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Abstract Template

Title of Paper	**Smart automated furrow irrigation of cotton**				
Theme	Irrigation system efficiency				
Keywords	Application efficiency, real-time optimisation, adaptive control				
Preferred Format	Professional ✓	Seminar	Workshop	Tour	Poster
Peer Review	Yes		No ✓		
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Abstract	Over a number of years the cotton industry (CRDC) has been supporting NCEA in the development and demonstration of a system for the 'smart' automation of furrow irrigation. The system currently undergoing final trials consists of three major component parts. The core component is automation hardware and software initially developed for bay irrigation and which is available commercially from Rubicon Water under its FarmConnect system. This provides: • precise, automated control of flows throughout the farm from the source (channel or ring tank) to the field, and • sequencing of the irrigation of fields and sets according to a pre-programmed schedule. This system uses a communications gateway located in central location on the farm and communicates with each radio node attached to the various sensors and control structures using ZigBee radio technology. The second component is specifically designed flow control infra-structure that gives precise, automated control of flows into the furrows. This consists of a Rubicon automated BayDrive and flap gate				

	installed in a standard box culvert, which delivers to the furrows via either: • small diameter (50 to 80mm) pipes inserted through the bank of a dedicated head-ditch. • a wide level rotabuck area. • flexible gated fluming. The final component is process for the real-time selection of time to cut-off for individual furrow sets to maximise application efficiency. Results from the demonstration trials have shown the system to work well without manual intervention. The evaluation of irrigation events controlled using the real-time optimisation show significant water savings over farmer managed irrigations. The future outcome of this work will be a commercial adaptive real-time furrow irrigation system able to compete with the pressurised alternative of centre pivot or lateral move machines on capital cost, water and labour savings but without the substantial energy costs.
Presenting Author(s)	Dr Jasim Uddin NCEA University of Southern Queensland, Toowoomba, Q, 4350 0746873966 mdjasimu@usq.edu.au Short biography Dr Jasim Uddin is a Postdoctoral Research Fellow working at the National Centre for Engineering in Agriculture, University of Southern Queensland, Toowoomba, Australia. He is currently working on modernization of surface irrigation system including the conceptualisation and development of a smart automation system.