RAIN BIRD®

SITE REPORT

Westley Ranch – 530 Acres of Chardonnay Wine Grapes.

Westley Ranch Vineyard Patterson, CA

Vineyard Manager

Kevin Cantrelle, Vineyard Properties, Inc.

Irrigation Design and Equipment Supplier

Carl Carlsen - C.I.D.
Western Irrigation, Madera, CA

Vineyard Manager Kevin Cantrelle takes care of 2,700 vineyard acres throughout California.

Rain Bird® PC Dripline Provides Trouble-Free Performance At Westley Ranch Vineyard

Vineyard Properties Corporation is a player in the California wine industry and Kevin Cantrelle, vineyard manager, is right in the middle of the game. In fact, Cantrelle is responsible for development, irrigation, fertilization, harvest, and overall management for 2,700 acres of vineyard throughout central California, including a 530-acre site near Patterson. The Westley Ranch vineyard is planted completely in Chardonnay grapes that will go to Vineyard Properties' own winery for production, and then on to its dedicated sales force for distribution. This vertically integrated organization is the second largest wine operation in California.

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The latest project for Vineyard Properties, Westley Ranch is located in a local microclimate, with some marine influence from San Francisco, yet on the edge of the hot, dry California Central Valley. According to Cantrelle, wine grapes are relatively new to this area north of Patterson, California, so Cantrelle and his crew will learn as the grape vines develop into full production. The vines are spaced five feet apart with nine feet between rows to optimize fruit production and leave space for harvesting machinery and good airflow.

Vineyard Properties is concerned about the availability of water, as are other growers across the country. Westley Ranch is supplied by Federal District water plus three wells scattered across the property. In dry years, the District water may not be available, so the irrigation system must be able to operate with surface water or groundwater. There are two booster pumps to take water from the District canal. In addition, there are three deep well turbine pumps. Sand media filtration with #16 silica sand (170-mesh/100-micron) is provided at all pumping stations. The site is almost flat, with no more than 5 feet of elevation change over 2,600 feet.

Cantrelle planned to control the system manually, so the design needed to keep the number of valves to a minimum. Also, he looked for the opportunity for long vine rows to save production costs. "Cultivation is easier," he says, "and longer vine rows means less time is spent turning around, so you have more time to work."

Maximum clog resistance from Rain Bird PC Dripline.

Designed by Carl Carlsen of Western Irrigation, the Westley Ranch is another of the many projects taken on in recent years. "Western Irrigation supplied the design and the product. They proposed Rain Bird PC Dripline and took care of the installation, and it works very well," says Cantrelle, as he describes the process. "I gave a site plan to Carl and told him that I wanted a highly efficient system, with no more than 10 percent

Young vines under irrigation at Westley Ranch.

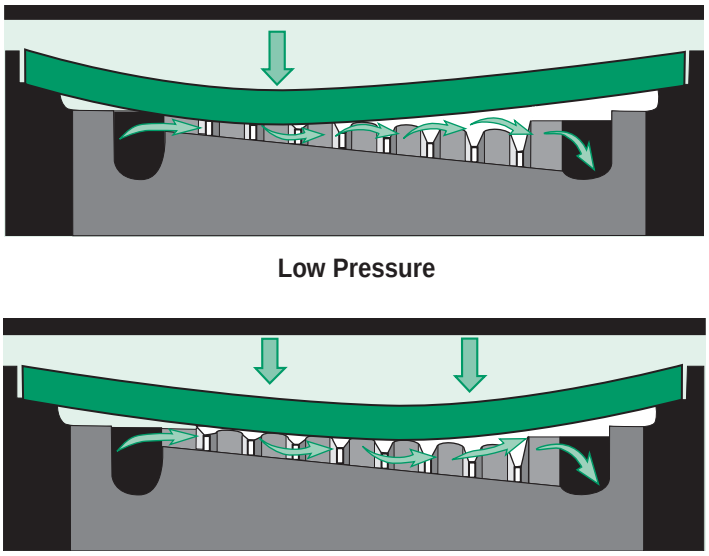
difference in water application anywhere in the field. I also wanted to be able to take water from any one of our many sources and deliver it to any part of the field. Carl took those goals, and with the help of his Global Positioning System (GPS), he accurately mapped out the site. With the GPS map, he was able to take advantage of the terrain to develop a simple design that provides me what I was looking for."

Designing an efficient system for such a large field was a challenge, but not beyond the capability of Carlsen, with his 15-plus years of experience as an irrigation system designer. "The GPS gave me the exact data I needed to work out a system to deliver water anywhere on the ranch," says Carlsen.

Designer Carl Carlsen of Western Irrigation.

Some of the underground pipes are a mile long, so Carlsen had to balance the pipe size with the elevation to be sure that there was as little friction as possible, yet be cost-effective. "Low friction loss is essential to reducing the horsepower that is needed to deliver water to your plants," Cantrelle explains. "You have to keep the horsepower down, otherwise you reach some point where you are spending money for nothing. The design I got from Western actually used larger pipes than I was expecting, yet their overall bid price was in line. Also, I immediately got to know Carl and Matt (partner Matt Angell) and I knew that I could get great service from them."

Because of the long runs, large blocks, and need for high uniformity, Carlsen looked into pressure-compensating drip emitters. These devices use a turbulent flow path and flexible diaphragm to provide the same flow rate regardless of the pressure. At the Westley Ranch, many of the tubing runs are more than 1,400 feet, and the project required 20-millimeter dripline. Carlsen decided to specify Rain Bird PC Dripline because of its superior resistance to plugging, and because he was sure of Rain Bird's successful history in irrigation.



Pressure-compensating chamber in Rain Bird PC Dripline.

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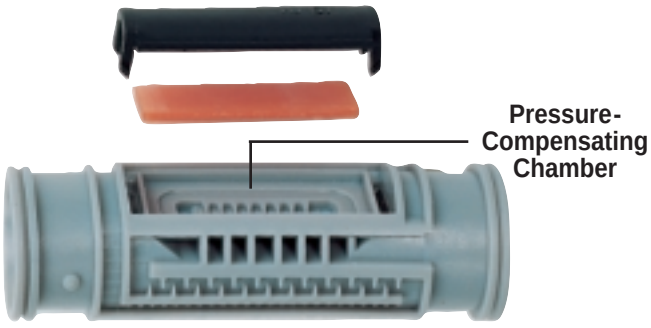
Rain Bird PC Dripline uses a unique approach to pressure compensation that dramatically improves resistance to plugging. A rectangular-shaped, silicone diaphragm covers the turbulent flowpath in Rain Bird PC Dripline. The flowpath is on a slight



Rain Bird PC Dripline is pressure compensating and provides virtually the same amount of water to all parts of the field.

angle, so at higher pressures, the diaphragm covers more of the flowpath length. In this way, the emitter compensates for increasing or decreasing pressure by making the effective flowpath longer or shorter.

The most significant benefit to this design is the large flowpath area inside the emitter. The flow path is never restricted by the diaphragm, as with other pressure-compensating techniques. Even at the highest pressure, the flowpath area in the Rain Bird PC Dripline is still more than ten times larger than the openings in the recommended 120-mesh (125-micron) filter. With this large flowpath, there is very little chance that particles smaller than the filter openings will bridge together and block an emitter passage.

> ***"I didn't worry about it being a new dripline, because I can trust Rain Bird to stand behind their products."***

"The Rain Bird PC Dripline was new to us when we heard about it from Western Irrigation," says Cantrelle. "I didn't worry about it being a new dripline, because I can trust Rain Bird to stand behind their products. What I learned about the larger flowpath and resistance to plugging made sense. It was also competitively priced. Now that I see there is no more than 10 percent variation anywhere on this ranch, and everything seems to be working well, I am very satisfied with my decision."

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