

The WETA effluent gun in action on the Haerepo Trust farm.

A really big gun

A new travelling effluent irrigator gun in use on the Haerepo Trust has been under development for the last two years.

The WETA irrigator is the result of work on a prototype using Italian componentry and AgFirst's design and practical experience. It's been robustly tested over the past two years in a number of tough environments. Another 20 were recently brought into New Zealand, with eight of them pre-ordered.

"It can cover a big area at one time at a low application rate," Davieth Verheij said.

"That means a higher flow for less labour cost than other irrigators and the greatest performance efficiency."

The gun is driven by a low-pressure turbine and hydraulic drive system. The drive system was developed with 3D CAD to ensure maximum energy is obtained from the effluent passing through the turbine. There's no gear box required so less energy loss. And its winch system, regarded as superior to others on the market, requires two to three times less energy to drive. It uses a rope made of 12 individual strands that has a three tonne breaking strain, with wire being offered as well.

"The drum acts as a gear and the wider the drum the more even the spread," Davieth said.

"Travel speed is impacted directly by the width of the winch drum. The turbine only uses the flow required at any one time to achieve the required speed. This means all the flow and pressure is not restricted by the turbine and maximum flow and pressure is delivered direct to the gun."

The result is larger jet lengths and higher flow, meaning larger areas can be irrigated with less labour required and a smaller pump.

"This cool technology also means when the drag increases because of hose length, undulating terrain or travelling up a hill, the irrigator will adjust its travel speed automatically," he said.

"So there's no more varied application depths throughout the run and no more high application rates or depths on slopes."

The result is an even spread of nutrients over the whole area that's being irrigated as shown by bucket tests that have been done.

The gun's travel speed is controllable

with the push of a button or turn of a dial, and two solar panels on its side supply 16 times the charge the battery requires. A switch on the irrigator can be used to turn it on after checking it, then there's a 30-second delay before it starts. If farmers want they can choose extras that will allow them to adjust the speed, start it, stop it and monitor it remotely or with their cellphone.

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There are built-in fail-safe systems, with the standard model turning off automatically at the end of the run. It will also turn off if the travel speed can't be reached during the run, which both these functions achieved without having to send signals to the pump. Optional extras are available such as GSM text or call alerts, GPS, telemetry, pressure sensing and flow measurement.

Depending on the level of desired automation and optional features the complete solutions cost between \$14,000 and \$20,000. Davieth points out that to achieve less with other irrigators, once fail-safe devices are added, farmers are looking at a cost of \$20,000-\$26,000.

"This is the beginning of the end game which will be for farmers to have mapped where nutrients are applied in every paddock and they're able to control application rates based," he said.

He believes the WETA irrigator ticks all the boxes with its efficiency and performance being second to none.

"Maintenance is very low and its fail-safe and data capturing ability provides the tools needed to effectively manage nutrients and monitor full system performance."

Davieth Verheij with the WETA irrigator on Haerepo Trust farm.

