IRRIGATION AUSTRALIA REGIONAL CONFERENCE 2015

PENRITH PANTHERS | WESTERN SYDNEY

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Abstract Template

Title of Paper	**Evaluation of the performance of automated bay irrigation of pasture and fodder**				
Theme	Irrigation system efficiency				
Keywords	Application efficiency, irrigation duration, soil moisture, waterlogging				
Preferred Format	Professional ✓	Seminar	Workshop	Tour	Poster
Peer Review	Yes		No ✓		
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Abstract	Automation of surface (bay) irrigation is a commercial reality with a number of farms in northern Victoria adopting it for whole or part of their irrigated area. Automation provides increased certainty in irrigation management. However in the absence of appropriate decision support, most of the key decisions, such as the scheduling of irrigations, flow rate and irrigation duration, still rely on the skill of the irrigator. Over the 2013/14 irrigation season the authors were engaged to evaluate the application efficiency of automated bay irrigation. The trial involved 9 farms x 1 bay x multiple irrigations. Flow rate into the bay was inferred from measurements at the supply point to the farm. Irrigation advance down the bay and flow depth were measured at three points down each bay. Soil moisture was monitored continuously at a central point in each trial bay. Data were collected automatically and stored on-line. The results demonstrated that application efficiencies in excess of 90% are achievable and are being achieved through correct				

	and precise management of the automated irrigation. Four of the farms evaluated in this study are already operating at that level. For another four of the farms strategies have been identified that will raise their efficiency close to or above 90%. On the remaining farm soil limitations preclude improvements in efficiency on the trial bay. As well a number of not unexpected lessons were learnt from the trial: 1. Excessively long irrigation durations are the principal cause of low efficiencies. 2. Soil moisture data is crucial for the optimal management of irrigated pasture. 3. Pastures are deeper rooted and soils more permeable than local mythology presumes. 4. Waterlogging is a major consequence of inefficient surface irrigated pasture. 5. Less frequent irrigations and shorter durations will reduce water logging and give greater pasture productivity.
Presenting Author(s)	Prof Rod Smith NCEA University of Southern Queensland, Toowoomba, Q, 4350 0438 158 710 smithrod@usq.edu.au Short biography Rod Smith is Professor of Irrigation Engineering at the National Centre for Engineering in Agriculture at the University of Southern Queensland in Toowoomba. His recent research has involved the conceptualisation and development of precision irrigation systems that employ automation, adaptive control and simulation as key components.