

# 'VARIwise' simulation of variable-rate irrigation of cotton via adaptive control: first results

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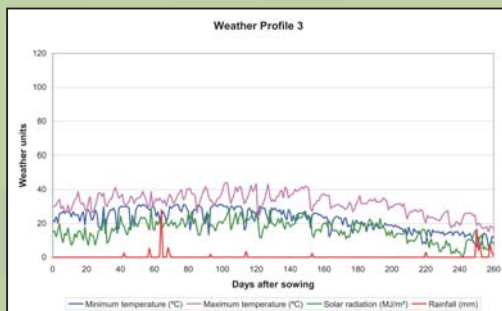
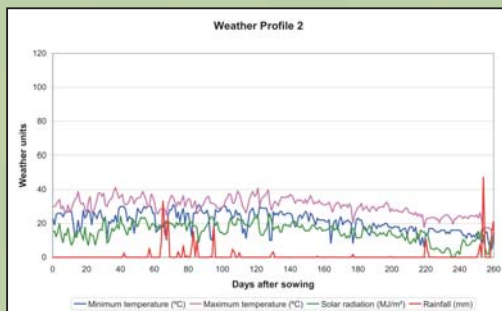
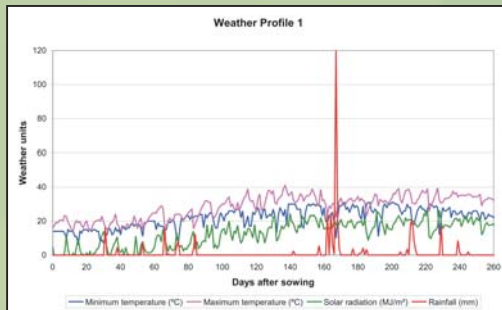
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## 1. Test weather profiles

The simulation framework 'VARIwise' has been used to evaluate three irrigation control strategies for cotton (McCarthy et al. 2009). This poster presents VARIwise simulation results for a self-optimising irrigation strategy with underlying soil variability imported from an EM38 map and using different weather profiles and cotton varieties.

## 1. Test weather profiles



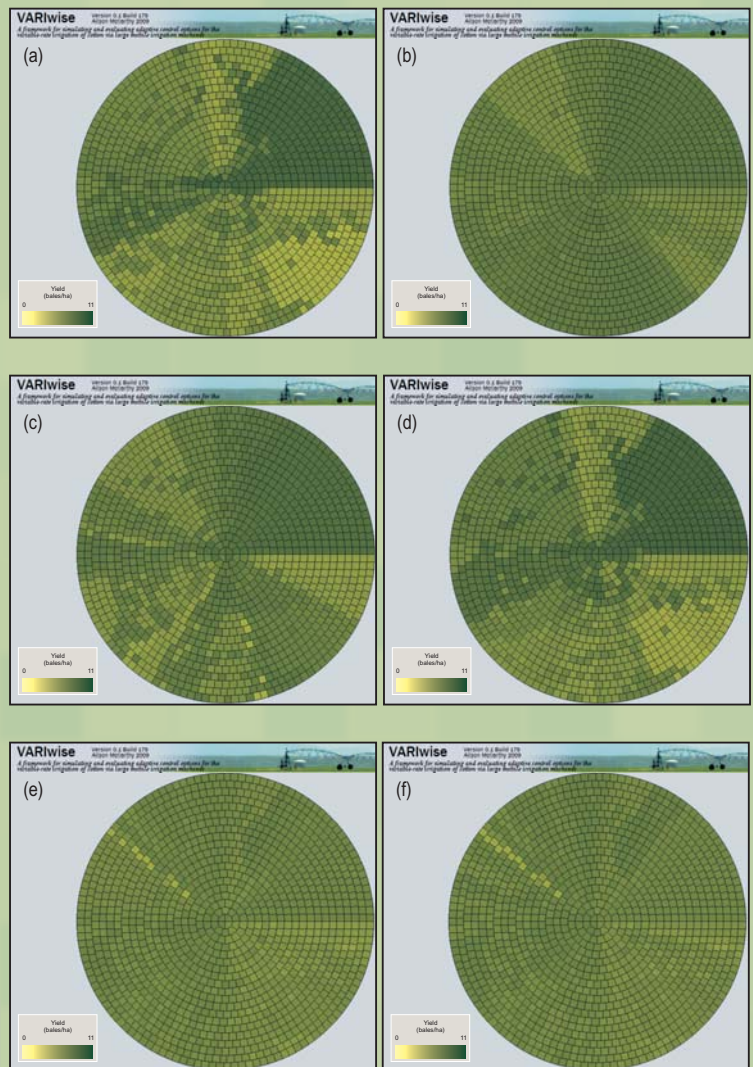
## 3. Comparisons

The yields from these simulations are higher than those irrigated via fixed and soil moisture deficit-triggered schedules under the same input conditions and when the weather and crop properties are varied.

There are significant differences in the simulated yield and water use. This demonstrates the potential value of VARIwise as a variable-rate irrigation simulation framework. Future work will entail further investigations of adaptive irrigation control strategies in VARIwise.

## 2. Performance of self-optimising irrigation strategy

Weather profile	Cotton variety	Irrigation applied (ML)	Yield (bales/ha)	Irrigation water use efficiency (bales/ML)	Figure
1	Sicot 73	116	9.3	1.0	(a)
	Sicot 71B	136	9.1	0.8	(b)
2	Sicot 73	130	9.2	0.9	(c)
	Sicot 71B	116	9.3	1.0	(d)
3	Sicot 73	162	8.4	0.7	(e)
	Sicot 71B	162	8.4	0.6	(f)



## Reference

McCarthy, A.C., Hancock, N.H. and Raine, S.R. (2009), *VARIwise: a general-purpose adaptive control simulation framework for spatially and temporally varied irrigation at sub-field scale*, Computers and Electronics in Agriculture (submitted).

## Acknowledgements

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