

100% Turnkey Valley Farm: Elite Sod Requires an Elite Irrigation Design



LOCATION:

Elite Sod
Colbert, OK

SITUATION:

- 1,700 acres
- 900 acres of high-quality sod
- Additional row crops on 800 acres
- Several pivots, some sideroll irrigation
- Diesel pumps

CHALLENGE:

- High energy costs
- Labor availability
- Old pipes
- Difference in elevation

DEPLOYMENT:

- Install 10 Valley® pivots
- Replace diesel with electric pumps
- Add seven Variable Frequency Drives
- Add ICONX on three non-Valley pivots
- Add AgSense® with ICON Link

EFFECT:

- 100% turnkey Valley farm
- Reduced labor
- Water and energy savings
- Doubled production

Wayne Carter owns and operates Elite Sod in Bryan County in southern Oklahoma. He and his family have farmed along the Red River for many years, including growing peanuts “forever.” Then about 10 years ago, a local grower offered to sell him his sod business. Carter has grown that business from 240 acres to more than 900, growing top-notch sod to serve much of the Dallas/Fort Worth metroplex.

“It’s high-end. We provide good quality sod,” Carter said. “We’re not the cheapest by any means, but people want good stuff and they’re willing to pay for it.”

He’s proud that his business is completely self-sufficient, including owning their own trucks to haul the sod. He’s also proud of their repeat business. “We still have some of the same customers as when we started,” such as the Oklahoma governor’s mansion and Choctaw hospital in nearby Hugo, OK.

In addition to sod, Carter still grows about 800 acres of corn, alfalfa, soybeans, wheat, and sometimes milo; he irrigates those crops with three pivots and some sideroll. He also owns about 450 Brahma cattle and 2,000 stock cattle, and sells dirt.

Carter has a diverse operation, but the sod is his primary asset. So why switch to sod after years growing peanuts and other crops? Admittedly, low commodity prices played a role in his decision, but beyond that, he calls himself “a bit of an entrepreneur” and likes to stay busy.

That’s good, because in terms of time commitment, he says growing sod is “worse than a dairy.” He said it with a chuckle, but he wasn’t really joking. “You have to turn water on or off at 2:20 in the morning sometimes.”



As his sod business has grown, his need for more water and pivots grew. And as his need for water and pivots grew, so did his need for labor. He works with his cousin Mitch and his son Lane, but the three of them aren't enough to do everything. "We couldn't find labor. No one wants to do it," he said, "and for the number of acres we have, we would probably need to hire eight more people."

Instead, he contacted his local Valley dealer, Knutson Irrigation Design in Yukon, OK. "Wayne is very smart. He runs pretty hard and pretty fast. He gets things done, and he knew he needed to do it right," said Destry Suthers of Knutson.

For Carter, doing it right meant complete automation. "I wanted it 100% turnkey – to be able to run it with an iPhone and one or two other guys."



6 CHALLENGES

Carter had several goals when he began the project: save on labor and save on energy costs while being able to pump enough volume directly out of the Red River. The objectives were clear, but the process of automation required several phases, and presented several obstacles, as well.

Challenge 1 – Number of Acres

The first challenge is simply the size of Carter's operation. "You have to water 900 acres every day. And mow it every day. That's a process in itself," he said. "You get two cuttings a year if you fertilize and mow it right. It takes really good management. You can't water one day and let it go for three days when it's 110 degrees. It will take it a while to get back. Then almost every four years, you plow it up and start over."

Challenge 2 – Elevation

The next challenge was the fact that the farm is on two levels: one in the river bottom and another on a sandier plateau. The elevation difference from the river bottom to the boost pump is around 90 feet, and from there to the top is another 50 feet, pumping the water a total of about 1.75 miles.

The second level wasn't developed prior to this project, Suthers explained. "Everything in the sod business had to come together to do it."

First, they flow tested and got nowhere near the amount of water Carter thought he was getting through the existing line. "We were thinking we were getting 2,500 gallons a minute, but we were getting much less – maybe 1,000 gallons up at the top," he said.

"The goal was to get a quarter-inch of water per day on every bit of sod, and we were losing 27 pounds [of pressure] going up," said Ken Chohon, Senior Project Installer for Knutson. They added a booster pump to help mitigate that friction loss.

Turnkey Solution

Challenge 3 – Pipe Re-Use and Replacement

Some of the challenges compounded each other. The existing pipe was older, smaller, and wasn't deep enough, so it needed to be replaced. "With the bottom as low as it is, it gets wet," Chohon said. "The weather was fairly moderate, but we had to work around Mother Nature. Digging and laying pipe was a bit of a challenge due to the sub-moisture."

"We reverse-designed that 20-year-old pipe in the ground to be more efficient," said Brett Marshall, Technical Sales Manager for Valley. "The global team of water management experts from Valley made some changes and made the whole thing better."

Marshall developed elevation maps and detailed scenarios, and provided that technical information in the right format to the government, saving hassle for Carter. Marshall also coordinated paperwork for the government cost sharing program, which offered financial assistance through the NRCS for converting to electric pumps.

Challenge 4 – Hydraulic Pump Conversion

That was the next step: converting the diesel pumps to electric. "Wayne has a full quarter at the bottom, plus two half circles, all of which were then being irrigated with siderolls," Chohon said.

"As long as we caught a rain, the diesel pumps could keep up, but when it was dry, it was hard," Carter added.

They installed seven identical new centrifugal pumps, all with Yaskawa VFDs. One pump supplies the pre-existing 12-inch line that goes to the pivots on the bottom; two pumps supply the new, 18-inch pipe to a pond that functions as a "cushion reservoir" to re-pump. From there, three more large pumps reach the top level. In addition, one booster station was converted from diesel to electric.

"Overall, we try to be more efficient, conserving water and fuel wherever we can," Carter said. "Since switching from diesel pumps, we don't have to do oil changes anymore."

"The whole pumping setup reaches all the way back to the river," Marshall said. "The VFDs make equal use of all the pumps, and allow him to run them all at the same time if he wants."



Challenge 5 – Sideroll Conversion

The top level of Carter's sod farm rests on wind-blown sandy ground that needs frequent watering. The performance of their siderolls left a lot to be desired.

One problem was that siderolls lost a lot of water when they drained them. "We could've watered a bunch more and not had to re-pump," Carter said.

Drainage wasn't the only issue while using sideroll. The water pressure needed to be much higher, and because they're in a windy area, sideroll irrigation meant they had to shoot the water 30 feet one way. There were obvious inefficiencies with that setup.

As previously mentioned, the bottom ground is "a bit tighter," while the top plateau is sandy. They spend six months laser grading and bulldozing to get it right. "The plan with the combo of lower, tighter ground and higher, sandier ground is to have grass to cut at any time of year," Carter explained.

Now there are eight center pivots on that top level, including three 7-tower pivots and three with three towers. "We get pretty much every inch," Carter said. "Very little is not watered now."

And the precision that pivot irrigation allows means they also no longer need to dilute fertilizer when applying.



Challenge 6 – Automation

Complete automation was the last – but definitely not least – of their goals. Even Carter’s grass cutters are automated; he understands the benefits that automation can bring. Seven new pumps and 10 additional pivots could mean a lot more work, without smart irrigation solutions from Valley.

“Wayne’s farm is 100% turnkey Valley, from water management to AgSense,” says Marshall.

Chohon put ICON panels with ICON Link on all the new pivots, connecting everything through AgSense for remote irrigation management via smartphone, tablet or desktop computer.

“With Crop Link®, Wayne can turn on the pivots and pumps together and ramp up or down based on demand,” Chohon said. “Crop Link can control more than one pivot, and they’re wired to Nelson valves so when the pivot quits, the water automatically quits.”

Carter says his pivots from other brands will soon have ICONX installed, for full touch control of his entire fleet of pivots on the Valley network. “Remote management will let us micromanage it to the best condition. Not everybody can – or wants to – manage it like we do. It’s too much work.”

And then there’s always the unforeseen, he adds. “I look forward to alerts that will tell me if something isn’t working.”

Results: More Efficiency Overall

The project took time and effort, but everyone involved believes it will be well worth the investment.

Carter appreciates the expert assistance he got from his Valley dealer. “Ken is really, really a good guy,” Carter said. “A lot of thought went into making this work, from pipe size to pumping. He helped me design it, and it was more him than me.”

“The project started about three years ago,” Chohon said. “It was one of the bigger projects I’ve done, with the complications stemming from re-use of existing lines.”

“We had to do it to stay in business,” Carter said. “We had to cut costs; throughout the next year it will pay for itself.” Plus, he estimates that the last batch of pivots and pumps will double his production.

Plus, he says he will cut his energy spending by two-thirds. “We’re a ways away from knowing water savings, but I’m confident we will save a bunch there, too.”

Next year, Carter plans to do another 100 acres. “We have the pivot on it already, but we have to kill off the grass to re-do it,” he says. “Eventually we’ll do the same to our other 800 acres.”

Marshall says the biggest advantage of a 100% turnkey Valley farm is simplicity. “Growers come to one person for support. In Wayne’s case, we even did a one-day training and went over the whole farm and how to get the most out of the operation. We were able to show them the whole gamut, from integrating flowmeters into Crop Link to reporting. Valley is a one-stop shop.”

Overall, Carter said, the project was the difference between making it and not making it. “Nothing we do is playing around. It’s serious business. We could go broke tomorrow if the economy goes bust. There aren’t many farmers left around us.”

“A turnkey operation means net profit,” he concludes. “That’s the bottom line.”