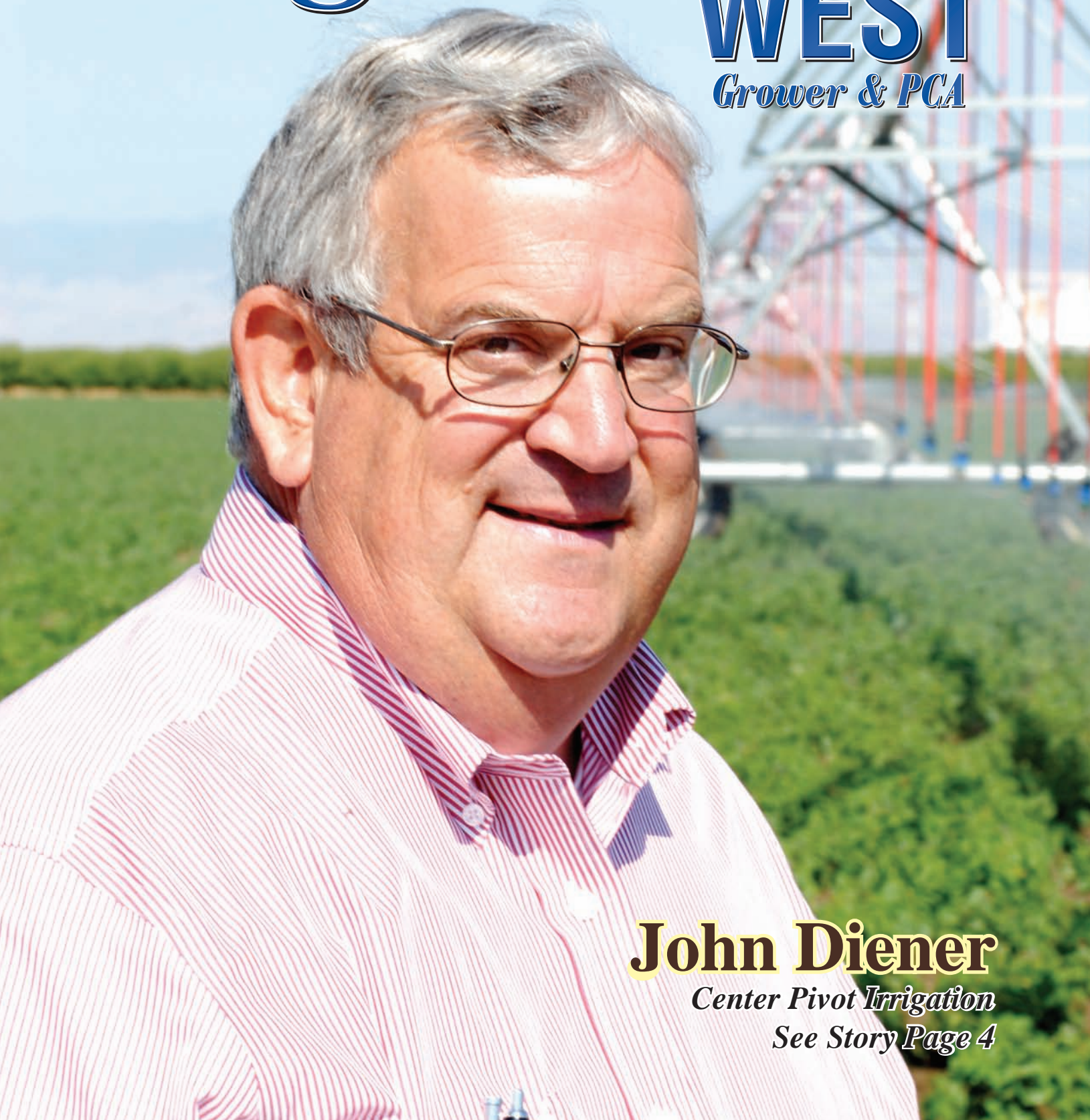


Vegetables

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WEST

Grower & PCA



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Center Pivots Proving Big Savings on West Side

The Landscape is Looking Different Around Five Points

By Patrick Cavanaugh, Editor

In western Fresno County, a major part of the world suffering from a broken promise of Federal water deliveries, grower John Diener, albeit frustrated by the lack of water, still has hope for the future.

On his land, known as Red Rock Ranch Inc. in Five Points, Calif. there is a major change going on. And it looks different too. Throughout his fields, several center pivot systems are now visible---moving slowly in circles, while ap-

plying water to crops, such as cannery tomatoes, field corn, wheat, and even freezer peas.

Using GPS-guided tractors, the fields were listed up in circles that meet the footprint of the Zimmatic center pivot systems, manufactured by the Lindsay Corp., Lindsay, Nebraska. The technology of the systems has been dramatically improved since the equipment was earlier adopted in the mid-west for corn, wheat and soybeans. The overhead systems that include both center pivot and linier designs have been used in the mid-west, northwest and in South America, but there was slow adoption in California. In fact, Diener's use of the center pivots on vegetable crops is the first ever in the state.

While the system does not reduce his water needs for tomatoes, which require two to 2.5 acre-feet, delivered mostly from on the farm wells, it does save big on labor. Let's just say, Diener's accountant is very happy with his center-pivot decisions. On one field, a quarter section of cannery tomatoes, the crop is growing in concentric rows that take up 125 acres. While there is loss of planted acres at the corners of the field, Diener noted he doesn't have the water for the corners anyway. "Plus, to outfit the center pivot system with equipment to water the corners would cost nearly 30 percent of the entire \$120,000 system," he said

Center pivot is also remarkably less expensive than a drip system. What's more, the overhead systems should have a minimum of 25-years in operating life. At \$1200 per acre, drip across 125 acres would run \$150,000. With a constant repairs, and eventual replacement of

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A center pivot overhead irrigation system in John Diener's Red Rock Ranch Inc. in Five Points.

Center Pivot

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drip tape, the extra cost compounds itself, which reflects an even greater savings a center pivot system provides across the same field. Diener has certainly done the math, and has invested in 12 center pivot systems that can be seen reaching out among his diversified fields.

A big part of Diener's decision was a system that meshes well with the minimum tillage program that he and many other growers have strived to adopt to reduce the inputs across their fields. He's been working with Jeff Mitchell, a UC Cooperative Extension Cropping Systems Specialist, based at the Kearney Ag Station, in Parlier, and the UC's West Side Field Station (WSFS) at Five Points. Mitchell heads up the UC Conservation Tillage Workgroup, which Diener is part of.

Mitchell noted that just after the July 4, 2005, John Diener and Scott Schmidt, with Farming "D" Ranch in Five Points went to eastern Washington state to meet a few vegetable and field crop farmers using center pivot systems or other overhead systems for decades, all run by lap top computers in their trucks. "They returned to the San Joaquin Valley convinced that the overhead system was something worth their attention," said Mitchell. "The biggest reason was labor cost savings. They learned that two or three workers could easily manage several thousand



John Diener said the center pivot system is saving enormously on labor, and coupled with conservation tillage, a 75 percent savings on diesel fuel, as well as other major savings.

Dr. Jeff Mitchell a UC Cooperative Extension Cropping Systems Specialist, based at the Kearney Ag Station is working closely with Diener and studying the efficiency of the overhead system, meshed with conservation tillage.



acres of crops."

During the same week, Mitchell visited Dwane Beck at South Dakota State University at Pierre, to also learn about overhead systems coupled with no-till production practices on a variety of Midwest crops. Since that time, Mitchell has worked with Valley Irrigation in Nebraska, which is another overhead irrigation manufacturer. "Valley has provided an overhead linear system at the WSFS for researching the merging of overhead irrigation with no-till cultural practices.

Mitchell, and other WSFS scientists are researching the merging of overhead irrigation systems with no-till cultural practices. "There is considerable relevance for the merging in the San Joaquin Valley, because intercrop tillage for surface irrigation is no longer required," said Mitchell. "The meetings in 2005 and lessons learned over the last 50 years have shown that overhead irrigation technology, especially in low pressure, precision applications makes them more adaptable for San Joaquin Valley growers of multiple crops."

"The primary goal of conservation tillage is to reduce tillage operations associated with multiple cropping seed-bed preparation, thereby reducing tractor and implement passes, reducing fuel and maintenance, while increasing profit. The theory is that we make permanent beds and keep

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The low-pressure system sends water through the drop down nozzles that can easily be monitored and replaced whenever needed.

Center Pivot

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the center pivot tracks,” said Diener.

“We used to figure 10,000 gallons of diesel for each section of land and now we are looking about 2,400 gallons per section, a 75 percent savings, noted Diener.

Another good example of conservation tillage with overhead irrigation is with cotton. “If you are on a cotton field with furrow water. You must work the field two or three times to get the beds ready. That’s before the first irrigation, and then do it again for the second irrigation, with cultivators. With pivots you can plant the cotton and never come back into the field until harvest,” said Diener.

In a conventional tillage system, you have to do a lot of soil work to condition it for a good stand. “With the pivots you can get by without doing very much tillage and still get a good stand,” noted Diener.

Mitchell is closely monitoring crop growth, soil water storage and irrigation system uniformity on Diener’s

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Dan Munk, a UC Cooperative Extension farm advisor working with water, soils, water salinity and drainage, is working with Diener to make sure the center pivot is delivering what is needed to tomatoes.



A pressure gauge on the last nozzle indicates that the system is working well.

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operations as well as in research at the WSFS.

In another quarter section with a pivot system he has a corn crop, which followed freezer peas, with minimum bed preparation between the two crops—a first.

Mitchell noted that recently on July 25, Diener did another further advance with center pivot and conservation tillage. “He planted corn into wheat stubble, after a slight strip till at the seed line. No equipment will enter the field until harvest. He is irrigating it with the center pivot system,” said Mitchell. This is the first time this has ever been done—another first for Diener!

Dan Munk, UC Cooperative Extension farm advisor, Fresno County—working with water, soils, water salinity and drainage, as well as being a cotton farm advisor, is also a research partner in the no-till research at the WSFS. He recognized early the potential of the overhead systems in the SJV and is working with Diener.

“We are out there doing some weekly monitoring and evaluating irrigation scheduling approaches to pivot system to help optimize its management,” said Munk. “We have access tubes in Diener’s fields that enable us to use neutron probes to access soil moisture readings from shallow to deep rooting zones.

Part of Munk’s evaluation is the center pivot’s irrigation uniformity, which will help him understand how efficient the system is with water applications.

“We do know that the center pivot water is being applied with high uniformity, particularly better than surface water,” he noted.

“Ultimately, we want to match the crop’s need for water, when it needs it, so that we will not be over applying,” said Munk

In terms of labor savings on the center pivot land, Diener does not need tractors, trailers and manpower to move gated pipe around. Also not needed are irrigation return systems for flood and furrow situations. “The pivots are better than drip offering improved water distribution across the whole bed and furrow to increase root growth,” said Diener. “The gallons per acre are about the same. It’s just a different distribu-



Wheel rows are kept dry because the drop down nozzles direct the water behind the wheels.

tion system.”

Because of severe water shortages and a major reduction in planted acres, Diener like most west side growers is operating with less employees (15 less for Diener). Having the pivot systems helps fill the labor gap created by the laid off workers.

“The new low pressure center pivot systems reduces the energy requirement than earlier pivots, and they can literally be operated from a computer system at the office or home, said Diener. You see which systems are running, make adjustments even change the direction, using radio control call (RCC) through an internet site.

Diener noted that about half of his chemical and fertilizer applications

are put through the pivot. Other insecticides are flown on with a helicopter. “With the tomatoes we applied Dual and Treflan herbicides as a lay-by application,” said Diener. “We cultivated and applied Admire as a lay-by pass to control aphids and curly top virus. As always seems to happen, a good idea is contagious, and already, neighbors are installing the overhead systems—further changing the landscape on the west side.

The water crisis is expected to drive unemployed farm workers elsewhere to find work making the labor shortage even tighter. Diener noted that when there is less labor available, the overhead systems would help him. “We’re getting ready,” he said.

