

## CAL-CORE Network: On-Farm Research to Improve Strawberry / Vegetable Rotation Systems in Coastal California.

Carol Shennan<sup>1</sup>, Joji Muramoto<sup>2</sup>, Alex Gershenson<sup>3</sup>, Graeme Baird<sup>2</sup>, Margherita Zavatta<sup>2</sup>, Lucinda Toyama<sup>2</sup>, Diego Nieto<sup>4</sup>, Janet Bryer<sup>2</sup>, Marc Los Huertos<sup>5</sup>, Stefanie Kortman<sup>6</sup>, Karen Klonsky<sup>7</sup>, Mark Gaskell<sup>8</sup>, Steve Koike<sup>8</sup> and Richard Smith<sup>8</sup>

### Abstract

The California Collaborative Organic Research and Extension Network (CAL-CORE) is a group of researchers, farmers, extension professionals, industry and non-profit organizations dedicated to furthering research into organic strawberry and vegetable production in coastal California. Formed nine years ago, we have worked on a variety of fertility, pest and disease management issues facing organic growers. Currently, our main effort centers on vegetable/strawberry rotations and different options for fertility and disease management.

In a replicated field trial, we compared treatments across a range of sustainability criteria: crop yield, nitrogen cycling and losses, greenhouse gas emissions, disease incidence, biocontrol of insect pests, soil carbon pools, and economics. Ultimately a full life cycle analysis for each rotation system will be developed to assess their overall environmental footprint. The split-split plot designed trial compares rotation length of strawberries—four- and two-year—as main plots, type of rotational vegetable crops — “disease suppressive” *Verticillium dahliae* non-host broccoli and “less suppressive” *V. dahliae* host lettuce — as sub plots. Fertility management options included control with no fertility inputs, legume/cereal cover crop only, legume/cereal cover crop plus compost and feather meal, and cereal cover crop plus mustard seed meal as treatments. In the two legume/cereal cover cropped treatments, Anaerobic Soil Disinfestation (ASD)—a promising option for controlling a range of soil borne diseases—is used for disease management prior to planting strawberries. Six network farmers also chose a sub-set of these treatments to test on their farms and compare to their own management practices.

The study is in its fourth year and all treatments at all locations are now planted to strawberries. Preliminary data on system productivity, nitrogen cycling greenhouse gas emissions, soil carbon, plant disease and biocontrol of cabbage aphids was presented. This project intends to provide farmers with tools to improve their production systems, meet water quality regulations, and quantify climate-related impacts of these intensive organic systems.

<sup>1</sup>University of California, Santa Cruz, [cshennan@ucsc.edu](mailto:cshennan@ucsc.edu).

<sup>2</sup>University of California, Santa Cruz.

<sup>3</sup>San Jose State University.

<sup>4</sup>Formerly with University of California, Santa Cruz, currently with Driscoll Strawberry Associates, Inc.

<sup>5</sup>Formerly at California State University Monterey Bay; currently with Pomona College.

<sup>6</sup>California State University Monterey Bay

<sup>7</sup>University of California, Davis.

<sup>8</sup>University of California Cooperative Extension.