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Australian Government

Department of Agriculture, Water and the Environment

- Variable-rate irrigation (VRI) enables precise application of water when and where it is needed
- Determining irrigation requirements over VRI fields ulletis labour intensive when based on soil moisture which may not maximise yield
- Novel adaptive control technologies in software lacksquare'VARIwise' have been developed to automatically determine site-specific irrigation with reduced water use and improved yield

Project Approach

- Trials for cotton and pasture irrigation: ullet
 - Uniform
 - Variable-rate using underlying variability (VRI)
 - Variable-rate using soil water sensors (VRI-SW)
 - Variable-rate using Model Predictive Control (VRI-MPC)
- Compare irrigation water use index (IWUI)

Field variability and trial plots **VRI** hardware on irrigation machine

Results







VRI Model Predictive Control strategy

Weather (onsite, regional

Iteratively run D parameterised biophysical model Identify optimal ati irrigation Ο volume and day to maximise pply predicted yield

Transfer to irrigation machine Enable map

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- stations)
- Soil properties (online databases, cores)
 - Management (sowing date, crop stage from cameras)

Conclusion

Automated variable-rate irrigation system that targets maximised yield can improve water productivity for cotton and pasture crops over existing variable-rate irrigation strategies

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