



# Sentek

## Quarterly

# Newsletter

## March 2022

[sentektechnologies.com](https://sentektechnologies.com)



## Contents

A word from Managing Director Nick Ktoris.....	2
New products.....	3
Season of NDVI.....	3
Matric Potential Conversion.....	6
Technical Support Tracking System in Irrimax Live .....	8
Sentek/Galcon Measurement and Control Solutions.....	9
Quarterly Activities .....	10
Staff member profile feature: Aaron Fielding, Production Engineer.....	12
Case study.....	13
Key contacts .....	16



## A word from Managing Director Nick Ktoris

Welcome to the latest edition of Sentek's newsletter.

I am hopeful that this newsletter will play an important role in highlighting the excellent work being undertaken by our staff, dealers and partners.

We encourage you to submit ideas for stories and to provide feedback on the content of the newsletter.

I would like to take this opportunity to share our mission and vision.

Our business mission statement is, "At Sentek we believe that better water management decisions come from accurate and reliable data, that is why we pursue advances in technology to measure and monitor changes in soil water, temperature and solutes".

Our vision is, "To be recognised as best-in-class provider of soil water and solute measurement and analysis for decision support".

As can be seen over the past 30 years we continue our mission and our vision is well on track. We appreciate timely forecasts that enable us to ensure product supply.

Another important highlight that has occurred recently is that Sentek has achieved recertification of its Quality Management System against the ISO 9001:2015 standard. This is a very important milestone for Sentek and provides even further independent verification of Sentek's proven quality and enduring value brand. *We continue to increase the quality processes within the business.* I believe quality has been embraced throughout out the organization and will continue to be at the forefront of the minds of employees and suppliers.

Along with our leadership team and the Board of Directors, we would like to take this opportunity to thank all for your continued support. I am consistently inspired by your efforts. Thank you all for everything you have done and will do for Sentek.

Enjoy reading the rest of the Sentek newsletter.

Regards

Nick Ktoris

Managing Director



## New products

### Season of NDVI

[NDVI \(Normalised Difference Vegetation Index\)](#) is a vegetative index, calculated according to the way a plant reflects and absorbs solar radiation at different wavelengths. The index allows for identification of problem areas of the field at different stages of plant growth for timely response. IrriMAX Live presents a Google Map View of the selected property where 10 x 10m<sup>2</sup> resolution NDVI images can be offered 1-2 times per week to track the over- or under-performance of crops over the course of a season.

The 6-month subscription (including the ability to buy back historical images) represents very good value.

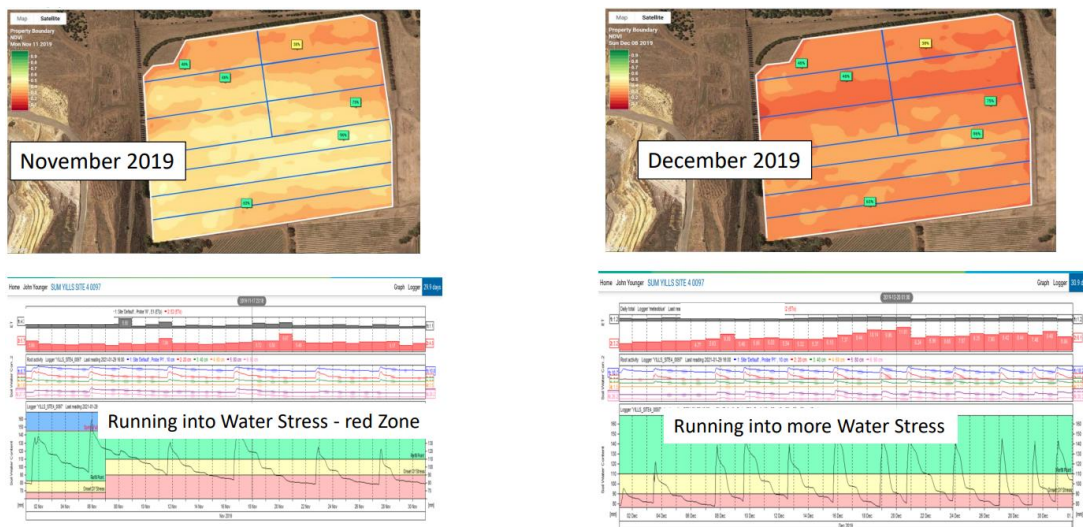


Figure 1: Soil water status too low & irrigation cycle too far apart

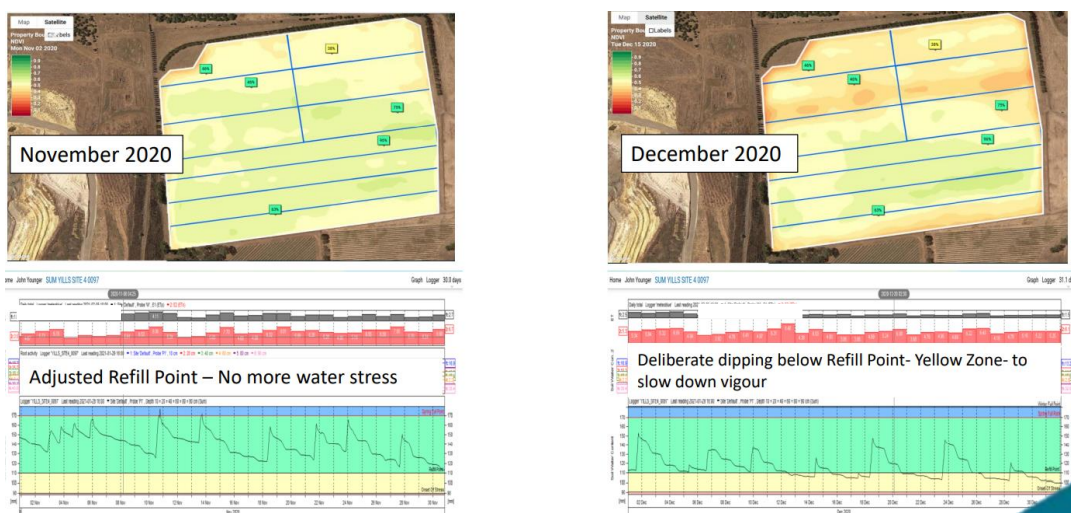
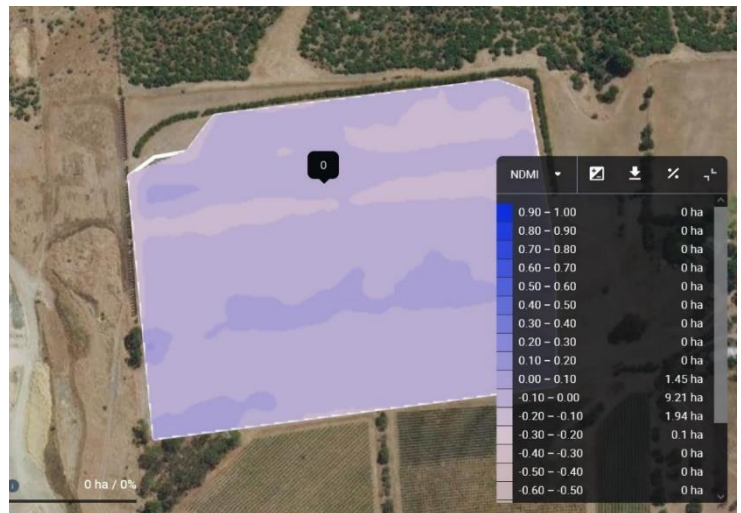


Figure 2: One year later – improved irrigation management

In addition to NDVI, Sentek offers a variety of other satellite imagery services for you to choose exactly which one suits your needs.

### Normalised Difference Moisture Index (NDMI)

NDMI describes the crops' water stress level and is calculated as the ratio between the difference and the sum of the refracted radiation in the near-infrared and SWIR spectrums. The interpretation of the absolute value of the NDMI makes it possible to immediately recognize the areas in which the farm or field is experiencing water stress.



### Normalised Difference RedEdge (NDRE)

NDRE is an indicator of photosynthetic activity of a vegetation cover used to estimate nitroge concentrations in plant leaves in the middle and at the end of a season. It allows the grower to detect the oppressed and aging vegetation and is used to identify plant diseases. It also makes itr possible to optimise the timing of the harvest.



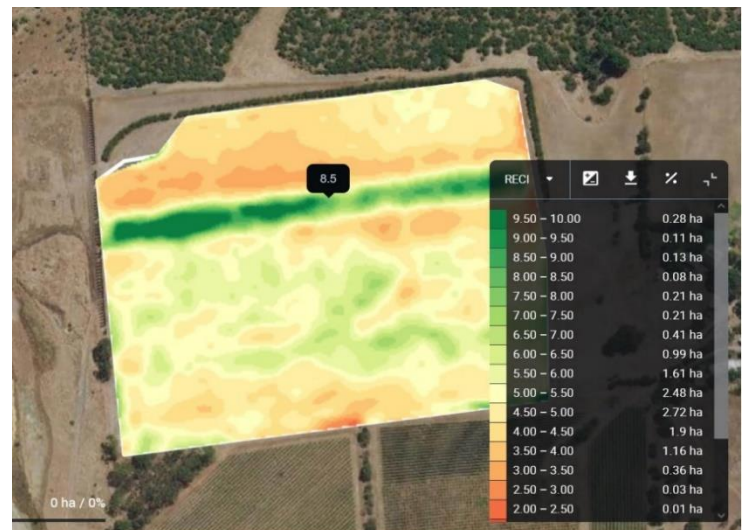
### Modified Soil-Adjusted Vegetation Index (MSAVI)

MSAVI is a vegetation index that allows the grower to determine the presence of vegetation in the early stages of emergence, when there is a lot of bare soil. The index minimises the effect of bare soil on the display of vegetation maps. Based on the index, the grower can build maps for differential fertiliser application in the early stages of crop growth.



### Red-edge Chlorophyll Index (ReCI)

ReCI is an index of photosynthetic activity of a vegetative cover, sensitive to the content of chlorophyll in leaves. Since the level of chlorophyll is directly related to the level of nitrogen in the crop, the index allows you to identify the areas of the field that have yellowed or faded leaves, which may require additional fertiliser application.



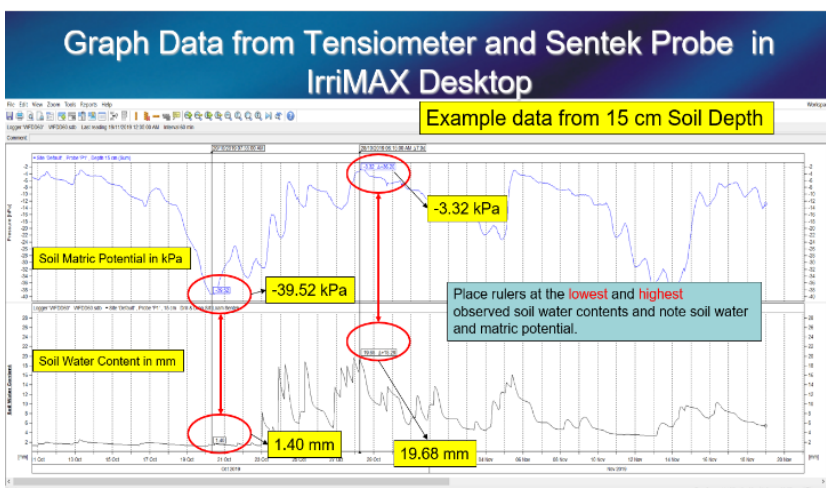
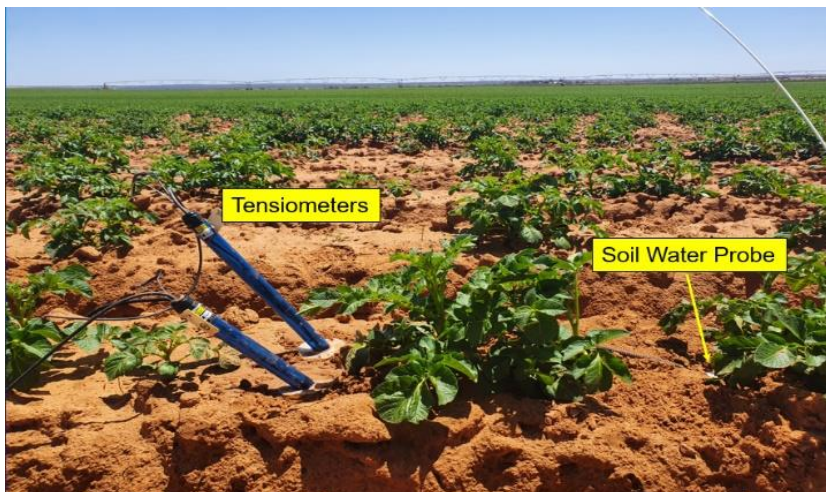
## Matric Potential Conversion

The Matric Potential Conversion is an innovative way of measuring moisture in two ways using [IrriMAX](#).

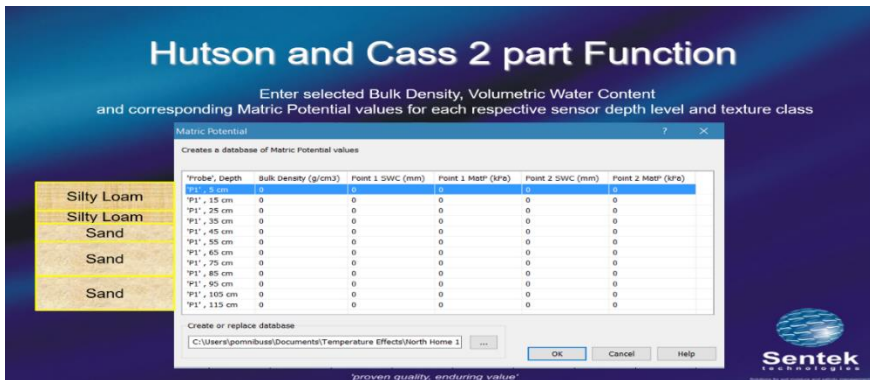
The advantages of matric potential calculated from volumetric soil water content are:

- Instant response time (no equilibration time)
- Seeing nuances (great resolution)
- More subdued diurnal fluctuation
- No limit to measurement range (from oven dry to saturation)
- No need for frequent regular servicing
- Larger sphere of influence of measurement

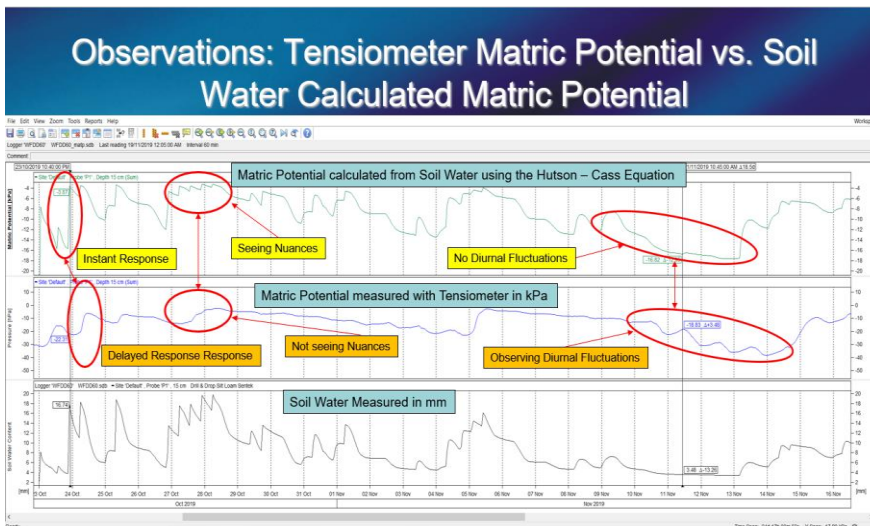
For soil site specific data, install logging tensiometers close to a Drill & Drop probe matching Tensiometer and D&D sensor depth. After a few wetting and drying cycles take note of the time of highest and lowest soil water content and the matching matric potential (see below).



Enter observed high and low data pairs into the input sheet for the "Hutson and Cass 2-part function". Also put in an estimated or measured soil bulk density (see below).

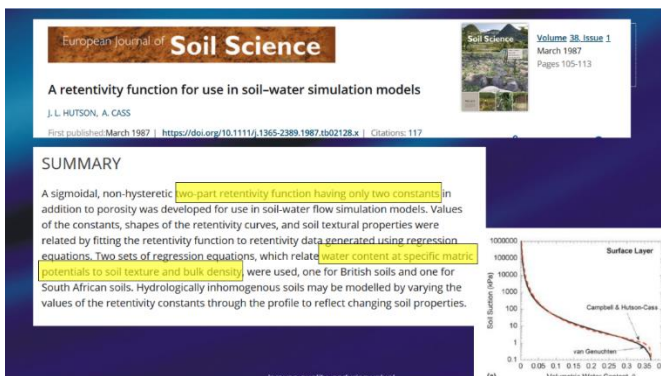


Now a new pane is added with the calculated matric potential values, which appears above the pane with the measured tensiometer readings.



Please [contact Sentek](#) for more detailed instructions of how to change volumetric soil water content step by step into soil matric potential.

Sentek would like to thank and acknowledge the contributions of *Dr John Hutson* to this project:



## Technical Support Tracking System in IrriMAX Live

For distributors who wish to be notified of technical support requests raised by their customers, Sentek's new Technical Support Tracking System is available for the convenience of both the distributor and grower. All you need to do is click "Respond to faults" on your Settings page on [IrriMAX](#). This makes you the service contact for users under you.

To raise a fault you go to Installation Details for the logger and click "Update" next to Fault Status. Choose the current status of the fault and add a note. The email of your service contact is there by default. You can add another email. If you don't want somebody notified, you can untick the email address. When you save, the logger thumbnails will be marked with a Spanner icon coloured according to the new status.

If there is a probe associated with the logger database, all databases associated with the probe will show the icon (there may be older databases created prior to a logger ID change, for example).

There is also a new sort option on the Loggers page, "Sort by faults". The service technician could start his day by using this to see what he or she has to fix.

**IrriMAX Live**

Installation details

Database:	(waterlink) BK6	Zone name:	<No selection> <input type="button" value="New"/>
Database type:	Plus/Multi FTP	Zone description:	<input type="text"/>
Probe account:	waterlink-waterlink001	Crop:	<input type="text"/>
Logger description:	<input type="text"/>	Variety:	<input type="text"/>
Configuration:	SWC (P1) : 5-55; VIC (P1) : 5-55; Temp (P1) : 5-55; Applied Water (DIU) : Current (DIU) : Voltage (DIU) : x2	Field size:	<input type="text"/>
Notes:	<input type="text"/>	Planting date:	YYYY-MM-DD ...
Distance to plant:	<input type="text"/>	Transplanting date:	YYYY-MM-DD ...
Distance to emitter:	<input type="text"/>	Expect harvest date:	YYYY-MM-DD ...
Installer:	<input type="text"/>	Spacing across row:	<input type="text"/>
Install method:	<input type="text"/>	Spacing down row:	<input type="text"/>
Install date:	2021-12-16 ...	Irrigation type:	<input type="text"/>
Extract date:	YYYY-MM-DD ...	Application rate:	<input type="text"/>
Last service date:	YYYY-MM-DD ...	Emitter spacing:	<input type="text"/>
Next service date:	YYYY-MM-DD ...	Drip lines/row:	<input type="text"/>
Service contact:	<input type="text"/>	Emitters/plant:	<input type="text"/>
Fault status:	<b>Working normally</b> <input type="button" value="Update"/>	Subsurf line depth:	<input type="text"/>
	2022-03-28 10:18 Working normally	Soil description 1':	<input type="text"/>
		Soil description 2':	<input type="text"/>
		Soil description 3':	<input type="text"/>

## Sentek/Galcon Measurement and Control Solutions

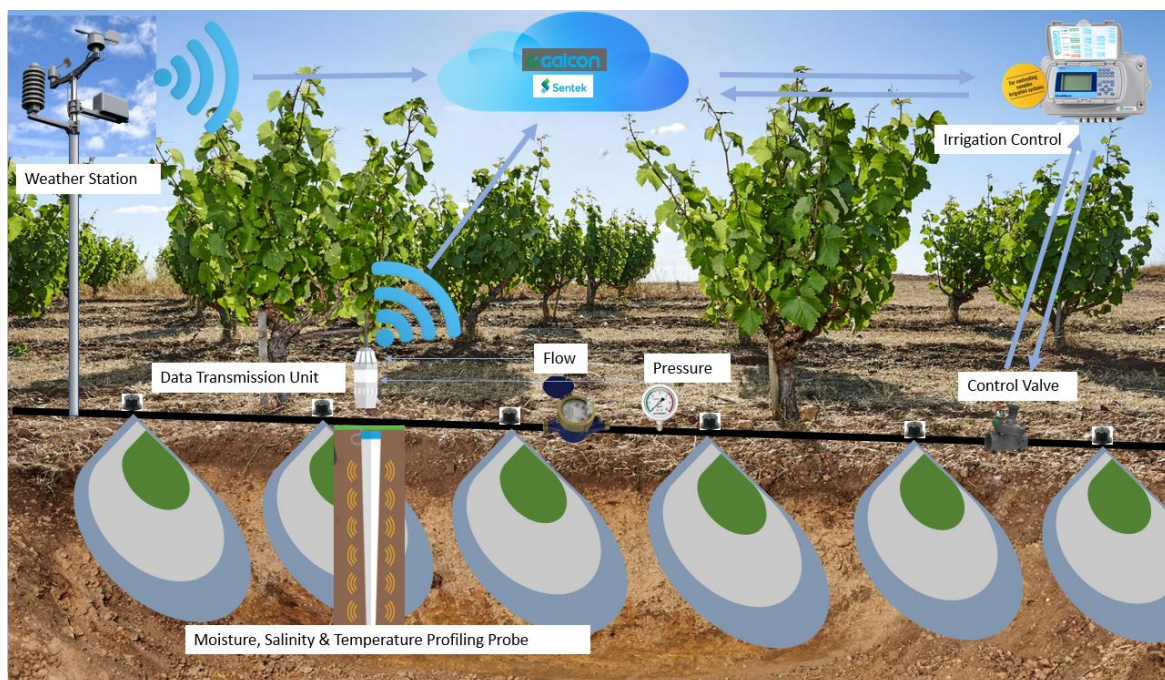
Irrigation installers and irrigators agree:

*"Measurements must be meaningful. Analyses based on best scientific practises. Information graphics understandable and accessible. Required actions implementable."*

Galcon, manufacturers of high value irrigation controllers, have incorporated Sentek's IrriMAX Live into their GSI Pro and Galileo Cloud online platforms. This recent development has been well received by the market, offering a well-priced, high quality and powerful solution for new composite systems plus upgrade paths for existing users of either companies' technologies.

Sentek solutions comprise [probes](#), data transmission units (cellular, satellite or Bluetooth via IOT or Android) and [IrriMAX Live software](#). Galcon's GSI Pro is an AC or DC powered irrigation and fertigation multiple valve controller with a range of settings and additional add-on sensor options. The [Galileo Cloud](#) is a state-of-the art controller. It is modular and can operate in all agricultural growing environments and levels of complexity.

To access both systems, users need only log into the controller software, build their design and schedule (including fertigation and sensor inputs as options) and link Sentek IrriMAX Live to the design.



## Quarterly Activities

### Kiwifruit Growers Association, Italy

In February 2022, Sentek's European Regional Manager Paolo participated in a great event with kiwi fruit growers and cooperatives in Latina, a key kiwi production area. Paolo got to demonstrate the use of Sentek's probes for better irrigation management to solve the problem of "Moria del Kiwi" (kiwi plantation death due to too much water), save water and energy, and improve the quality and quantity of production. The event hosted 90 people including farmers, agronomists and cooperatives, and another 60 online.



### World Ag Expo, United States of America

The 2022 World Ag Expo took place in February in Tulare, California. Sentek USA's Gill Costa and Matt Nunes and Galcon Inc's Yoav Tregerman held Booth 2419 Pavillion B showcasing irrigation automation and irrigation management equipment. They offered irrigation prescriptions for farmers who wish to understand when to turn irrigation on and off. They also helped growers interpret irrigation graphs and simulated irrigation prescriptions.



## Visit to Victoria, Australia

As part of regular regional visit and business development, Rob Guy (General Manager, Sales& Marketing) and Medi Zaboli (Regional Manager, Sales& Marketing ANZ) visited VIC on 15<sup>th</sup> to 18<sup>th</sup> March 2022. Rob and Medi travelled through North to East VIC, and met with a large range of dealers for the first time in 2 years!

Rob and Medi provided technical, sales and agronomic training. Appreciation was experienced for the lush level of Sentek product quality and customer service.

Feedback was that many integrator clients specifically asked for Sentek probes to be included in their packages. Consistency of data quality and reliability were the major winning factors of Sentek equipment over its competitions from dealers' perspective.



## **Staff member profile feature: Aaron Fielding, Production Engineer**

*What do you do at Sentek?*

I am the supervisor and production engineer for Sentek in the electronics area. I set up programming, fix problems, run our quality systems in the manufacturing area, run the schedule, make sure things go out on time, manage repairs/tech support and provide back-up to Patrick and John.



*How long have you worked for Sentek?*

I've been here four years. I enjoy the job, there's always plenty of interesting things to do. Whenever we start new products that always makes the job more exciting, with new challenges.

*What do you like most about working for Sentek?*

I like fixing the problems, I like engaging with the people in Production, I have a good relationship with them, and it's the people that make this place. You just don't notice the time, that's because the work is engaging, and the people are good to work with.

*What projects are you currently working on?*

We just finished off creating the testing procedures for the Sentek modem, and making sure that systems are robust for production and tech support. We are also working on replanning the entire factory down here because we're getting some new equipment that's going online.

Also we've got a robot that we need to get online with a new application.

*What do you like to do in your spare time?*

Quite a bit! I watch a lot of sports - cricket, ice hockey and football. I've got two kids so they take up a lot of my time, I do a lot of drawing with them, because I love drawing, and I read a lot. I think I read about 50 books last year! I do a bit of electronics at home as well, just little projects to excite the kids, they loved a bridge I built out of lego and put spikes on it, that was a bit of fun. I'm big into wine so I collect a lot of wine and I do a lot of reading about wine, then I talk to my Dad about wine... then I talk to everybody about wine... I don't think they're really interested in wine, maybe I'm just too interested in wine. Oh and music, music is a big thing, I go and watch a lot of concerts, usually a lot of alternate and rock music, I'm glad that's all up and running now, I'm actually going to see a band this weekend through the Adelaide Fringe Festival.

## Case study

[Multi-sensor soil moisture probes](#) have been used in the potato industry for the past 30 years. Measurements every 10 minutes at multiple soil depth levels are presenting much deeper insights than just the current soil moisture status for irrigation management. In 2013, Sentek launched its cloud platform [IrriMAX Live](#), a user interface, where potato farmers can access data from their in-field probes including soil moisture, -salinity and – temperature, coupled with a [7-day weather forecast](#) and [frequent NDVI images](#) showing the health and vigour of the potato crop.

But it does not stop there. A new algorithm using real data combining soil moisture and weather data help agronomists and farmers to detect more easily the first day of the onset of water stress by the potato crop. This point in time is then used to set the threshold of soil moisture at which water stress occurs (red zone) and when the crop is not under any water stress (green zone).

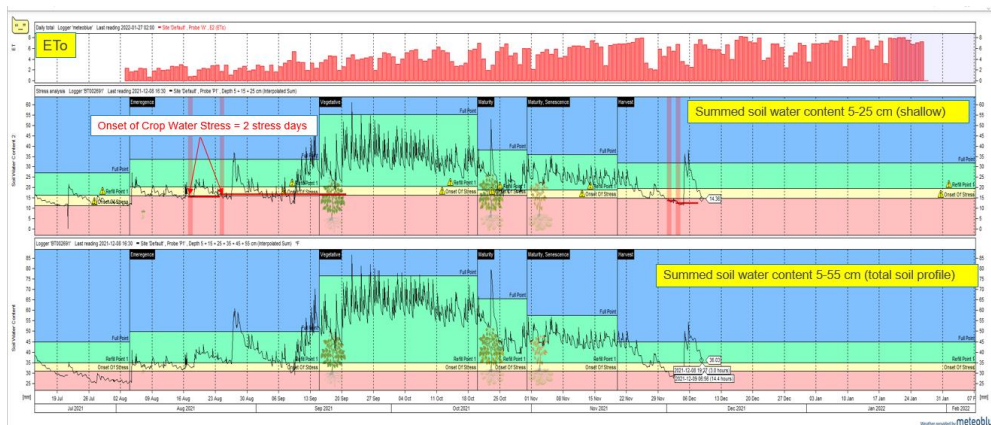


Figure 3: Onset of Potato Crop Water Stress by Algorithm

Potato roots grow deeper throughout the growing season. To prevent over- or under irrigation, the active root zone depth needs to be taken into consideration when applying irrigations.

Another algorithm in IrriMAX Live using real-time measured data, rather than modelled data, detects the advancing root activity of the growing potato crop and the applied depth of irrigation. This is a useful tool to prevent over- and under irrigation by matching the depth of irrigation to the depth of the advancing potato root zone.

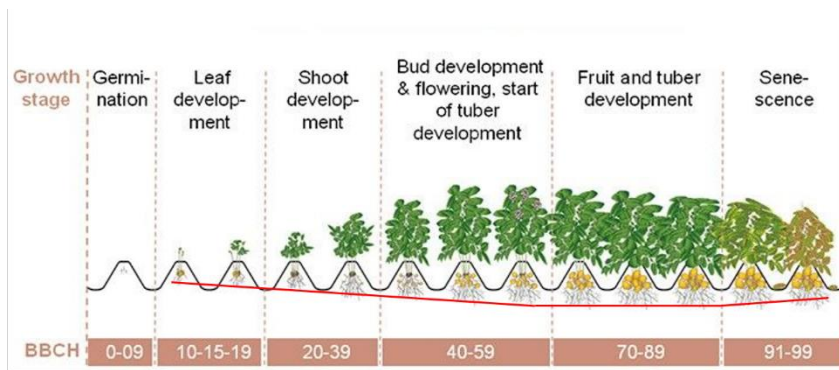


Figure 4: Potato Crop Stages and Root Zone Development

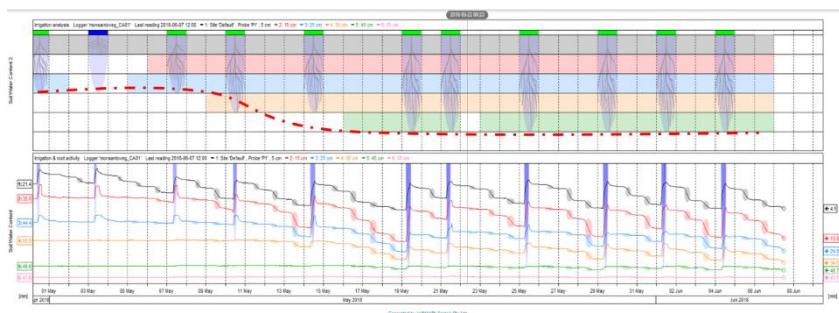


Figure 5: Automatic Root Activity and Depth of Irrigation Detection throughout the potato season

In the example above, moisture trendlines from different soil depth levels are displayed in the bottom pane. The dots on the trendline indicate potato root activity and the blue needles show the depth of irrigation. The upper pane called "Irrigation analysis" shows the depth of irrigation events are matching the root zone depth. These events are ticked with a green horizontal bar.

Advancing root activity and matching deeper irrigation events during the potato crop stages are finally captured in the summed soil water profile graph, where Full Point and Refill Points are adjusted to accommodate the increased potato irrigation requirements throughout the season. Not shown here are the decrease of the root zone activity towards the end of the season and its matching reduction of irrigation applications.

This summed soil profile graph with crop stages and Full and Refill Points then can be used as a starting Irrigation Management Template for future potato crops if grown on the same field using the same variety.

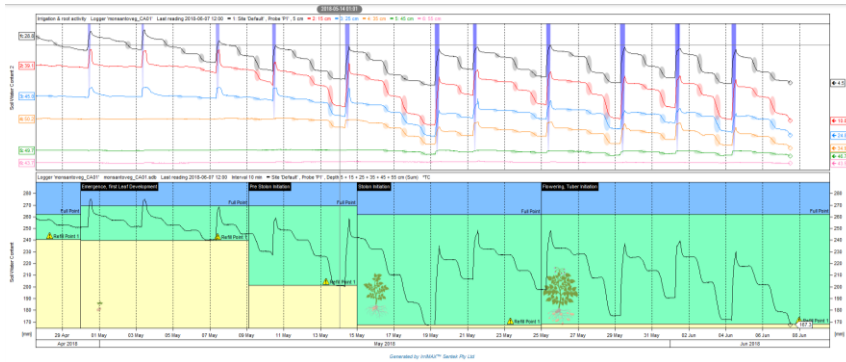


Figure 6: Summed soil water profile graph showing Irrigation Full and Refill Points for the potato season

Furthermore, the “drinking speed and its changes” and the “advancing depth of root water uptake” of the potato crop is being used to provide insights in crop water uptake dynamics and facilitate “crop driven irrigation management decisions”, a new era of improved irrigation scheduling.

## Key contacts

Key Sales and Support Staff, Head Office, Adelaide, Australia

Robert Guy, Manager of Sales and Marketing: [rguy@sentek.com.au](mailto:rguy@sentek.com.au)

Dave Fowler, Customer Service Officer: [orders@sentek.com.au](mailto:orders@sentek.com.au)

Patrick Walsh, Technical Support Officer: [techsupport@sentek.com.au](mailto:techsupport@sentek.com.au)

Medi Zaboli, Sales and Marketing Regional Manager, ANZ: [mzaboli@sentek.com.au](mailto:mzaboli@sentek.com.au)

Amber Venning, Marketing Coordinator: [marketing@sentek.com.au](mailto:marketing@sentek.com.au)

Hasith Perera, Finance and Administration Manager: [accounts@sentek.com.au](mailto:accounts@sentek.com.au)

Sales Staff, United States of America

Bob Gills, Managing Director of Sentek USA: [bgills@sentekusa.com](mailto:bgills@sentekusa.com)

Gill Costa, Business Development Manager, Western USA: [gcosta@sentekusa.com](mailto:gcosta@sentekusa.com)

Matt Nunes, Business Development Manager, Southern USA: [mnunes@sentekusa.com](mailto:mnunes@sentekusa.com)

Alexander Breckenridge, Business Development Manager: [abreckenridge@sentekusa.com](mailto:abreckenridge@sentekusa.com)

Chris Mann, Galcon Operations: [cmann@sentekusa.com](mailto:cmann@sentekusa.com)

Patricia Bush, Customer Service Officer USA: [orders@sentekusa.com](mailto:orders@sentekusa.com)

Sales, Europe

Paolo Antini, Regional Manager Europe: [pantini@sentek.com.au](mailto:pantini@sentek.com.au)

