No Farms No Food

American Farmland Trust
SAVING THE LAND THAT SUSTAINS US

RIO FARMS AND GILLS ONIONS

Stewardship Profiles in California Agriculture
Environmental Leadership with Energy, Nutrient Management, and Water Efficiency

In 1976 Steve and David Gill followed their family's agricultural legacy and started farming onions and vegetables in Monterey County. They acquired 200 acres and in 1979 they added another 200 acres. In 1983 the brothers opened Gills Onions, an innovative and sustainable fresh-cut onion processing plant. They sell their onions nationally to both supermarkets and fast food chains. Currently they farm 7,000 acres with two crops per year on the same piece of land to produce 14,000 acres worth of crops.

ACHIEVEMENTS

- 30% water savings due to drip irrigation
- $230-$250,000 of electricity is generated from solar power per year
- 50% decrease in food waste

PROBLEM

From the beginning, it was difficult to balance soil nutrition and prevent runoff in the sandy clay loam soil. Additionally, California is in the midst of a serious drought. Depleted reservoirs and low water tables equate to reduced water supplies. Water quality has declined because the groundwater hasn't been recharged in certain zones and salinization is common. Mildew on spinach and soil diseases were also a problem. Finally, there was a high level of waste in the operation, as Gills Onions was sending 30 percent of the onion to the landfill.

SOLUTION IMPLEMENTED

To address the soil health issue, soil and petiole tests were conducted. Low calcium and high magnesium levels were balanced by adding gypsum and lime. Water samples were taken to best make use of the excess nitrogen in the soil. To improve soil quality, Rio Farms both makes and buys compost from commercial compost companies. Applying compost builds soil organic matter that helps hold water in the soil and decreases the need for irrigation. To further reduce their need for water, Steve and David converted to drip irrigation. The drip tape is reused three to four times before it is disposed of. Tuning in to the local weather station and implementing the use of soil probes gave the Gills more accurate irrigation information based on crop demand. Land leveling with a laser level also contributes to an even distribution of water.

Balancing soil moisture has minimized mildew problems. At Rio Farms, both breeding and genetic development have helped tremendously to defend against soil diseases.

"Look at what other growers are doing around the country and see what you can apply"

-David Gill

Crop rotation has also been important for combating soil-borne pathogens; every five years Rio Farms will take a field out of production and plant onions for their allelopathic qualities. To reduce waste, Gills Onions now grinds up onion byproducts, which are then pressed and transferred to a methane digester, which connects to fuel cells that produce electricity for the processing plant.

CHALLENGES/OBSTACLES OVERCOME

Over the last five years Rio Farms has been undergoing a process of matching up plant needs with corresponding soils. This process has led to higher yields because the plants now receive precise amounts of nutrients and water in accordance with their needs. Installing the drip irrigation system required proper spacing and the size of drip emitters had to be compatible with water pressure. Now they can reuse drip tape 3-4 times as part of their ongoing environmental stewardship practices. In the beginning David and Steve applied three or four applications of nitrogen per crop per year. They are working on fine-tuning their strategy and in situations where the plant is indicating nitrogen stress they will opt to conduct further testing to see what can be done to correct the problem. When they do use fertilizers, they administer them through the drip irrigation system, which is connected to flow meters. This has enabled them to reduce the use of nitrogen fertilizers while boosting yields.

The methane digester technology is new, and the Gills find filter maintenance to be difficult. However, they see the digester as a long-term investment, and implementing the system had required operational changes and operator training. Getting methane gas from the onions was easy; compressing it and getting it into a hydrogen fuel cell was a challenge and it took years to generate electricity. Gills Onions went through several pieces of machinery before perfecting their system. Eventually they will have a fixed electricity bill and receive a tax deduction through depreciation. They also receive tax credits and investment tax incentives for net metering. At Rio Farms, the use of solar power allows David and Steve to run the water pump during peak hours at no additional cost.

MEASURING SUCCESS

To conserve energy a solar operation was installed at Rio Farms that connects all meters from different wells into one meter and to produce one reading. Switching from sprinkler irrigation to drip irrigation is saving David and Steve 30 percent on water and 30 percent on fertilizers. At the processing plant 1MW of solar power generates $230-250,000 per year of electricity. The plant is now producing 50 percent less food waste and the rest is sold for cattle feed.

For more information about the stewardship practices discussed in this profile, please contact the farmer directly. You can reach David Gill by phone at (831) 595-4441.

STEWARDSHIP PRACTICES

- Energy
- Nutrient Management
- Water Efficiency

GILLS ONIONS
QUALITY • CONVENIENCE

PROJECT PARTNERS

- Farm Credit West

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