



Improving irrigation decision-making through a digital water-use efficiency system

WaterWise, a digital efficiency system, monitors crop water stress to inform irrigation decision-making.

Using in-field canopy temperature sensors, WaterWise employs machine learning, advanced data analytics, spatial sensing systems, and weather forecasting to predict future water requirements for high-value crops.

The challenge

The development of WaterWise began with a vision for increased water conservation. Irrigation timing is crucial to minimise negative effects on yield and quality. For most of human history irrigation management has relied on growers' experience, not data, to make decisions on when to water their crops often leading to over- or underwatered crops. These decisions have led to water inefficiencies in Australia that have affected communities and growers.

The response

WaterWise allows growers to make irrigation choices with real-time data based on the crop, soil type, regional climate, system capacity, water availability, and risk. WaterWise achieves this by identifying biological targets such as canopy temperature to measure plant stress; using data analytics to incorporate this knowledge with in-field sensing and weather forecasts; and developing strategies that use this information to build a precision irrigation decision-making toolbox.

More crop per drop: technology to time irrigation better.

The impact

CSIRO is licensing the WaterWise technology to agriculture startup Goanna Ag. Goanna are already making WaterWise available to growers, allowing growers to increase yields by irrigating the correct amount needed at the correct time while decreasing growers' overall water footprint.

A recent independent evaluation found WaterWise has the potential to provide between \$48 million and \$769 million in economic impacts (present value terms, 2020) accruing to Australian agricultural producers between 2021 and 2030. Apart from environmental co-benefits, the largest proportion of benefits are associated with operational cost savings through on farm use and increased yields on existing harvested areas for each commodity.

Agriculture and Food
Dr Rose Roche
Research Manager
+61 2 6218 3465
rose.roche@csiro.au

Australia's National
Science Agency