


DEPARTMENT OF PRIMARY INDUSTRIES

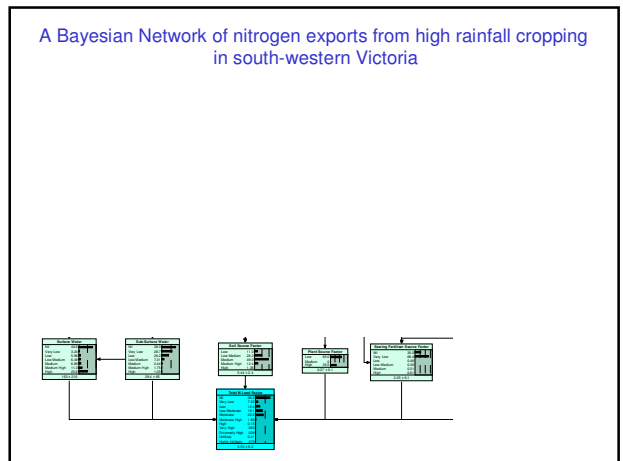
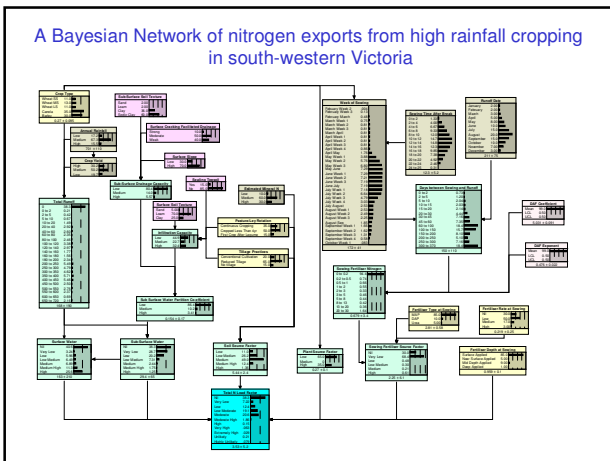
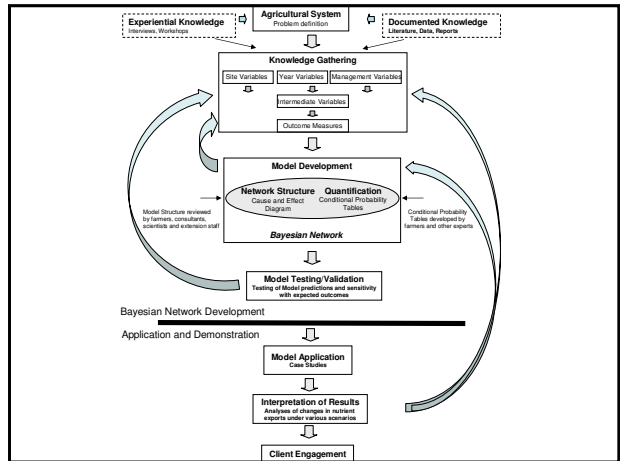
## Maximising gross margins lowers nitrogen exports from cropland in south-eastern Australia

Dave Nash  
Penny Rifkin  
Robert Harris  
Alan Blackburn  
Cam Nicholson  
Mark McDonald

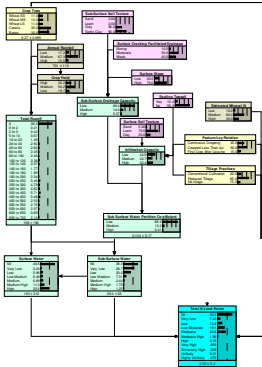



GRDC  
Grains Research & Development Corporation

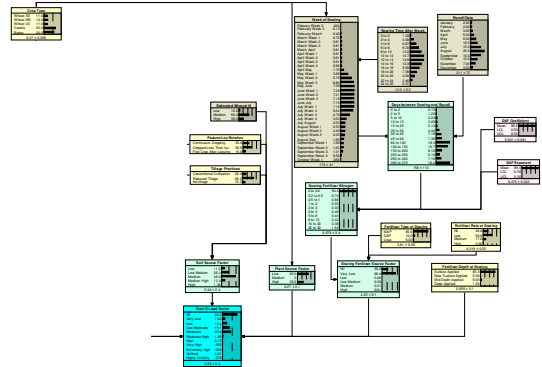
Victoria  
The Place To Be



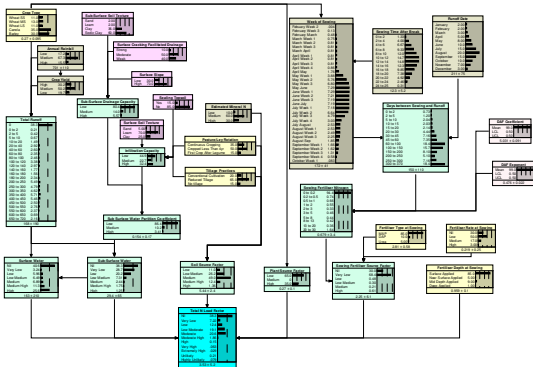
A Bayesian Network of nitrogen exports from high rainfall cropping in south-western Victoria



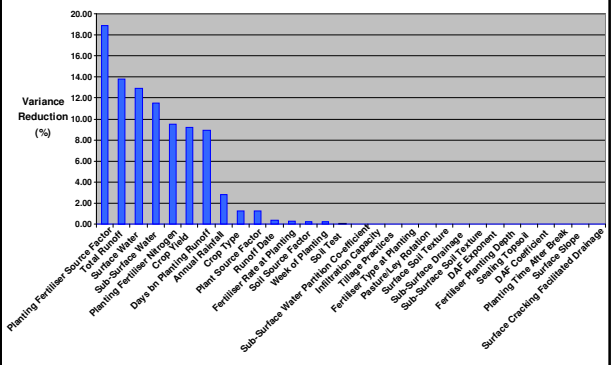
A Bayesian Network of nitrogen exports from high rainfall cropping in south-western Victoria



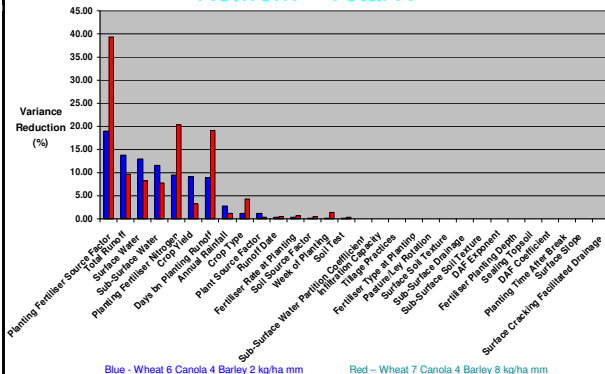
A Bayesian Network of nitrogen exports from high rainfall cropping in south-western Victoria



Sensitivity Analyses for Cropping Bayesian Network – Total N



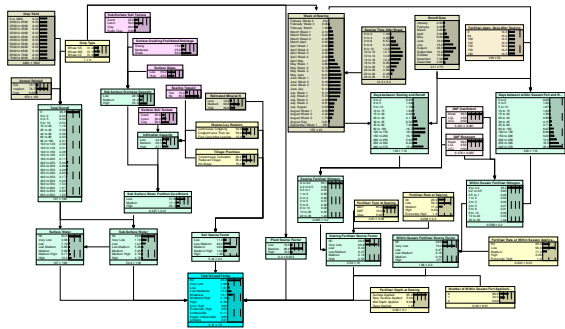
Sensitivity Analyses for Cropping Bayesian Network – Total N



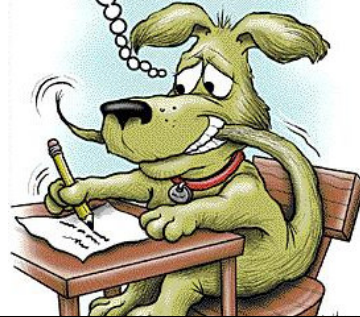
Looking for the bigger picture



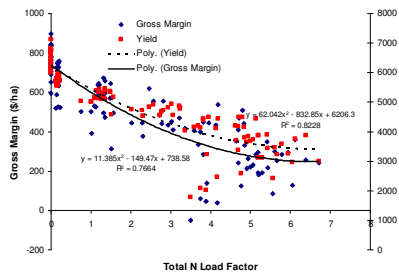
A Bayesian Network of nitrogen exports from high rainfall cropping in south-western Victoria



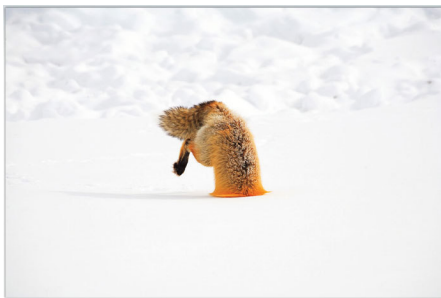
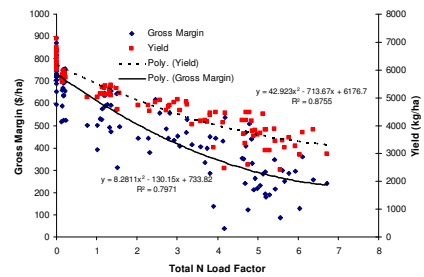
Dear Diary-  
You'll never guess what  
I FINALLY caught today...



Plots of estimated average annual yields and gross margins against estimated environmental impact (Total N Load Factor) from Dunkeld in south-western Victoria



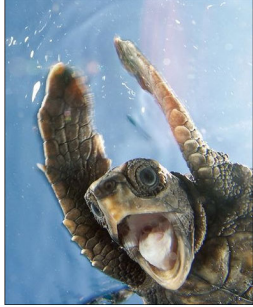
Plots of estimated average annual yields and gross margins against estimated environmental impact (Total N Load Factor) from Dunkeld in south-western Victoria (with data for the low initial soil N, 10 kg N/ha sowing only options excluded).



Developing specific fertiliser recommendations for different combinations of soil fertility and wheat varieties

Crop	Soil N	Total N (kg)	Gross Margin (\$/ha)	Environmental Impact (EI) as estimated by Range (tN)	Comments	Recommendation	Sustainability Rating (OMRE)
Silvator	Low	10	45	1.9	Low overall yield results in high environmental impact. Fine rain (CSIRED) application. Highest gross margins associated with better environmental outcome.	No recommendation	
		35	86-330	43.5-3		Base option (25 kg N/ha) at GS19	75
	Low	60	891-809	3.7-5.8	The environmental impact is lower for a single 50 kg N/ha application at GS11 due to the crop. The network handles the fertilizer case. That option has a similar gross margin (1.1 tN/ha) to the best sowing application of fertilizer (25 kg N/ha).	Two post-sowing applications of fertilizer (25 kg N/ha) OR Single post-sowing application of fertilizer (50 kg N/ha) at GS11	87 106
		110	325-328	1.1-4.9	High gross margin is associated with the lowest environmental impact.	An additional 50 kg N/ha at sowing and an additional application (50 kg N/ha) at GS11	470
	Low	526	1.1		<b>OVERALL RECOMMENDATION</b> The recommendation reflects the reduction in the volume of runoff (due to plant water use) that accompanies a productive crop.	An additional 50 kg N/ha at sowing and an additional application (50 kg N/ha) at GS11	478

**Finished, you beauty!**



**Striking a balance!**