

O · R · E · G · O · N *Conservation* SHOWCASE



Michael Paine: Standing in front of a recently installed solar array on his organic farm in Yamhill, Ore.

efficient, high-pressure, water delivery system, they produced a number of ancillary problems. For starters, the pumps were gas powered and required regular refilling ever two hours.

“Several times a day, someone would have to stop working to make the trek to refill the pump,” Paine explained.

Additionally, due to the high pressure and water volume produced by the pumps, handlines and overhead sprinklers were required in place of more efficient driplines. This, in turn, created more weed competition and demanded additional man hours to remove weeds and move lines across the fields in accordance with the farm’s irrigation calendar.

“We needed a change,” Paine said.

SWCD Resource Conservationist Michael Crabtree agreed. When Paine initially approached the district to discuss the potential for a solar pump irrigation system to replace his current gas pump system, Crabtree was eager to find ways to assist with the innovative project. John Gillilan, a USDA Natural Resources Conservation Service (NRCS) engineer, stepped in to advance the project from its conceptual stage to its realization in the field, ensuring

Yamhill, Ore. —

When Michael Paine, owner and operator of Gaining Ground Farm, first approached the Yamhill Soil and Water Conservation District (SWCD) in 2008, he was powerless. Literally. His small, community-supported farm has no electricity in or near the fields, making the task of irrigating the land both technically and financially challenging.

For more than three years, Paine used high-pressure, gas-powered pumps to push water across the property that he co-owns and manages with his wife Jill. While the pumps proved an

Organic farmers shines light on irrigation issues.

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its safety and efficiency along the way. Because this would be the first time a solar pump had been applied to irrigation, Gillilan faced a unique engineering challenge.

Cost-share assistance for the project derived from two sources: the NRCS Organic Environmental Quality Incentives Program (EQIP), a nationwide special initiative providing financial assistance to organic producers and those transitioning to organic production; and the Oregon Watershed Enhancement Board (OWEB).

Today, Paine is the proud owner of a fully functional, solar-powered irrigation system; an accomplishment he credits in part to NRCS. A 2-kilowatt solar array

powers a solar-specific pump. During daylight hours, the pump pushes water up the hill to 10,000 gallons worth of storage tanks. The system then uses gravity to power drip irrigation in the fields below. Computerized valves increase efficiency by converting the system to pulse irrigation at night, dusk and dawn. The system is also tied into an adjunct rainwater catchment system that catches rainwater from the Paine family's home and ships it to storage tanks. Overflow from the tanks is rerouted down the hill via a drainage pipe to an irrigation pond.

Paine is enthusiastic about the results. “It seems possible that we can cut our water consumption in half, and at the same time increase



Storage tanks: Approximately 10,000 gallons worth of storage tanks sit atop Paine's property.



Solar Array: This 2-kilowatt solar array powers a solar pump that pushes water up the hill to a storage tank for later disbursement via drip irrigation.

efficiency of our water delivery to our crops,” Paine said. “Also, there are erosion control benefits from the thousands of gallons of water that would run off our building roofs now being captured for use in irrigation.”

Over the course of the next five years, Paine estimates he will save over 200,000 gallons of water thanks to the new solar system. Additionally, countless man hours will be saved now that the pumps no longer require regular refilling.

Paine notes with a smile, “I hesitate to add we might even be able to take a day off.”

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