



## California dairy farmers change up their soil strategy

Farmers are known to carry on the traditions of their ancestors. In fact, Legacy Ranches, in Pixley, California gets its name from how it began—a herd of 15 pasture-raised cows in the 1930s that were hand-milked on the side of the road. Still in Pixley, the enterprise now includes Legacy Holsteins (a 1,500-cow dairy) and Legacy Ranch 2 (a 3,000-cow dairy). While still honoring family history, cows are cared for and milked using advanced technologies powered by solar energy, and the methane from manure is turned into transportation fuel. Likewise, the farm has improved how crops are grown—a change that defies traditional thinking.

Like a few others in the area, Frank Fernandes, a third-generation farmer who partners with his brothers in Legacy Ranches, has switched from conventional tillage (fully tilling after each crop) to a new strategy, known as the “California no till” system. This is the use of a practice known as strip tilling in the spring (before planting corn) and no tilling in the fall (before planting wheat). The goal is to improve soil health by minimizing disturbance and leaving more organic matter. The risk in trying any new farming strategy is ensuring that crop yield and quality are not sacrificed. For dairy farmers, the quality of feed crops is paramount because it directly impacts cow nutrition and milk production.



*Frank Fernandes has seen a great boost in soil health from using conservation tillage and cover crops.*

“The farmers’ dilemma is that we’re used to looking to our neighbors and doing what we’re comfortable with and what we know works. I’ve been trying a different approach,” Frank said. “But, when we talk about sustainable farming, we also can’t go broke. It has to make economic sense. To me, this made sense.”

The transition has paid off for Frank, as he’s seen benefits in the soil itself and in the quality of his corn. Frank has been using strip tilling on their 1,500 acres for 15 years, and he started adding “no tilling” three years ago. He’s also been growing cover crops, which helps meet two other key tenets for soil health: keeping the soil covered and adding biological diversity (a wider variety of crops). This past year is when he really started to see the soil holding water like a sponge. He’s also seen more worms and microorganisms living in the soil.

Frank believes this improvement is helping prepare his family’s farm to face fast-approaching challenges, including the implementation of the Sustainable Groundwater Management Act (SGMA). By increasing the water-holding capacity and infiltration rate of the soil, he was able to grow his corn with one less irrigation last year. When there is more organic matter and pores within the soil, more water can be absorbed into the plant’s root zone at a faster rate, which increases efficiency and decreases loss from surface-level evaporation.

One challenge Frank is seeing is that cover crops are being discouraged in his area, as water users make plans to meet SGMA requirements. However, Frank has seen for himself how this practice can provide tremendous value to the soil, while also producing a crop that is harvested and used. Cary Crum, crop consultant with [California Ag Solutions](#), says about ten dairy farmers have been working with his team to develop the practice

of growing a multispecies crop, a mixture of legumes, grass, and brassicas, which include “tillage radishes.” The crop is harvested and fed to heifers and cows that are not currently producing milk—providing enough value as a feed source to cover its production costs, while greatly improving the water-holding capacity of the soil. In fact, conserving water is the top priority for farmers like Frank.

“I’m doing these things not because of carbon sequestration. I’m doing it so I can use less water,” Frank said.

In addition to using less water, the healthy-soils practices also help reduce the need for synthetic fertilizers—a cost savings to the farm. Dairy farmers use composted manure and recycled manure water as tremendous sources of natural, organic fertilizer. Microbes in the soil break down nutrients in the manure and make them accessible to the plants. By increasing the number of microbes in the soil through conservation tillage and cover cropping, manure can provide even more value, further reducing the need for synthetic fertilizers.

“Once you develop that soil profile and you feed it with natural manure, it’s amazing,” Frank said.

While Frank is hooked, other farmers in the area are still evaluating as they ease into these new strategies. Cary knows of about 30 dairy farmers in the Central Valley, who are in various stages of implementing conservation tillage practices. Dairy farmer Jonathan Lawrence of Hanford is one of them.

Jonathan manages his family’s dairy and farms 1,110 acres of feed crops. His parents emigrated from the Azores Islands of Portugal. His father began milking cows at age 14 before starting his own dairy, which has grown from 110 cows to 2,500 today. Jonathan heard about conservation tillage being used on another nearby farm. Two years ago, he tried the practice on 80 acres. Now, with help from his recently awarded [Healthy Soils Program](#) grant, he’s implementing these practices on roughly half of his land, while sticking to conventional tillage on the other half, at least for now.



Jonathan Lawrence received a Healthy Soils Program grant from CDFA. See more photos at [DairyCares.com](http://DairyCares.com).

Jonathan likes that conservation tillage saves him time, labor, and fuel by reducing the number of tractor passes. He says it also makes watering and planting more efficient. While he’s pleased with results so far, he won’t speculate on this year’s crop—not until it’s harvested. “You can’t tell until you chop. That’s when you know how many tons and what the quality is. You never count your eggs before they hatch,” Jonathan said.

Jonathan enjoys using precision farming technologies—including a state-of-the-art variable-rate spraying tractor he assembled himself—and watching his crops thrive. However, caring for cows is still his favorite task. “I like seeing the cows be healthy and feeling good,” he said.

Cows will always be the top priority for dairy families. But, more and more farmers like Jonathan and Frank are also turning attention to soil health. Their farms continue to implement new technologies and strategies, both on the dairy and in the field. By adapting practices to boost soil health, California dairy farmers are improving the overall economic and environmental sustainability of their farms.

## Honoring their past while looking ahead, dairy farmers advance practices and boost soil health.

*Dairy Cares is a statewide coalition supporting economic and environmental sustainability and responsible animal care. Our members include Bar 20 Dairy Farms, California Cattlemen’s Association, California Dairies Inc., California Dairy Campaign, California Dairy Research Foundation, California Farm Bureau Federation, Dairy Farmers of America-Western Area, Dairy Institute of California, F & R Ag Services, GHD, Inc., Hilmar Cheese Co., Joseph Gallo Farms, Land O’Lakes, Merck Animal Health, Milk Producers Council, Ruan Transport Corp., Yosemite Farm Credit, Zenith Insurance Company, and others. For information, visit [DairyCares.com](http://DairyCares.com) or call 916-441-3318. To subscribe to the e-newsletter, contact [news@dairycares.com](mailto:news@dairycares.com).*