Effect of canola genotype choice and agronomic management – Northern NSW 2012 & 2013

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Introduction

- 24 G * M experiments conducted in Northern NSW 2012 & 2013 as part of GRDC supported VSAP project
  - Nitrogen rate and timing
  - Phosphorus rate
  - Seeding depth
  - Plant density
- Aimed to determine management of hybrids v OP varieties
- Experiments split with even number of OP and Hybrid
  - Balanced with TT between groups
  - Commercially popular genotypes

Frequency of significance of G, M and G * M in 24 trials

	Frequency F prob. <0.05		
Trial Description	**G**	**M**	**G*M**
Genotype * Seeding Depth	10/10	8/10	6/10
Genotype * Nitrogen	5/5	5/5	2/5
Genotype * Density	5/5	5/5	1/5
Genotype * Phosphorus	4/4	2/4	0/4
Overall	***24/24***	***20/24***	***9/24***

Genotype * nitrogen experiments – treatment variance contribution

				Factor SS as % total treatment SS		
Experiment	**Season**	**Site**	**Entries**	**G**	**M**	**G*M**
Genotype * Nitrogen	2012	Spicers Ck	2 Hybrid, 2 OP	46	52	n.s.
		Gilgandra		69	12	19
		Nyngan	2 Hybrid, 2 OP	81	18	n.s.
	2013	Trangie	2 Hybrid, 2 OP	88	6	6
		Nyngan		79	11	n.s.

SS = sum of squares

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Genotype * plant density experiments – treatment variance contribution

				Factor SS as % total treatment SS		
Experiment	**Season**	**Site**	**Entries**	**G**	**M**	**G*M**
Genotype * plant density	2012	Nyngan	2 Hybrid, 2 OP	90	8	n.s.
	2013	Trangie		42	58	n.s.
		Nyngan		64	28	n.s.
		Caroona		40	50	10
		Garah		60	22	n.s.

SS = sum of squares

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Genotype * phosphorus rate experiments

				Factor SS as % total treatment SS		
Experiment	**Season**	**Site**	**Entries**	**G**	**M**	**G*M**
Genotype * Phosphorus	2012	Coonamble	2 Hybrid, 2 OP	57	33	n.s.
		Trangie		90	n.s.	n.s.
	2013	Nyngan	1 Hybrid, 1 OP	82	16	n.s.
		Trangie		93	n.s.	n.s.

SS = sum of squares

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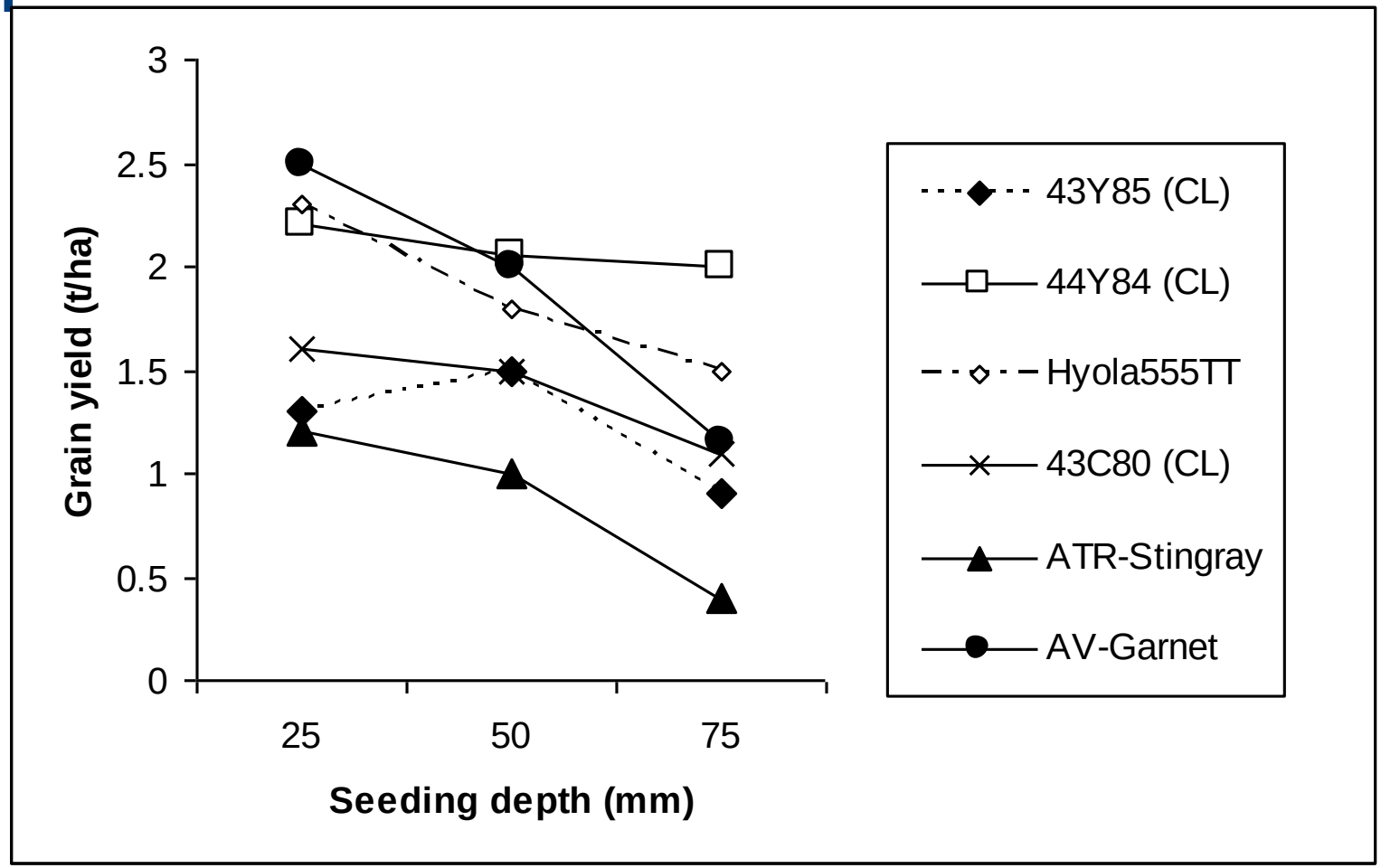
Genotype * seeding depth experiments

				Factor SS as % total treatment SS		
Experiment	**Season**	**Site**	**Entries**	**G**	**M**	**G*M**
Genotype * Seeding Depth	2012	Coonamble	3 Hybrid, 3 OP	78	14	n.s.
		Nyngan		94	4	n.s.
		Trangie		89	n.s.	n.s.
		Moree		41	32	14
		Blackville		37	n.s.	18
	2013	Nyngan		28	61	11
		Trangie		66	31	3
		Caroona		36	44	16
		Garah		58	22	21
		Mullaley		33	57	n.s.

SS = sum of squares

Nyngan genotype * seeding depth experiment - 2014



l.s.d. ($p<0.05$) = 0.42 t/ha

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OP TT genotype (left) hybrid Clearfield (right) at 75 mm seeding depth

Average grain yield of hybrid and OP genotypes in 24 G * M experiments

	Average yield (t/ha)	
Trial Description	**Hybrid**	**OP**
Genotype * Seeding Depth	1.4	1.1
Genotype * Nitrogen	1.9	1.5
Genotype * Density	1.3	0.9
Genotype * Phosphorus	1.5	1.1
Overall	***1.6***	***1.2***

Conclusion

- Genotype choice had the greatest bearing on grain yield
  - Assume a greater effect than most other crops?
- Agronomic management factors were secondary to genotype choice
- Only evidence of consistent G * M interactions was with seeding depth experiments
- Management of hybrid genotypes similar to management of OP genotypes for N, P and density