Piloting IrriSat Technology in Irrigated Cotton

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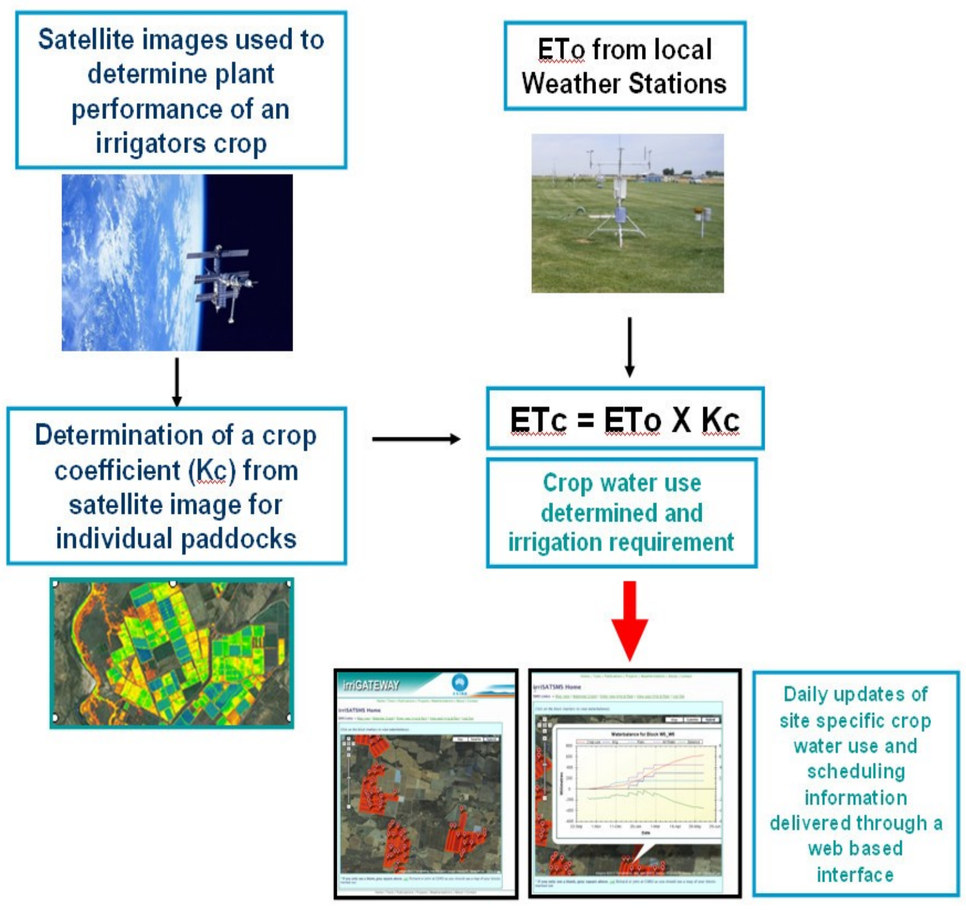
Developed by CSIRO, IrriSat is a weather based irrigation scheduling service. It uses satellite imagery to better determine site specific crop coefficients (Kc) that are needed to calculate crop water use.

It involves the installation of two weather stations across a region so local estimates of reference crop evapotranspiration (ETo) can be obtained. Kc is combined with ETo to calculate crop water use (ETc).

It has been trialled in irrigated cotton over three seasons and although developed primarily as an irrigation scheduling tool, an unexpected outcome has been the interest in using the technology for irrigation benchmarking.

How does IrriSat Work?



Uses of IrriSat:

1) **Determine seasonal and daily crop water use.** The red line in figure 1 shows the cumulative crop water use over the season. Daily crop water use information can also be downloaded from the website.

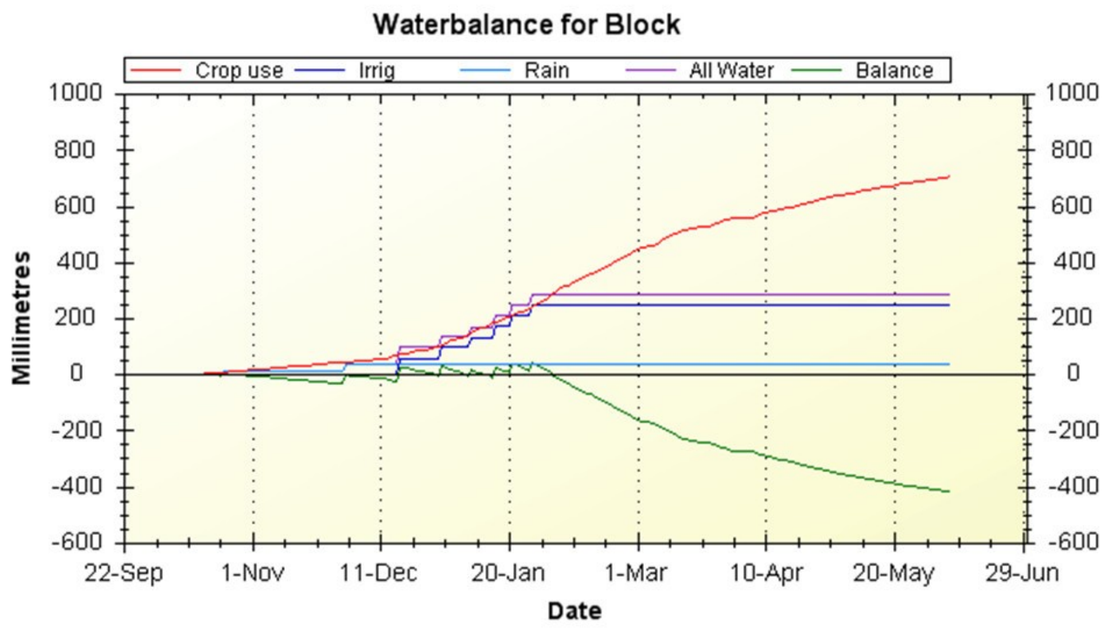


Figure 1: Water balance graph for an individual irrigation field

2) **Forecast daily crop water use.** IrriSat predicts crop water use for the coming seven days. This is very useful information to help with scheduling decisions.

3) **Examine spatial variability across a field or multiple fields over a region.** The crop coefficient (Kc) map (figure 2) shows the variability in the field, different stages of crop growth, impacts of waterlogging, insect pressures, nutrition etc.

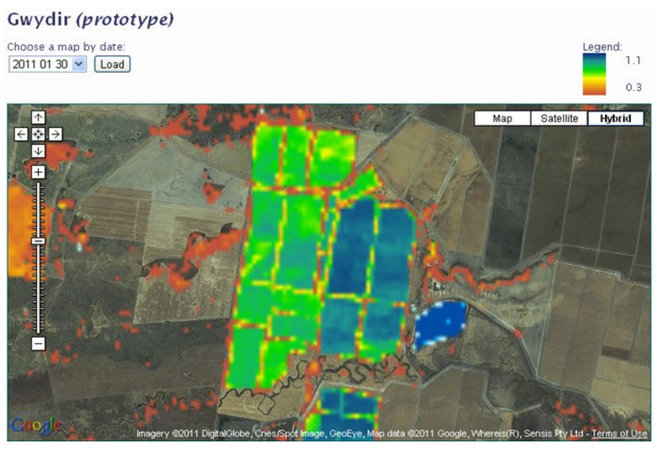


Figure 2: Variation in crop coefficient across fields and farm

4) **Benchmark Crop Water Use across a farm and region.** IrriSat can be used to determine Crop Water Index, which relates yield to actual crop water use. Figure 3 illustrates the difference in crop productivity between fields monitored during 2010-11 season. It includes a variety of irrigation systems and row configurations

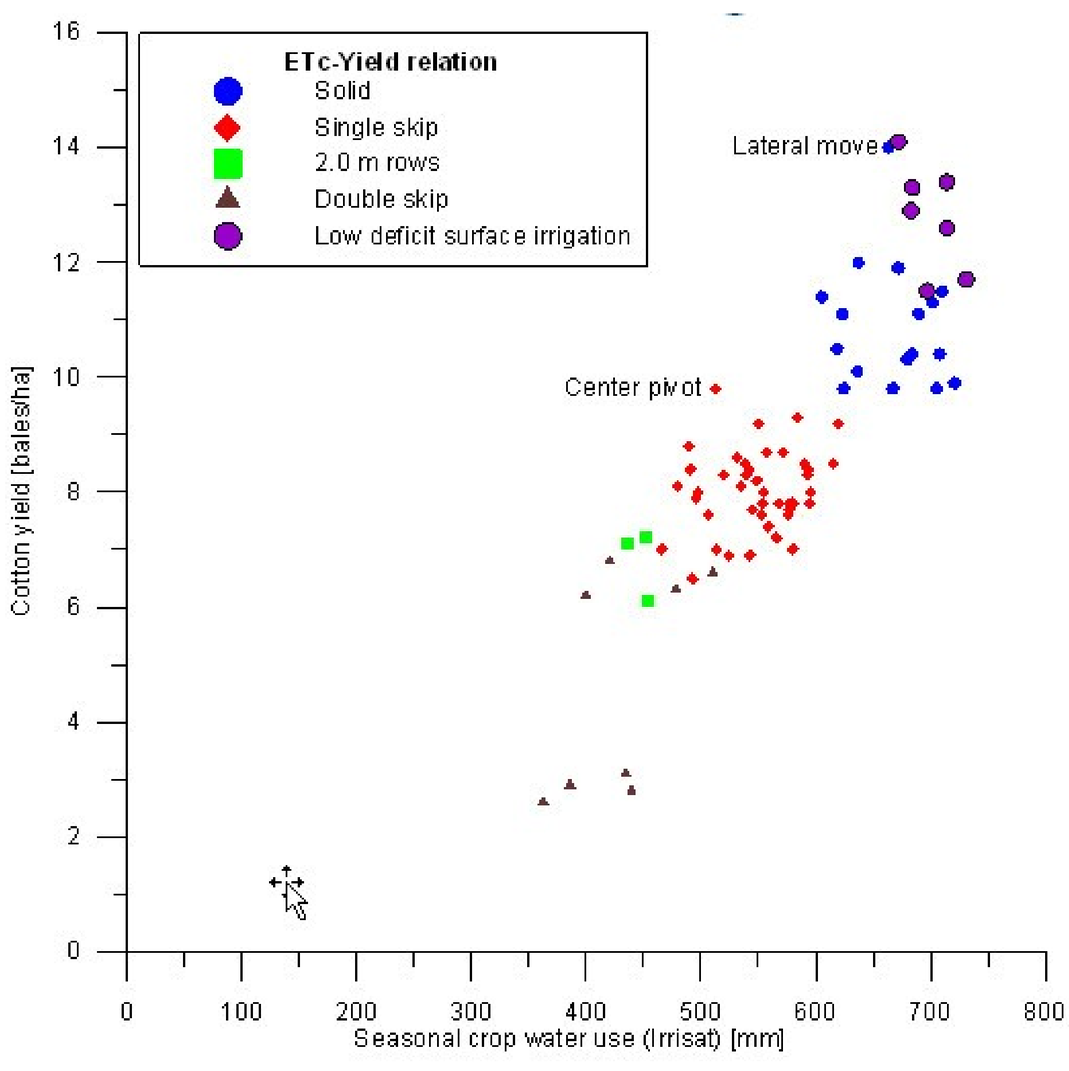


Figure 3: Cotton yield and seasonal crop water use for different row configurations and irrigation methods in the Gwydir catchment, NSW for the 2010-2011 season

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