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Pond liner answer for irrigation

by Phil Whyte



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20/8/2009



The Turley Farms lined reservoir is now about 25% full. Batter slope is 1:3.

Frequent dry summers are part of the deal for farmers on New Zealand's east coast.

And Turley Farms Ltd's land at Rangitata, 30km south-west of Ashburton, is no exception.

The Turleys are in cropping in a big way, specialising in potatoes, cereal production and hybrid vegetable seeds – and required a storage pond to irrigate and future-proof 1000ha.

The result is a 5.3ha, 10 metre deep lined irrigation pond, built by Rooney Earthmoving Ltd of Ashburton. Now filling, it will be able to store over 400,000m³.

Murray Turley says he looked at the options.

'We have porous soils so an ordinary two metre deep earth reservoir would have required lining with something like clay, and anyway it would take up over 20ha,' he told Rural News.

'My own feeling was to go for the lined pond, and this was confirmed when the costings came in. With the reduced land area required for a deeper reservoir, the land that would have been used for a shallow reservoir has offset around half the cost of the liner.'

Water loss through evaporation was another factor. On a 20ha reservoir it can equate to 1000m³ a day in summer. The smaller deeper pond minimizes evaporation loss.

Since water pressure for a 10m water depth would cause unacceptable loss to seepage, the Turley's were presented with a range of impermeable artificial lining membranes including HDPE and EPDM.

Murray and Margaret Turley selected a 1.14mm EPDM Geomembrane, manufactured by Firestone Building Products. This was due to its durability and Firestone's 20-year material warranty, but it also satisfied the engineers' future-proofing and building consent requirements by having a life expectancy of over 50 years.

Firestone says its EPDM Geomembranes remain highly flexible even at very low temperatures (down to - 45°C), enabling year round installation in a variety of climates and terrain. They can stretch over 300%, enabling the membrane to conform to irregularities in the subgrade.

The company says they offer unmatched resistance to ultraviolet radiation and ozone, require little or no regular maintenance after installation. Membranes are inert with low environmental impact during production and use.

After Rooney Earthmoving completed the excavation, construction and compaction of subgrade a geotextile underliner was installed prior to placing the impermeable Firestone membrane.

This is a vital component, as it drastically increases the puncture resistance and protects the lining membrane against possible damage once pressure is applied when filling, says Vaughan Podbielski of Cosio Industries, exclusive New Zealand distributor of Firestone lining products.

Installation was carried out by Tim O'Sullivan – Young Farmer of the Year – and his business partner Simon Metcalf of Canterbury Environmental Linings. Due to one of the wettest May's in 35 years for the area, installation of the 62,000m² Firestone EPDM liner – the size of eight rugby league fields – took a little longer than expected.

This privately funded infrastructure is part of the region's much publicised Rangitata South Irrigation Scheme, which is planned to irrigate a total of 12,000ha of farmland in the area.

Like many of the existing and planned schemes, the aim is to provide a reliable water supply using storage ponds, which is seen as the key to future growth in the primary sector for this region by Irrigation New Zealand. This belief from INZ is echoed by Federated Farmers chairman Don Nicolson.

Turley Farms has always been an early adopter of new technology and innovative solutions in the farming community. The Turleys were one of the first to import centre pivot irrigation

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