

Optimizing irrigation scheduling with limited water using the iCrop decision support tool

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Optimizing irrigation scheduling with limited water under erratic weather is not trivial and requires a systems approach to understanding crop yield response to water. Therefore, producers and crop consultants need dynamic/interactive decision support tools that integrate the entire farming system including soil (S), weather (E, environment), genetics (G), and crop production practices (M, management; e.g., irrigation and fertility management practices). The focus of my presentation will be to demonstrate how a new and innovative model-driven decision support tool called iCrop can be used to optimize irrigation scheduling on a field-by-field basis in California. Behind iCrop is a calibrated and validated DSSAT-CSM model (Decision Support System for Agrotechnology Transfer Cropping Systems Model). iCrop is linked to CIMIS (California Irrigation Management Information System) and automatically accesses weather data. iCrop is also linked to soil databases allowing automated preparation of input files for the crop simulation model. I will demonstrate how iCrop could be used to tactfully optimize in-season irrigation scheduling decisions by minimizing number of irrigation applications in wet years to normal weather years and increasing number of irrigations applications in drought years while optimizing yields. iCrop can also be used to strategically optimize crop-water allocation. iCrop shows the potential of going from complex models to usable decision support tools and how they can be used to enhance resource use efficiency.