# Large-Scale Organic Transition


**Western SARE**

Phil Rasmussen, Coordinator
Utah State University
Agricultural Science Building
Room 305
4865 Old Main Hill
Logan, Utah 84322-4865
phone: (435) 797-2257
fax: (435) 797-3344

**Professional Development Program**

Morgan Doran
California PDP Coordinator
Livestock & Natural Resource Farm Advisor
University of California Cooperative Extension
501 Texas Street
Fairfield, CA 94533
707.784.1326
mpdoran@ucdavis.edu


**Western SARE Grant Categories**

- Research & Education
- Professional Development
- Farmer/Rancher
- Professional + Producer
- Graduate Student
- Sustainable Farm Tours

Go to http://wsare.usu.edu
Click on: Apply for a Grant


USDA United States Department of Agriculture
National Institute of Food and Agriculture


## Situation

Organic production has increased in the Salinas Valley, the nation's largest producer of cool-season vegetables like lettuces, cole crops, and celery. As large-scale growers convert some of their land to organic production, questions arise about making the transition.

Tanimura and Antle Inc., a large vegetable production company in Salinas Valley, is committed to growing organic produce on hundreds of acres. The company agreed to participate with University of California researchers and farm advisors in a farm-scale research project on two of its ranches, Storm Ranch and Daugherty Ranch, in Salinas. The project is designed to meet grower needs and develop new scientific information on ecological changes during organic transition.


Above, Hideomi Minoshima and Maria Taylor gather crop samples for the organic transition project, indicated by the sign at left.

— Photo by Louise Jackson

### Research & Education Grant

**Title**: Transition to Organic Vegetable Production by Large-Scale Conventional Farmers

**Project Number**: SW01-057

**Principal Investigator**
Louise Jackson, Professor/ Cooperative Extension Specialist
Department of Land, Air and Water Resources
University of California Davis
One Shields Avenue
Davis, CA 95616
530.754.9116
lejackson@ucdavis.edu

**Participants**
Marita Cantwell, Extension Specialist, UC Davis
William Chaney, Farm Advisor, UC Cooperative Extension, Salinas
Karen Klonsky, Extension Specialist, UC Davis
Steve Koike, Farm Advisor, UC Cooperative Extension, Salinas
Liese Murphree, Lecturer, California State University, Monterey Bay
Richard Smith, Farm Advisor, UC Cooperative Extension, Salinas
Sean Smukler, Graduate Student, UC Davis
Ron Yokota, Ranch Manager, Tanimura and Antle Inc.

**SARE Grant**: $123,399

## Objectives

- Monitor changes in crop species and yield, soil organic matter and microbiology, diseases, insects, and weeds during the three-year organic transition
- Design experiments to target specific management and pest problems as they arise
- Track changes in agronomic management, economic issues, and decision-making
- Disseminate findings via field days, public meetings, workshops, and publications

## Actions

Certified organic practices were instated at two Tanimura and Antle ranches in 2000, and permanent sampling points were set up for frequent monitoring:

- 3 transects on each of 9 lots, each transect a 2-bed strip across the entire field
- 3 equidistant permanent sampling points (±5 m)

*...continued on page 2*

# Large-Scale Organic Transition

*SARE's mission is to advance—to the whole of American agriculture—innovations that improve profitability, stewardship, and quality of life by investing in groundbreaking research and education.*

*The Western Region, one of four SARE regions nationwide, is administered through Utah State University.*

**Western SARE:**
**http://wsare.usu.edu**

**National SARE**
**www.sare.org**

along each transect

- 81 sampling points total – 54 on Storm Ranch, 27 on Daugherty Ranch

The plots were sampled in June 2000 and re-sampled periodically for:

**Soil Characteristics**

- Total carbon and nitrogen
- Potentially mineralizable N
- Microbial biomass
- Nitrate
- Ammonium
- Available phosphorus
- Physical properties

**Plant Characteristics**

- Biomass
- Nutrient content
- Mycorrhizal colonization

**Diseases**

**Insects**

**Weeds**

A total of 510 individual plots on 47 sampling days were sampled, and 25 different crop and cover crop species were assessed.

Management regimes:

- Historic – Lettuce, broccoli, spinach, and celery planted in blocks of 20-30 acres with frequent inputs of inorganic fertilizers and pesticides
- Organic – Diversified into smaller parcels of baby greens, leaf lettuce, radicchio, endive, escarole, fennel, cilantro, and parsley with inputs of compost, chicken manure pellets, cover crops, and organic-approved soluble fertilizers

Two types of compost were applied at Storm Ranch at 7 yards per acre:

- Commercial grade (75% yard waste plus manure and lime)

Participants learn about the project during a field day.

- High grade (30% yard waste plus cow manure, clay, finished compost, and baled straw)

## Results

Soil analyses showed low concentrations of nitrate and ammonium through the three-year study. Nitrate was often close to zero, even though N concentrations in plant tissue were more than adequate.

Soil microbial biomass, total soil carbon, and mycorrhizal colonization – all indicators of improving soil quality – increased at Storm Ranch. Daugherty Ranch, with higher soil clay content, showed more variation.

Pest damage and weeds did not increase during the transition period at either ranch.

Few differences were observed in compost treatments; commercial compost is 25% less expensive than high-grade compost and may alleviate problems caused by manure, such as salinity.

## Potential Benefits

The project found that transition from conventional to organic vegetables can be done without large risks. But it does require careful planning and implementation of methods that require capital and labor, like drip irrigation and hand weeding.

Other key outcomes:

- environmental quality is enhanced by organic transition
- soil carbon pools can increase
- nitrate leaching potential can decline
- pesticides are no longer applied

Organic fields, set amid a non-organic environment, did not become oases for large populations of nearby pests

The organic transition was 'uneventful,' in the words of Ron Yokota of Tanimura and Antle, the result of deliberate planning and monitoring

More than 30 presentations on organic transition were made to a variety of audiences, widely disseminating project results. More than 20 students were involved in the project, learning sampling design, field and laboratory skills, and participatory research with farmers.

...

*Smukler, S.M., L.E. Jackson, L. Murphree, R. Yokota, S.T. Koike, and R.F. Smith. 2008. Transition to large-scale organic vegetable production in the Salinas Valley, California. Agriculture, Ecosystems and Environment 126:168-188.* http://groups.ucanr.org/jacksonlab/files/52509.pdf