HINKLER AGTECH INITIATIVE

Localised Weather Station Array

INTRODUCTION

This trial was undertaken as part of CQUniversity's Hinkler AgTech Initiative. The Initiative aimed to increase the productivity and profitability of the Bundaberg region's agricultural sector through greater availability and utilisation of agricultural technology (AgTech). An extensive consultative process undertaken with agribusinesses identified on-farm needs that may be addressed using AgTech. Trials of selected AgTech products and services were then undertaken in partnership with agribusinesses and technology providers to determine the technologies' efficacy in on-farm conditions. This summary provides an overview of findings from one of the technology trials, including grower feedback and considerations for other growers when deciding whether to utilise the technology in their own enterprise.

Background

Many traditional sources of weather information are not sufficient for agricultural applications because of the long distances between weather stations, meaning the data is not always local and applicable for on-farm evaluation and resulting on-farm decision processes. Localised factors such as topography, vegetation and proximity to water bodies can affect weather conditions to an extent not detected by regional weather station networks. Timely localised weather information over the entire growing season is crucial for many of the agronomic management decisions made on farms, including effective timing of pest and weed control, more effective and timely soil fertility applications and efficient irrigation operations through improved soil moisture monitoring and irrigation scheduling.

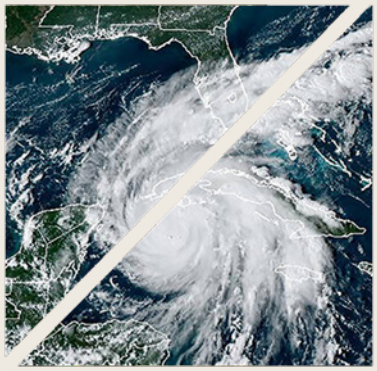
The Technology

The Davis Vantage Pro 2 weather station is a professional-grade, solar-powered weather station that measures a range of meteorological parameters including rainfall, temperature, wind speed and direction, wind chill, relative humidity, wet bulb, dew point, air pressure and solar radiation. The station can be mounted as a free-standing tripod unit or fixed to existing infrastructure. This data is presented to growers via Davis's public online portal called which is accessible via a mobile app or web-based dashboard. Individual owners of weather stations can choose to share, or not share, the data from their station via the WeatherLink platform.

Davis weather stations can also be linked via DTN's 'Weather Sentry' software system which collates, analyses and disseminates data from the stations in real-time via a subscription-based service. The information presented through Weather Sentry provides users with a comprehensive suite of weather tools, including real-time weather alerts, forecasts, and historical data.

The Project

DTN was engaged to install 16 Davis weather stations throughout the Bundaberg region. The selected sites were all private properties owned by growers, community groups or sports clubs. Sites were based on a 5-square-kilometre grid pattern to provide optimal coverage. Free public access to real-time data from the weather stations was made available via a customised dashboard developed by the Hinkler AgTech Initiative and hosted on its website. Access to data available through DAVIS's WeatherLink and DTN's Weather Sentry platforms, was also provided to participating landowners, via a single, shared subscription.


Value to Business

Following the completion of this trial, most participants chose to keep the weather station on their land and continue paying the annual subscription to DAVIS WeatherLink. Growers commented that this was their preferred dashboard for accessing data, with DTN's Weather Sentry platform considered more complicated to use. Growers particularly valued the capacity to view weather data for individual, separated farms within their operations. Wind speed and direction were the most variant parameters recorded within the array area and growers valued the benefit of this information when scheduling their crop spraying regimens.

Daily rainfall totals also varied significantly within the array area. The largest variations, up TO 70%, were recorded during the wettest months and growers were able to adjust irrigation rates and schedules accordingly.

The price of a Davis Vantage Pro 2 weather station, not including installation, is approximately $1500*. The cost of an annual subscription to the DAVIS WeatherLink, including alerts, forecasts and historical data from all weather stations registered on the 'public' network, ranges from $300* for a '60 minute' service plan (provides data updates every 60 minutes) to $440* for a '15 minute' service plan (provides data updates every 15 minutes).

Grower Feedback

Trial Summary Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I see value in this technology				✓	
I found the technology easy to use				✓	
The technology was easy to integrate within my business			✓		
I was satisfied with the service provided by the AgTech company		✓			
I intend using this technology in my business			✓		
I recommend this technology to other growers			✓		

Other Considerations

It is important that a weather station be sited in a location that does not interfere with its optimal operation. An open, exposed area of flat or gently sloping ground away from roads, tall trees and buildings and not affected by spraying operations or plant operations is ideal. It is also advisable to avoid installing near pools, rivers or lakes as these features can affect ambient weather parameters.

The weather stations deployed for this project are mostly maintenance-free, but it is recommended that they be inspected every two months for infestations of pests such as ants and spiders and build-up of dust and dirt, particularly affecting the rain gauge. The stations also require a small amount of connectivity to transmit data back to the dashboard, however all sites selected during the trial were suitable, including ones with limited mobile service.

Further Information

For further information on this trial and results, email CQUniversity's agricultural research team:
agriculture@cqu.edu.au

For further details on DTN Weather products and services, visit:
dtn.com

Summaries of other technology trials undertaken through the Hinkler AgTech Initiative are available at:
bundabergagtechhub.com.au

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Australian Government

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