Ed and Wynette Sills, Pleasant Grove Farms — Pleasant Grove, California

Summary of Operation

- *Rice, popcorn, wheat, dry beans, cover crop seed on 3,000 acres, grown organically or in transition*
- *100 acres of almonds grown organically*

Problem Addressed

Pest pressure and poor fertility. For 40 years, the Sills raised rice and a variety of other crops in California's Sutter County using conventional practices. As the years passed, Ed Sills began to notice that pest pressures were increasing while fertility seemed to be dropping.

"We were really not improving any of our land," Sills says. "The weeds were becoming resistant to the expensive rice herbicides, and I didn't feel we could be successful in the conventional farming arena."

Background

Sills' father, Thomas, began growing rice — and wheat, oats, and grain sorghum — in 1946 near Pleasant Grove, Calif. After Ed Sills joined his father in the farming operation, they grew their first organic crop, 45 acres of popcorn, in 1985. They planted an organic rice crop in 1986. After that, Ed Sills began to aggressively transition his land to organic. The last year that any crops were raised with purchased chemicals was in 1995.

Today, Sills manages pests and improves soil fertility through rotation, cover crops, applications of poultry bedding manure and incorporating all crop residues.

Focal Point of Operation — Organic production

The Sills farm is divided into several fields for crop rotation. Organic rice is their primary crop, grown on about 1,100 acres each year. Sills also plants organic popcorn, yellow corn, wheat, dry beans and some oats. He manages the fields with two-, three- and four-year rotations, depending on soil type and condition.

Sills devised a simple, two-year rotation for his soils that are poorly suited for crops other than rice: a year of rice followed by a year of vetch. He plants purple vetch in the fall after the rice harvest, and it grows throughout the winter. In the spring, he either grows the vetch for seed or incorporates it into the soil to help fix nitrogen. He sells most of the vetch seed to seed companies and other farmers, but also retains enough for his cover crop needs.

Sills then lets the field lay fallow, depending on the amount of weeds or the quality of the vetch stand. In the fall, the fallow fields are re-seeded with vetch and the harvested fields re-seed naturally from shattering during the harvest. The vetch is plowed under the following spring and Sills once again plants rice.

The three-year rotation, used on poor soils, includes a rice year followed by a vetch seed/fallow year.

During the second fall, oats are planted with the vetch and grow through the third year until Sills harvests their seed. Vetch is again planted in the fall, then incorporated in the spring before rice planting.

The four-year rotation is reserved for the better quality soils. Sills follows rice with dry beans, wheat and popcorn. Purple vetch is planted in the fall and incorporated in the spring before each new crop except the fall-planted wheat.

Sills uses a limited amount of turkey manure as a fertilizer on his fields, mostly because of the expense. He applies manure prior to planting the summer crop each spring and sometimes re-applies before planting wheat in the fall.

Sills planted his first almond orchard in 1985 and has grown it without purchased chemicals since 1987. Sills has found fewer and fewer problems from insect pests and diseases since eliminating agri-chemicals. He plants vetch and allows native annual grasses to grow between the rows, tilling the center to provide a quicker nitrogen release from the vetch. Sills speculates that the mowed rows help control pests like peach twig borer and navel orange worm, as they no longer harm the almond crop.

"We've got tremendous predation on all our insect problems," he says. In fact, he stopped using copper and sulfur materials for disease control, finding they weren't needed. "I believe the nutrition provided by the cover crop plowdown and application of turkey manure creates a tree that is less susceptible to disease," he says.

Economics and Profitability

The Sills take advantage of organic premiums that range from 25 percent to 100 percent above conventional prices. Using their own processing equipment, they clean and bag popcorn, wheat and beans for direct sale to the organic wholesale market. They sell primarily to natural food distributors and processors, customers gained through referrals and the old National Organic Directory, which is no longer published. They sell all of their wheat to organic flour millers.

Sills says they have been fortunate to find markets for their additional crops. "We have good organic wheat markets and dry bean markets, and the popcorn market we've sort of built ourselves."

Tom Getings

The Sills' main crop is organic rice, but they also grow wheat, beans, popcorn and almonds.

It's difficult to compare the cost of production and profits between organic farming and conventional farming, Sills says. When he was farming conventionally, there was a continuous production of rice each year, so it was easy to figure costs, which were consistent in fertilizer, chemicals, rent or land. Today, his costs to raise rice organically are similar, and perhaps lower because he no longer purchases herbicides. Using vetch and turkey manure in the almond orchard eliminated his need for commercial fertilizer. The key, he says, is that the costs now are spread throughout the rotation.

Labor costs remain. Sills hires a hoeing crew through a labor contractor, although the rotations ensure the dry beans are relatively clean. Sills incurs a tillage cost because he incorporates all of his straw into the soil, and also purchases turkey manure.

The farm went through a period of economic difficulties in the late 1980s when they began producing organic crops on a large scale. "We were aggressive in transitioning land," he says. "We were able to grow more organic grain than the market could bear and we sold quite a bit of our production at conventional prices. That was either at a loss or break even."

During most of the 1990s, the organic market grew. "Pricing has continued to be fairly strong, with some dips, but overall nothing compares with the conventional market where they are mostly below the cost of production," he says.

Environmental Benefits

Sills' organic farming system has improved

the fertility and quality of his soil and, in a large part, controlled insects and weeds. This all has been accomplished through his rotational methods and by abandoning the use of conventional fertilizers and chemicals.

Sills credits his cover crops and rotations with effective weed control. "There are a lot of weed problems in rice production and I don't see where conventional growers are reducing any herbicide usage," says Sills. "Many of my organic fields, especially the ones in my long rotation, are as clean as some conventional fields."

The cover crops help in other ways, too. Cover crops on the orchard floor help to improve soil quality by increasing organic matter and water infiltration rates. The clover also helps establish populations of beneficial organisms to control unwanted almond insects, while the vetch helps fix nitrogen.

Finally, Sills has focused on soil health through rotations and residue management. "The rice straw and the other crop residues are a very important part of our organic program," he says. "They're just as important as the vetch for returning organic matter and nutrients back into the soil."

Community and Quality of Life Benefits

Sills worked with a group from the University of California-Davis and Butte and Sutter county farm advisers, with support from University of California's Sustainable Agriculture Research and Education Program (SAREP), to examine the benefits of on-farm residue. They set up a 25-acre plot to investigate the best mix of residues to break down in the soil, provide nitrogen and improve soil tilth. Since then, Sills has hosted tours for farmers and researchers from all over the world.

Sills believes that he provides a service to consumers, who have few sources for products such as those he grows. With the advent of biotechnology, some consumers are asking for guarantees that some products do not contain genetically modified foods.

"With all the controversy surrounding it, and the demands from consumers, I have to write letters to my buyers guaranteeing my product is certified organic. They even want to make sure the seed I use does not have biotechnology origins.

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"One of the things farmers forget is that you have to grow something people want to buy," he says. "And that's one of things we learned right away in the organic movement. We're producing something that people are asking for."

Transition Advice

Sills recommends that farmers who wish to transition to organic production go slowly to spread out the risk.

"I've seen some farmers go too fast and try to do too much with too many acres and get into a situation where maybe the yields during transition were lower than expected," says Sills.

Sills suggests that farmers seek information on organic growing from their county extension offices. He, too, is happy to offer advice to anyone who writes to him.

The Future

To continue to improve fertility management and his soils and to better understand weed ecology, Sills hired a full-time researcher. The researcher is helping Sills investigate ways to alleviate soil compaction, for example, using research plots, yield monitors and global positioning system (GPS) mapping.

As for the future of organic farming, Sills believes that most tools farmers are offered today are conventionally based, including the new varieties of rice being developed. Those varieties are high yielding and offer disease resistance, but are short-growing and are, therefore, not competitive with weeds.

"Most seed breeders figure farmers have herbicides to take care of the weeds, so they do all of their testing with a zero weed population," he says. "Many of us in the organic or sustainable movement would like varieties that are more competitive when not using chemicals, so maybe even a conventional farmer could get by without using as many chemicals as they do now."

■ *Mary Friesen*

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