

Queensland Cotton Grower Increases Yield and Water Use Efficiency with Sentek's Diviner 2000®

Michael Hegarty is a Farm Agronomist for Janerin Pty Ltd. This company farms 2,400 ha of alluvial cracking black soil near Brookstead on the Darling Downs in Queensland. Janerin Pty Ltd is able to irrigate 1800 ha on four farms where the main crop grown is cotton. Other crops also grown on these farms are sorghum, wheat, soybeans, corn and sunflowers. The soil holds around 200mm of plant available water and water is sourced from Leslie dam allocation, via the Condamine River, and from overland flow and bores.

Michael normally oversees the growing of 1000-1400 ha of cotton each season which had been monitored by a consultant with a Neutron probe service. In the winter of 2000, Janerin Pty Ltd approached Total Ag Services, the local Sentek supply and service distributor, based in Dalby about the portable soil moisture monitoring solution, Diviner 2000®. The Diviner 2000® proved a timely investment by Janerin Pty Ltd as the next three growing seasons of drought have all been extremely challenging from an irrigation scheduling perspective.

Diviner 2000® - Portable Soil Moisture Monitoring

Diviner 2000® is Sentek Sensor Technologies portable soil moisture monitoring solution that allows for instant in-field decision making as it displays data on a large graphical LCD screen. Additionally, the Diviner 2000® can monitor up to 99 sites and no PC is required for data interpretation although information can be downloaded using the Sentek software for more informed decision-making.

With the ongoing drought facing many parts of Australia the cotton areas have been severely affected. As a result, these areas have been reduced each season, due to limited available surface water, and with slow bores once acting as the only source of stored water now being exhausted, decisions on when and where to send water have been critical.

Having the lightweight and portable Diviner 2000® on farm has meant that soil moisture information for any given field and variety is at Michael's fingertips. Using

the appropriate software, the scheduling of up to 19 sites on the property is made easier.

Key Benefits from Diviner 2000®

Janerin Pty Ltd Farm Agronomist Michael Hegarty stated that the following are key benefits of Diviner 2000® in his cotton crop,

- ✓ ... *Reward to benefit/cost ratio better, compared to previous outside scheduling service.*
- ✓ ... *We are able to derive our own soil moisture information from Diviner 2000® and therefore have more control of our irrigation scheduling without surprises, versus previous service from outside companies.*
- ✓ ... *Easy to use, as the Diviner 2000® is portable and lightweight.*
- ✓ ... *Not radioactive, therefore Diviner 2000® requires no annual calibration and license.*
- ✓ ... *Whilst taking a reading, we are able to quickly monitor root growth on the spot by viewing moisture levels at each 10cm depth.*

Michael Hegarty went on to state that, *“During the 2000/2001 season the farms ran out of water in the critical peak flowering period in late January. We were saved by 150mm of rain in early February which contributed to soil moisture profiles and gave some overland water flow to catch. Within 5-7 days, with the use of Sentek’s Diviner 2000® we could now determine which profiles were filled and which were not and what the daily water use of each crop was. Decisions were then able to be made on which crops would require water and which ones would not. The valuable benefits of the information provided by Diviner 2000® is hard to put a figure on when water is you’re most limiting resource. In hindsight, those decisions gave us water to carry over to the next season (which was even drier) to pre-plant irrigate.”*

Michael Hegarty states, *“Without the information Diviner 2000® provided we would have run some of our crops out of water!”*

The current cotton industry scourge is the Fusarium Wilt disease. This is a stress induced pathogen which is influenced by both lack of water and too much water. This is a major concern for growers in the Darling Downs district. Janerin Pty Ltd Farm Agronomist Michael Hegarty stated, *“Some of our paddocks carry this soil borne disease. Severe infection can be disastrous especially with a susceptible variety.”*

Michael Hegarty stated, *“The use of Diviner 2000[®] in Fusarium Wilt blocks has enabled us to reduce the disease’s impact. Watering at an appropriate deficit reduces the stresses of root tearing from soil cracking and also reduces water logging stress from delayed timing.”*

Water Use Efficiency

Recent CRDC water use efficiency surveys indicate that 2.0 to 3.2kg cotton lint per mm of moisture from crop irrigation plus useful rainfall is a good benchmark for efficient water use.

Michael Hegarty commented, *“After three very dry seasons using Diviner 2000[®], most of our individual paddocks have ranged from 2.15 to 2.9kg/mm, inline with the CRDC water use efficiency benchmark. Farm average results for the last three seasons have been very pleasing in terms of kg of lint per mm water considering the drastic water shortages. Those paddocks achieving under 2kg/mm have either had no in crop irrigation or their yields have been limited by Fusarium disease.”*

Michael Hegarty states, *“Diviner 2000[®] has enabled us to improve our water use efficiency through better irrigation timing.”*

Summary

Cotton is a non-perishable commodity. Most of the currently measured quality attributes are determined genetically, or by genetic X environment interactions. Michael Hegarty stated, *“The only control we have on potential final result is through Best Practice for fertilizer management, disease control, pest control and water management when you have the available water. If everything else is right, a full moisture profile in mid-February gives us the best yield and water use efficiency. The Diviner 2000[®] has allowed us to see ‘under the ground’ as well at this critical stage to help decision making.”*

Contact Information

For further information on Diviner 2000[®] and Sentek Sensor Technologies full range of soil moisture monitoring solutions please contact Sentek's Marketing Coordinator, Adrian Manera at amanera@sentek.com.au, free call in Australia, 1-800-SENTEK (1-800-736-835) or visit www.sentek.com.au to arrange for an information pack to be sent to you.