9. GENERAL AGRONOMY AND SYSTEMS TRIALS

9.1 Seeder Trial 1999

Researchers

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Aim

Our aim was to drill 6 kg/ha canola seed, plus 110 kg/ha MAP and 100 kg/ha urea. Where possible this was done in one pass, otherwise the urea was pre-drilled before sowing by each machine . The DBS Auseeder mixed the MAP and urea and sowed in one pass.

Background

On 1.7.99, 12 different seeders were used to direct drill canola. The area had been under pasture for at least three years, was spraytopped in spring of 1998, and sprayed with 1.2 l/ha glyphosate in Feb / March after heavy early rains. 2 l/ha gramoxone was applied on 25/6. The soil surface was bare, and the tilth and soil moisture was close to ideal. 450 ml Dual and 150 ml fastac/ha was applied PSPE.

Plot size was 30m wide (except for plot 8 which is 25 m wide and plot 7 which is 35 m) by about 150 m in length, with the long side running north south at right angles to Norbank road.

Plot 1 (West side) - P. Brains **Napier** drill. No urea was pre-drilled, only MAP and seed. The ripping tynes on this machine run deeper than the seeding tynes, so we used this plot to test the effect of depth of sowing. There are six runs with depth of sowing increasing west to east in half inch increments starting with seed dropped on the soil surface.

Plot 2 - Sown with an **International** A6-1 20 run combine set on 7" row spacing and fitted with primary sales coil tynes and boot assembly with superseeder points. The point/ boot assembly gives the ability to disrupt below the seeding depth. Urea was pre-drilled, and then the canola / MAP sown. Fitted with conventional trailing harrows. The machine was supplied by Lachlan McDougall of Ballycarrick Engineering who carried out the conversion.

Plot 3 - Sown by Robert Fraser's machine (see plot 11) only using impact treated MAP, width 8.6 m, comparison with plot 11.

Plot 4 - **Shearer** 24 run combine fitted with Janke tynes and spear points. Six runs were set up on parallelogram mounts for sowing beds (this machine was used to seed the beds at the east end of the trial). Supplied by George Burdett. Rolling packers fitted instead of harrows, and air blast fitted to seed tubes.

Plot 5 - Bill and Luke Fay's **Horward Bagshaw** airseeder with a two box simplicity cart, and K-line rolling harrows, points were superseeders. Tyne spacing 8 3/4 inch, width 8.4 m.

Plot 6 - A. Geddes and son's **Flexicoil** 820 machine, tynes at 7.5 inch. Tyne breakout 350 ft lb, and fitted with Keech points and finger harrows. Width 9.45 m.

Plot 7 - Emmett Motors of Horsham supplied a 38 foot **Morris** Concept 2000 airseeder, fitted with variable rate technology 7180 aircart. Tynes were on four ranks and 9 inch spacing, fitted with eagle beak points. Machine can deep band while seeding. Finger harrows. Width 11.6 m Plot width is 35 m.

Plot 8 - A. Smart supplied a **DBS Auseeder**. This machine features a coulter in front of a tyne with the seeding equipment fitted on a parallelogram system with a presswheel. Tyne spacing was 10 or 12 inch. Fertiliser is placed separate to seed, and in this case a urea/ MAP blend was placed below the seed. Note this plot is only 25 m wide.

Plot 9 - Max Davis supplied a **Ryan** 3 bin airseeder, tynes are on a 7" spacing and points are Primary tillage deep banding points. Fertiliser can be placed below the seed with this machine. Width 7.1 m.

Plot 10 - James Geddes has come up with a novel system to achieve deep placement of fertiliser when sowing by hitching two **Napier** 20 run combines in line. The front combine places urea (and MAP if wanted) using 4" points on Ryan tynes, and the rear one sows seed and MAP using 2" knockon points on napier tynes. A heavy mesh harrow smooths the soil in-between the combines. The tynes are set up in line, on a 7" spacing.

Plot 11 - An extensively **modified airseeder** owned by Robert Fraser. Based on an Alfarm bar (N530- 5 row), fitted with two carts, a Ryan air box, and a Shearer Airbox. The machine was fitted with KEE depth control sensors, and trails a home made prickle chain harrow. Tynes are arranged on a 7" row spacing (45 tynes), with a home made double shoot boot fitted. Urea is delivered to the front tube, and seed and fertiliser to the rear tube, with the aim of getting vertical separation of seed and fertiliser.
In last years trial this machine did not perform well, thought to be due to poor point design. These were changed from No 7 Primary Sales in 1998 to Superseeder in 1999. Width 8.6 m.

Plot 12 - David Wills supplied a **Janke** 6 row bar, 25 ft wide, fitted with Janke tynes. The front two bars were used to band fertiliser on 12" spacings, while the back 4 bars were used to sow on 6" spacings. The end result was deep banding in between every second sowing tyne. The front tynes were set deeper than the seeding tynes. Box was a 3 bin double shoot type, Murray finger harrows fitted. Width 7.6 m.

Plot 13 - James Davidson supplied a 3 bin **Gason** Cultimaster airseeder. Tynes are on a 7" spacing, and are 280 ft lb breakout, fitted with Keech points. Fertiliser can be placed below the seed. Width 9.1 m.

Plot 14 - Phillip Brains **Napier** CT 6000 28 run combine. There are 6 ranks of tynes, with front ripping tynes offset 2" sideways and below the seeding line. Air blast modification fitted to seed tubes. Ripping tynes are gason, seeding tynes Jenke. Every point known to man is fitted to this machine in a trial of their wearing ability.

Bedforming - An area on the east of the trial was scarified and formed into beds using a Watson engineering 3 row bed former, featuring plastic listers and levelling boards and crumble roller. Bed size is adjustable from 1.65 m to 2 m.

NOTES ON PROBLEMS

Plot 7 Morris airseeder - everything ran quickly, and urea ran out halfway on the third run, and MAP shortly afterwards. The third run is on the east side of the plot heading south.

Plot 11 Robert Fraser - pto was not engaged for the first run on the east side and half the next run next to the road. An attempt was made to resow this, but the lid of the airseeder box was not down tight and it again failed. Robert suspects sabotage! Directed to try again in plot 3!

Plot 14 Philip Brain - the first four runs on the east side had the MAP running at about 200 kg/ha, adjusted back to 100 kg/ha in the last two runs.

Plot 10 James Geddes - the restrictors were on the wrong side so that the canola sowing rate was only about 2 kg/ha.

Plot 4 Shearer- an error was made weighing in the canola, so that we actually weighed out more than we put in, seeding rate was assumed to be 5.2 kg/ha.

CALCULATED RATES OF UREA, MAP AND CANOLA SEED USED.

Plot		2	3	4	5	6	7	8	9	10	11	12	13	14
Width	m	30	25.8	30	25.2	28.4	35	25	28.4	30	25.8	30.4	27.3	30
Urea	Kg/Ha	96	142	55	69	96	170	96	68	78	142	99	110	111
MAP	Kg/Ha	156	103	90	50	129	152	96	117	96	103	134	139	*
Can	Kg/Ha	7	6	6	8	7	19	8	4	2	6	9	6	6

Can = Calcium Ammonium Nitrate

ASSESSMENT OF PLOTS ON 14.09.99

Plot		Plant/ m2	Seed rate Kg/Ha	Plants/ Kg seed sown	Rating	Passes	Comments
1	Sown at 0"	44	6	7	4	1	Big difference compared to plot 14 also sown with this machine.
	Sown at 0.5"		6		4	1	Plot 14 had urea pre-drilled before
	Sown at 1"	61	6	10	6	1	sowing while this was direct
	Sown at 1.5"		6		4	1	drilled.
	Sown at 2"		6		1	1	Sowing at about 1" looked to be
	Sown at 2.5"	18	6	3	1	1	Best
2	Inter A6	52	7	8	6	2	Seed mixed with super. Improved as it went. Strippy at first.
	R. Fraser	112	6	18	7	1	
4	Shearer	91	5	17	6	2	Missing rows
5	Horwood B.	77	8	10	7	2	
6	Flexicoil	79	7	11	8	2	
7	Morris	177	19	9	7	1	Hard to evaluate due to high seeding rate. East strip missing N.
8	Auseeder	152	8	18	10	2	More vigour, even, taller.
9	Ryan	63	4	17	7	1	Bit uneven in spots.
10	Napier (dual)	45	2	20	6	1	Bit sparse due to low seeding rates
11	R. Fraser	119	6	20	7	1	Mobile phones and airseeders??
12	Janke	73	9	8	7	1	Bit of uneveness
13	Gason	99	6	16	7	1	
14	Napier	97	6	17	9	2	Good even job.*West half 2x MAP rate
	Raised Beds	59	5	12	5		Strips missing. Better taproots – same as area of paddock ripped.

HARVEST RESULTS

Harvested 21.12.99 using R.Fraser's header. Samples tested at Westmere silo 21.12.99

Plot	Name	Machine	Yield (t/ha)	Plant Density (plants/m2)	Sow Rate kg/ha	Test Wt (Kg/Hl)	Screenings %	Oil %	Moisture %
1a	P. Brain	Napier	2.44	44	6	68	2.3	43.6	7.1
1b			2.38	61	6	70	1.3	43.8	6.8
1c			2.47	61	6	68	1.3	43.1	7.4
1d			1.94	18	6	67	3.6	40.2	9.3
2	L. McDougall	Inter A6-120	2.63	52	7	67	1.7	43.6	6.9
3	R. Fraser		2.77	112	6	67	1.8	42.7	7.2
4	G. Burdett	Shearer 24	2.55	91	5	68	1.4	43.7	6.9
5	B & L Fay	Horward Bagshaw	2.36	77	8	69	1.4	44.2	6.6
6	A Geddes	Flexicoil	2.71	79	7	69	1.5	43.7	6.9
7	Emmett Motors	Morris Concept 2000	2.45	177	19	66	1.6	42.7	6.8
8	A Smart	DBS Aus-seeder	2.43	152	8	67	1.2	43.7	6.6
9	M Davis	Ryan	2.63	63	4	67	1.4	44.5	6.6
10	J Geddes	Napier	2.70	45	2	64	1.5	43.3	7.1
11	R Fraser		2.50	119	6	65	1.7	43.4	6.7
12	D Wills	Janke	2.81	73	9	63	1.7	44.1	6.6
13	J Davidson	Gason	2.84	99	6	66	1.1	44.0	6.5
14 West - P Brain		Napier	2.73	97	6	65	1.0	43.2	6.5
14 East			2.61	97	6	66	1.1	43.7	6.3
Beds West*			1.99	59	5	64	*4.8	45.4	6.4
Beds East**			2.71	59	5	64	1.4	46.3	6.0
Ripped Area - R Fraser			2.77			65	1.4	44.3	6.4

Note: * The Beds/West windrow was difficult to harvest. There was a significant quantity of gravel in the screenings

** The Beds/East is a border plot

STREATHAM SEEDER TRIAL 1999 - YIELD RESULTS (SORTED IN YIELD ORDER)

Plot	Name	Machine	Yield (t/ha)	Plant Density (plants/m2)	Sow Rate (kg/ha)
13	J Davidson	Gason	2.84	99	6
12	D Wills	Janke	2.81	73	9
3	R. Fraser		2.77	112	6
Cult Area	R Fraser		2.77		
14W	P Brain	Napier	2.73	97	6
6	A Geddes	Flexicoil	2.71	79	7
Beds E			2.71	59	5
10	J Geddes	Napier	2.70	45	2
2	L. McDougall	Inter A6-120	2.63	52	7
9	M Davis	Ryan	2.63	63	4
14E			2.61	97	6
4	G. Burdett	Shearer 24	2.55	91	5
11	R Fraser		2.50	119	6
1c			2.47	61	6
7	Emmett Motors	Morris Concept 2000	2.45	177	19
1a	P. Brain	Napier	2.44	44	6
8	A Smart	DBS Aus-seeder	2.43	152	8
1b			2.38	61	6
5	B & L Fay	Horward Bagshaw	2.36	77	8
Beds W			1.99	59	5
1d			1.94	18	6