve farmers.*

Did you know the Western region now has a cover crops council? The Western Cover Crops Council aims to promote the successful use of cover crops in our diverse agricultural systems. In order to do that, we are asking farmers like you to share your perspectives on cover crops. Whether you plant them now, planted them in the past or have never planted them—your perspective is important!

The survey is being conducted by partners at the University of Idaho, Oregon State University, and Boise State University with funding from the Sustainable Agriculture Research and Education Program (SARE). This brief survey will take approximately 5-10 minutes to complete. The survey is confidential, and your responses cannot be linked to you. Upon completion you will have the opportunity to enter a drawing for one of ten \$50 Amazon gift cards. Odds of winning are approximately 1 in 75.

Please take a few minutes and share your thoughts, experience, and expertise with us. It is only with your help that we can understand how to best guide cover crop programs for the western US.

[Here is a link to the survey.](#)



## **2020 Research Progress/Results**

***Weed control and cost-benefit analysis of automated cultivators to control within-row weeds in processing tomatoes***



*From left: Finger weeder, Robovator, weeds and tomatoes pre-cultivation (April 16, 2020).*

The growing interest in weed management technologies, like mechanical and automated weeders that have the ability to cultivate within the plant row, combined with increasing costs of hand-weeding labor, provides an opportunity to conduct a cost-benefit analysis. We are comparing weed management strategies in two processing tomato fields (Colusa County and Merced County) by evaluating weed control and costs associated with herbicides, finger weeders, and the Robovator (a tractor-mounted automated weeder) as additions to standard grower practice.

Our hypothesis is that mechanical implements to control weeds within the plant row significantly reduce hand hoeing costs in conventional processing tomatoes. Our treatments consist of **1)** grower standard practice for weed control (pre-plant incorporated herbicides, post-transplant herbicides, cultivation, hand-hoeing); **2)** grower standard practice + finger weeder (instead of post-transplant herbicide application); **3)** grower standard practice + Robovator (instead of post-transplant herbicide application); **4)** grower standard practice without hand-hoeing.

We are measuring crop injury, time for cultivators to make a pass, weed control, yield, and then conducting a cost-benefit analysis. We hope to demonstrate the benefits, challenges, and costs of using mechanical and automated weeder technology to supplement herbicides and reduce hand-weeding for processing tomato growers in the Central Valley. UCCE Advisor, Scott Stoddard in Merced County is a co-principal investigator on this project. The Robovator was kindly supplied by Steve Fennimore, UCCE Weed Extension Specialist. This project is funded by the California Tomato Research Institute.



### ***Multisite demonstration of conservation management practices for soil health and greenhouse gas emissions reduction***

UCCE Agronomy Advisor, Sarah Light, and myself have finished our final year of sampling for a 3-year statewide Healthy Soils Demonstration Project supported by CDFA. This project includes a cover crop demonstration and research site on a farm in Sutter County in addition to two other sites statewide (San Joaquin and Merced County). We are evaluating the impact of cover crops to soil health and annual production in the region. Our plots consist of a control (no cover crop), a low seed rate of vetch, and a high seed rate of vetch. We have finished taking greenhouse gas emission samples around events such as tillage and irrigation, since the field will be in rice for 2020 field season. We collected biomass samples before the cover crop was terminated and measured % residue after the cover crop was harvested in Spring 2020. Annual soil sampling was completed in May and sample analysis is ongoing. Unfortunately, we cancelled our March 2020 field day due to COVID-19 precautions but plan to hold a field day in Fall 2020 or a virtual field day if needed.



*From left: Vetch cover crop plot, close-up of vetch.*



*From left: control plot, close-up of control.*



The 2017 Healthy Soils Demonstration Project is funded by Greenhouse Gas Reduction Funds and is part of California Climate Investments, a statewide program that puts billions of Cap-and-Trade dollars to work reducing GHG emissions, strengthening the economy, and improving public health and the environment.



### ***Management of western spotted and striped cucumber beetle in melon production***



*From left: Western striped cucumber beetle, scarring damage on honeydew from cucumber beetle feeding.*

Because we currently have a poor understanding of where western striped cucumber beetle overwinters before moving into melon fields, we are identifying likely overwintering locations (weedy vegetation around fields) and have been monitoring these locations during the late winter for cucumber beetles. We are also gathering data on the western spotted cucumber beetle. Trap locations were chosen based on locations of possible overwintering hosts such as mustard, wild radish, alfalfa, and bindweed (Pedersen 2009). Traps are checked weekly and the vegetation surrounding the traps is visually inspected. These data will provide a foundation for understanding beetle movement from overwintering sites into crop fields. We hope this will aid growers and pest control advisers in predicting when the first or second population peaks may move into melon fields from surrounding areas.

We are also testing if the addition of an aggregation pheromone to a clear sticky trap enhances capture of western striped cucumber beetles. An aggregation pheromone is not available for the western cucumber beetles, though one has been identified and tested for the closely related striped cucumber beetle found in the eastern U.S. (Weber 2018). We will test this pheromone in an organic melon field known to have high beetle pressure to determine if it is also attractive to our western species. If the pheromone lure enhances capture of western striped cucumber beetles by itself or in combination with a floral lure, it could be useful as a monitoring tool or as a component of an attract-and-kill strategy.

References: **Pedersen, A. B. (2009).** *Improved integrated pest management of two cucumber beetle species (Coleoptera: Chrysomelidae) in California melon agroecosystems.* University of California, Davis. Retrieved from Proquest Dissertations Publishing. **Weber, D. C. (2018).** *Field attraction of striped cucumber beetles to a synthetic vittatalactone mixture.* *Journal of Economic Entomology.*

Ian Grettenberger, Field and Vegetable Crops Entomology Extension Specialist is a principal investigator on this project. UC Davis Masters student Jasmin Ramirez Bonilla is very involved with both aspects of this project. Rachael Long-Field Crops and Pest Management Farm Advisor, and Margaret Lloyd-Small Farms Advisor are collaborators. This research is funded by the California Melon Research Board.

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Please feel free to contact me with any vegetable crop issues in the field, questions or comments, or to subscribe to this newsletter electronically.

Amber can be contacted at the Colusa UCCE office at 530-458-0575, by cell phone at 508-254-4490, or at [acvinchesi@ucanr.edu](mailto:acvinchesi@ucanr.edu).

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