Improving Crop Quality and Yield

WITH PRECISION VRI (VARIABLE RATE IRRIGATION)

No More Soggy Soil

The soil on the Kangaringa Station farm near Keith, South Australia, varies dramatically, consisting of nearly all sand to a sand and clay mix.

In many places, water from irrigation and rainfall would sink rapidly through the sand and then hit the clay soil underneath, resulting in water runoff and puddles. Soggy soil caused potatoes and onions to literally rot in the ground—in some instances resulting in areas of total crop loss.

Now, thanks to Growsmart by Lindsay's Precision VRI, the manager of Kangaringa Station has full control of water over each square meter of the farm, maximizing crop quality, yield and profitability.

CHALLENGE

Richard Sheppy, former farm manager at Kangaringa Station, Keith, South Australia, needed a solution to the varying water holding capacity of the soil on Kangaringa Station, one of the largest potato and onion growing operations in Australia.

Pivot irrigation on the farm provided critical moisture when needed, but because of the combination of sand and clay soils on the farm, puddles of water would form on the land. Not only did this waste water and energy, it also damaged the potatoes and onions.

Ideally, Sheppy needed a customized system that would apply exactly the right amount of water to each area of the fields at Kangaringa Station.

Precision VRI can provide individual sprinkler control as shown in the top photo from Kangaringa Station, or zone control as shown in the bottom photo from Nebraska.

SOLUTION

"I had been looking into variable rate irrigation for some time," Sheppy says. "Something that would allow me to fully manipulate the water because the soil type is not consistent at Kangaringa Station."

After learning about Precision VRI from Lindsay, Sheppy decided to take the first steps to total control of the pivot irrigation water on his farm.

Electromagnetic mapping of the fields was done, providing a critical baseline of the soil variability from which water holding capacity of the soil was derived and a precise readout of the elevation and topography of the farm.

"The EM mapping was critical and showed where there would be wet spots in the fields and where water would runoff," Sheppy says.

"We're seeing better, more efficient use of water. We're basically irrigating smarter. And, there has been an immediate savings of fuel."

LINDSAY™

A combination of sand and clay soils caused water to puddle and damage crops.

Tom Moore, Onion Production Manager, Kangaringa Station farm.

FAST FACTS – KANGARINGA STATION

- Family-owned business supplying produce to grocery store chains throughout Australia and various export markets
- 20,234 hectares (50,000 acres) of land
- 328 hectares (810 acres) under Precision VRI pivot irrigation
- Potatoes and onions are the main crop
- One of the largest potato producers in Australia

Pinpoint irrigation plans were created for each field and loaded onto the Precision VRI controllers.

Seven existing pivots on the farm were retrofitted with Precision VRI, resulting in 328 hectares (810 acres) of land under variable rate irrigation.

Water for the pivots is supplied by underground wells and pumped by diesel engines, with variable ramping pressure controls on the motors.

Sheppy worked with his local Zimmatic by Lindsay dealer, Steve Hall of Hall Irrigation, Lameroo, South Australia, in mapping the fields, configuring the pump motors and installing Precision VRI.

"A key part of the project was to have the right water pressure to prevent damage to the pivots," Hall says.

"Our experience in this area allowed us to come up with a cost-effective, customized solution to the water pressure needs of their Precision VRI system."

"The Kangaringa Station project was one of the biggest projects for us as far as Precision VRI," Hall says. "They were losing productive ground to wet spots and crops were rotting in the ground."

RESULTS

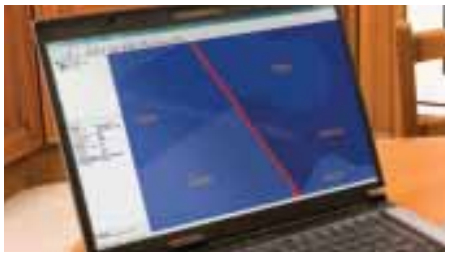
Kangaringa Station is now starting to document water and energy savings from Precision VRI.

"We do know that yield loss has been reduced from 5 percent to less than one-half of a percent today. This will result in substantial, immediate payback on the Precision VRI system. We're seeing better, more efficient use of water. We're basically irrigating smarter. And, there has been an immediate savings of fuel."

Sheppy adds, "This is one of the most exciting developments in irrigation in 15 to 20 years."

PRECISION VRI
HOW IT WORKS

- Field mapping defines custom irrigation plans and zones
- Pinpoint irrigation application plans are created for each field
- VRI controller reads the plan and sends a message to wireless nodes on the pivot
- Nodes control each individual sprinkler to turn on or off, or pulsate according to field position and desired application depth
- Each sprinkler is controlled by a magnetic latching solenoid valve
- Works on all brands of both pivots and laterals



The custom application tool allows you to define an infinite number of flexible areas, and with Precision VRI, there's no restriction on size or shape.

SOURCE: Richard Sheppy and Lindsay Corp.

For more information, call toll-free 1-800-829-5300 or visit www.zimmatic.com

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