Unconventional Conversion: Cultivating Sustainability in Citrus and Avocado Orchards

Zachary Griffin, (Farmer Rancher Grant Program)

Project Number: FW03-009

Title: Unconventional Conversion: Cultivating Sustainability in Citrus and Avocado Orchards

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A field of oranges before conversion.

SARE Grant: $7,500

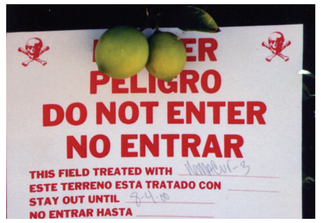
Situation

Citrus and avocado production has dominated the agricultural landscape of Ventura County for more than a century – monocultures that have reduced soil quality, in turn reducing fruit quality. This, coupled with rising pressures from imports and declining water resources, has prompted many small growers to fold, replaced by nurseries, row crops, and development as land values increase.

On Zack Griffin's 5.75-acre navel orange orchard, operated for 50 years under a conventional approach, overgrown tree foliage touched between rows and hung on the ground. Snails climbed trees in pursuit of fruit, and sharpshooters fell like rain from the canopy above. Modern irrigation had been installed, but soil was compacted, eroded and barren.

Griffin believed that a new approach to farming – diversifying crops, incorporating livestock, and embracing a whole-farm approach – could renew and sustain his farm's productivity.

Mulching early in the project.



Pesticides are not longer used.

Objectives

- Restore the soil and a viable habitat for all types of beneficial organisms
- Diversify production and markets
- Set up sustainable systems, methods and infrastructure throughout the orchard

Actions

Griffin harnessed his Western SARE grant to take these steps:

- Apply compost and other materials laden with carbon and beneficial bacteria
- Interplant leguminous trees to feed nitrogen and other organic matter
- Plant deep-rooted deciduous varieties within the field to buffer the microclimate, add organic matter, and provide habitat
- Plant a border of sheltering conifers, cypress, palm, and other species to further protect the field from wind, frost, and heat
- Plant cover crops, including clovers, vetch, alyssum, beans, and herbs to improve soil quality and reduce erosion
- Using light ripping, incorporate wood chips from arborists into soil as mulch
- Rotate ducks, geese, and turkeys in nine separate pastures to mow plants and reduce snails and other pests

Mixed vegetables are grown between trees.

Open inverted bell-shaped canopy.

Results

Technical advisor Pierre Constans, a permaculture consultant, observed these results:

- Applying compost and planting cover crops have improved and regenerated soil quality and checked erosion
- Changes implemented have upgraded the productivity and quality of the farm's navel oranges
- The operation has become more diversified with plantings of other citrus (lemons and mandarins), avocadoes, figs, apples, and stone fruits, which spreads out the harvest and improves market options
- The incorporation of geese, ducks and turkeys has provided organic matter, curtailed snails, slugs, and ground vegetation and created a niche market for the birds

Birds consume free leftover produce.

Mulched fourth-year intercropped trees.

Impacts and Benefits

Over six years, the farm has been converted from a money-losing industrial navel orange orchard to a solvent, permaculture-style farm harvesting nearly 100,000 pounds of oranges a year, with hundreds of other fruit trees now coming on line.

Griffin reports:

- Improved overall field health
- Increased production quality and income
- Drastically lower costs
- Less need for water in improved areas
- Regenerated life within the soil
- Less maintenance required

Many people have inquired about the farm's techniques, and there appears to be a trend toward conservation and ecological improvements at nearby farms.

Heirloom avocadoes ready to pick.

Vegetables produced between rows.

"At first," says Griffin, "other producers thought our birds were novel, and that attempting to compost and mulch my entire field was ridiculous. Now, they are amazed by the weed control by the birds and impressed by our composting with free, high quality materials."

Apples ready to harvest.

Orange harvest runs February through May.

Technical Advisor Pierre Constans at work.