Liebe Group Diamond Sponsors:

LIEBE GROUP
SPRING FIELD DAY
Thursday 8th September 2005

Liebe Group presents the 2005 Spring Field Day with support from the following organisations:

☆Department of Agriculture☆ CSBP☆ Elders ☆Syngenta ☆Agritech

☆ Hardi Australia☆ Jolly and Sons ☆Boekeman Machinery☆ Cunninghams

☆ Ian Blaxell Spraying ☆Landmark ☆WANTFA ☆AWB☆ Grain Pool ☆WAHRI

☆Hyde Family☆

Disclaimer: All information in this booklet is believed to be true and correct. No responsibility is taken for incorrect information printed.

WELCOME

I would like to welcome you all to our Spring Field Day. The trials have come up well in what has been an interesting season for rainfall. We had an exceptional start followed by an extended dry spell that has certainly dropped some of the yield potential that was set up early. A good August has again given us an opportunity to recover some of those set backs from the dry spell.

Thank you to CSBP, Agritech, Department of Agriculture, Elders, Syngenta, Hardi Australia, Jolly and Sons, Boekeman Machinery, Cunninghams, Ian Blaxell Spraying and Landmark for their trial support with the Liebe Group this season. We value your partnership in this day immensely. We would also like to extend our appreciation to the presenters that will be speaking today. These include our special guest speaker Dr Ric Charlesworth, Rolf Derpsch (courtesy of WANTFA), Peter Stone (AWB), Graham Barrett (courtesy of Syngenta), Tim Wiley and Peter Tozer (DAWA) and Professor Stephen Powles (WAHRI). The Liebe Group also extends thanks to CBH/GrainPool for the use of their facilities and the barley end product demonstration.

I would like to take this opportunity to thank the Hyde family for making this site available and for their tremendous assistance in helping make these trials a success.

Today we have a programme that is bursting with quality. We have been blessed with many opportunities that we felt would have relevance to you as farmers. The agenda is very comprehensive and I urge you to take time to try and plan your day to maximise benefits to your business. Please take time out in our rest area at any time if the brain needs a break!

We are in the process of trying to implement a longer time line with our planning for the Spring Field Day. We hope to start selecting our sites three to four years in advance. This will enable us to ensure good weed hygiene at the site for variety trials. It will also enable us to plan different rotation, nutrition and disease based trials. We are excited about this and believe we will enhance our already great relationship with our research partners. We welcome members who would like to host the Spring Field Day to register your interest with the office.

Please do not hesitate to catch up with myself or any of the committee during the day if you want to have a chat about anything. We always welcome your feedback.

I hope you all enjoy the day.

Regards,

Stuart McAlpine
R&D Chairperson
Liebe Group

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MTS PADDOCK INFORMATION

Farmer: Ian Hyde, McLevie

Hyde Paddock Details:

Soil test results from 2005

Light

Nitrogen Nitrate	Nitrogen Ammonium	P Ppm	K Ppm	S mg/kg	Organic Carbon %	Reactive Iron Status	Salt E.C. dS/m	pH (CaCl2)
11	12	15	174	7.5	1.12	291	0.074	5.40
13	4	17	114	5.3	0.74	338	0.061	4.40

Soil test results from 2005

Heavy

Nitrogen Nitrate	Nitrogen Ammonium	P Ppm	K Ppm	S mg/kg	Organic Carbon %	Reactive Iron Status	Salt E.C. dS/m	pH (CaCl2)
5	5	23	649	7.7	1.21	372	0.077	6.10
3	20	19	545	5.5	1.10	369	0.062	5.70

Rotation

YEAR	**Crop**	**Yield**	**Other comments.**
2004	Pasture		
2003	Wheat	2.71 t/ha	Calingiri
2002	Pasture		
2001	Lupins	0.69 t/ha	Kayla
2001	Peas	0.59 t/ha	Dundale

2005 Rainfall

January	**February**	**March**	**April**	**May**	**June**	**July**	**August**
3	**2**	**27**	**14**	**69**	**68**	**18.5**	**50.4**

Choose your own Field Day

LIEBE GROUP SPRING FIELD DAY AGENDA

9.00	9.25	Registration				
9.25	9.30	Welcome – Keith Carter, Liebe Group President				
9.30	9.35	Opening – Peter Metcalfe, Regional Manager Department of Agriculture				
9.35	9.40	Farm Information – Ian Hyde, Main Trial Site Host Farmer				
9.40	9.45	Housekeeping – Brianna Peake, Liebe Group Executive Officer				
		FIELD PRESENTATIONS				**MARQUEE PRESENTATIONS**
10.00	10.30	Wheat Variety (1/5) **12**	Disease Resistance and Dividend (1/2) **4 & 13** *	Practice for Profit (1/3) **6**	Disease Management (1/3) **1**	No till (1/2) **16**
10.35	11.05	Lupin (1/3) **10 & 11**		Wheat Variety (2/5) **12**	Nitrogen Application (1/3) **9**	Livestock (1/2) **17**
11.10	11.40	Disease Resistance and Dividend (2/2) **4 & 13** *	Knockdown Application (1/3) **5**	Disease Management (2/3) **1**	Practice for Profit (2/3) **6**	AWB (1/1) **15**
11.45	12.15		Wheat Variety (3/5) **12**	Pasture (1/3) **2 & 3**	Pulse (1/3) **7 & 8**	Livestock (2/2) **17**
12.20	12.50	LUNCH				
12.50	1.35	Special Guest Speaker – Ric Charlesworth				
1.45	2.15	Disease Management (3/3) **1**	Practice for Profit (3/3) **6**	Lupin (2/3) **10 & 11**	Pulse (2/3) **7 & 8**	No till (2/2) **16**
2.20	2.50	Pasture (2/3) **2 & 3**	Knockdown Application (2/3) **5**	Wheat Variety (4/5) **12**	Nitrogen Application (3/3) **9**	Liebe Projects (1/1) **14**
2.55	3.15	AFTERNOON TEA				
3.20	3.45	Herbicide Resistance – Prof. Steve Powles				
3.55	4.25	Pasture (3/3) **2 & 3**	Knockdown Application (3/3) **5**	Lupin (3/3) **10 & 11**	Machinery viewing (1/2) **18**	Aerial (1/2) **19**
4.30	5.00	Nitrogen Application (3/3) **9**	Pulse (3/3) **7 & 8**	Wheat Variety (5/5) **12**	Machinery viewing (2/2) **18**	Aerial (2/2) **19**
5.10	5.15	Introduction of Ultraviolet fluorescent dye night session – Simon Kerin, Syngenta				
5.15	5.30	Final Closing Announcements – Ben Parkin, Liebe Group				
		Grain Pool – barley end products tasting				
		BBQ & drinks				
6.30	7.15	Viewing of the dye night				

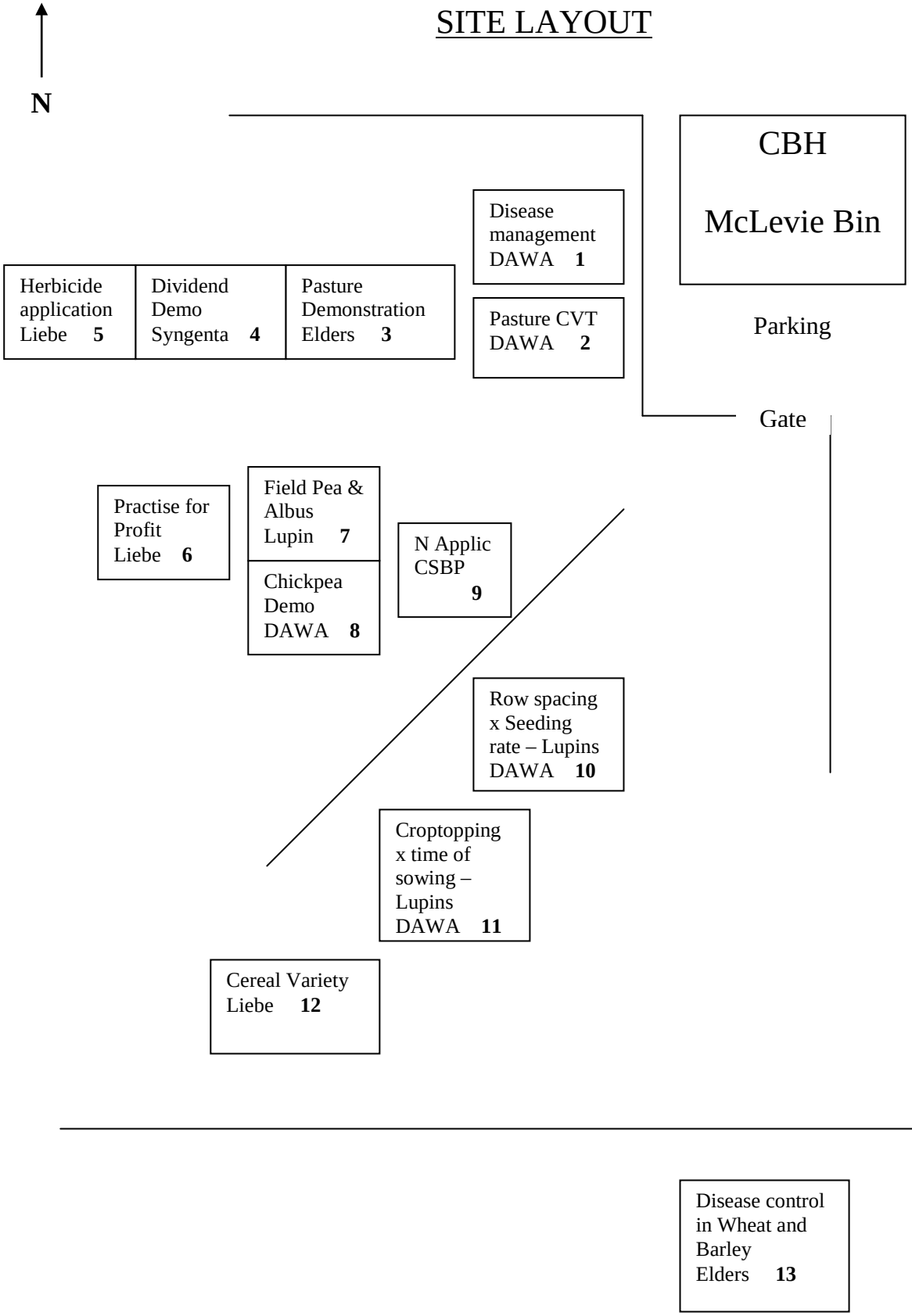
Please note: (Number in Brackets) indicates number of replications.
Bold number indicates Trial/Presentation number

* = Meet at Marquee

SPRING FIELD DAY PRESENTATIONS

PRESENTER	TOPIC DESCRIPTION	NOTES
Trials		
Brad Westphal, Elders	Pasture Demonstration	Combined presentations. Replicated 3. **Trial No. 2 & 3** More info pg 10-12
Angelo Loi, Dept of Ag	Legume Pasture CVT on heavy soil	
Ciara Beard, Dept of Ag	Early and late season wheat disease management	Replicated 2. **Trial No. 1** More info pg 8
Simon Kerin, Syngenta	Effectiveness of Dividend	Combined presentations. Replicated 2. **Trial No. 4 & 13** More info pg 13, 26
Dave Scholz, Elders	Disease control in wheat and barley	
Trent Kensett-Smith, Landmark	Nozzle types and water rates for effective knockdown	Replicated 3. **Trial no. 5** More info pg 30
Darren Chitty and Peter Burgess, Agritech	Practice for profit trial, including long term results	Replicated 3. **Trial No. 6** More info pg 14
Wayne Parker, Dept of Ag	Effect of row width on chickpea yield	Replicated 2. **Trial No. 7 & 8** More info pg 16, 17
Wayne Parker, Dept of Ag	Field pea vs. Albus lupin performance	
Erin Cahill, CSBP	Comparison of N application methods on wheat yield	Replicated 3. **Trial No. 9** More info pg 18
Bob French, Dept of Ag	Effect of seeding rate and row spacing on lupin yield	Combined presentations. Replicated 3. **Trial No. 10 & 11** More info pg 21, 22
Greg Shea, Dept of Ag	Making the choice between delayed sowing and croptopping in lupins for ryegrass control	
Christine Zaicou, Dept of Ag and Peter Burgess, Agritech	Wheat variety trial	In the morning Christine presenting, in the afternoon Peter Burgess presenting. Replicated 5. **Trial no. 12** More info pg 24
Other presentations		
Brianna Peake, Liebe	Climate Risk Management	Combined presentation and also discuss other Liebe projects & events. Replicated 2. **No. 14** More info pg 32, 33
Ben Parkin, Liebe	Soil Health project results	
Peter Stone, AWB Melbourne	Crop Shaping WA	Replicated 1. **No. 15**
Rolf Derpsch, Paraguay	No till in WA	Replicated 2. **No. 16** More info pg 28
Tim Wiley and Peter Tozer, Dept of Ag	Livestock breed comparison and economics	Replicated 2. **No. 17**
David Bromillo, Hardi and Case Specialists	Viewing of Hardi and Case Spraying Technologies	Informal session. Replicated 1. **No. 18**
Simon Kerin, Syngenta, Graham Barrett QLD and Ross Blaxell	Getting the best out of aerial spraying	Replicated 1. **No. 19** More info pg 29

SITE LAYOUT


N
CBH
McLevie Bin
Parking
Gate
Disease management DAWA 1
Pasture CVT DAWA 2
Herbicide application Liebe 5
Dividend Demo Syngenta 4
Pasture Demonstration Elders 3
Practise for Profit Liebe 6
Field Pea & Albus Lupin 7
Chickpea Demo DAWA 8
N Applic CSBP 9
Row spacing x Seeding rate – Lupins DAWA 10
Croptopping x time of sowing – Lupins DAWA 11
Cereal Variety Liebe 12
Disease control in Wheat and Barley Elders 13

EARLY AND LATE SEASON MANAGEMENT OF WHEAT STRIPE RUST (AND OTHER DISEASES)

AIM: To compare the benefit of different early foliar disease control strategies with conventional systems of foliar spray later in the season.

COMPANY: Department of Agriculture Western Australia
RESEARCH OFFICER: Ciara Beard, Geraldton

BACKGROUND: Stripe rust is a serious threat to wheat growers in WA since its discovery in the state in 2002. With few resistant varieties and no previous research on this particular strain of stripe rust it is important that local information is gathered on the effectiveness of different control measures. Until stripe rust resistant wheat varieties are available to grain growers there is an opportunity to manage the disease by use of fungicides. As the stripe rust fungus prefers cool temperatures and wet conditions, seed treatments (fungicide in furrow and seed dressings) may provide good control of this disease early in the season, followed by foliar fungicide application later in the season. In addition to stripe rust, other diseases may be controlled by seed treatments, so these trials will be monitored for leaf spot diseases (yellow spot, and septoria nodorum blotch) in addition to rust.

TRIAL DETAILS:

Date	Job	Rate/Ha	Application
14-May-05	Sown	kg	Barley Buffer Plot
14-May-05	Sown	kg	Wheat banded with knifepoints and fertiliser treatments hard set soil surface
14-May-05	Sprayed	1.5 L	Triflur X
14-May-05	Sprayed	2.4 L	Sprayseed 250
27-May-05	Sprayed	100 mL	Le Mat
28-Jun-05	Sprayed	54 kg	Urea
15-Jul-05	Sprayed	250 mL	Lontrel
15-Jul-05	Sprayed	1 L	Jaguar

TREATMENTS AND PLOT NUMBER

Rep	Plot	Factor 1	Factor 2
1	1	5. (Full control) Jockey+Triad Z31 & Z55	1. Untreated (Nil)
1	2	4. Triad 125EC at 1.0 L at Z31	2. Tilt 250EC @ 250 mL/ha at Z39
1	3	1. Untreated (Nil)	2. Tilt 250EC @ 250 mL/ha at Z39
1	4	3.Triad in-furrow 200 g/ha	1. Untreated (Nil)
1	5	3.Triad in-furrow 200 g/ha	2. Tilt 250EC @ 250 mL/ha at Z39
1	6	4. Triad 125EC at 1.0 L at Z31	1. Untreated (Nil)
1	7	1. Untreated (Nil)	1. Untreated (Nil)
1	8	2. Jockey 450 mL/100 kg seed	2. Tilt 250EC @ 250 mL/ha at Z39
1	9	2. Jockey 450 mL/100 kg seed	1. Untreated (Nil)
1	10	5. (Full control) Jockey+Triad Z31 & Z55	2. Tilt 250EC @ 250 mL/ha at Z39
2	11	5. (Full control) Jockey+Triad Z31 & Z55	2. Tilt 250EC @ 250 mL/ha at Z39
2	12	4. Triad 125EC at 1.0 L at Z31	2. Tilt 250EC @ 250 mL/ha at Z39
2	13	2. Jockey 450 mL/100 kg seed	2. Tilt 250EC @ 250 mL/ha at Z39
2	14	5. (Full control) Jockey+Triad Z31 & Z55	1. Untreated (Nil)
2	15	4. Triad 125EC at 1.0 L at Z31	1. Untreated (Nil)

2	16	1. Untreated (Nil)	2. Tilt 250EC @ 250 mL/ha at Z39
2	17	3.Triad in-furrow 200 g/ha	2. Tilt 250EC @ 250 mL/ha at Z39
2	18	2. Jockey 450 mL/100 kg seed	1. Untreated (Nil)
2	19	1. Untreated (Nil)	1. Untreated (Nil)
2	20	3.Triad in-furrow 200 g/ha	1. Untreated (Nil)
3	21	2. Jockey 450 mL/100 kg seed	2. Tilt 250EC @ 250 mL/ha at Z39
3	22	4. Triad 125EC at 1.0 L at Z31	2. Tilt 250EC @ 250 mL/ha at Z39
3	23	1. Untreated (Nil)	2. Tilt 250EC @ 250 mL/ha at Z39
3	24	5. (Full control) Jockey+Triad Z31 & Z55	1. Untreated (Nil)
3	25	4. Triad 125EC at 1.0 L at Z31	1. Untreated (Nil)
3	26	3.Triad in-furrow 200 g/ha	2. Tilt 250EC @ 250 mL/ha at Z39
3	27	1. Untreated (Nil)	1. Untreated (Nil)
3	28	2. Jockey 450 mL/100 kg seed	1. Untreated (Nil)
3	29	3.Triad in-furrow 200 g/ha	1. Untreated (Nil)
3	30	5. (Full control) Jockey+Triad Z31 & Z55	2. Tilt 250EC @ 250 mL/ha at Z39
4	31	5. (Full control) Jockey+Triad Z31 & Z55	2. Tilt 250EC @ 250 mL/ha at Z39
4	32	2. Jockey 450 mL/100 kg seed	1. Untreated (Nil)
4	33	1. Untreated (Nil)	2. Tilt 250EC @ 250 mL/ha at Z39
4	34	3.Triad in-furrow 200 g/ha	1. Untreated (Nil)
4	35	2. Jockey 450 mL/100 kg seed	2. Tilt 250EC @ 250 mL/ha at Z39
4	36	4. Triad 125EC at 1.0 L at Z31	2. Tilt 250EC @ 250 mL/ha at Z39
4	37	5. (Full control) Jockey+Triad Z31 & Z55	1. Untreated (Nil)
4	38	3.Triad in-furrow 200 g/ha	2. Tilt 250EC @ 250 mL/ha at Z39
4	39	1. Untreated (Nil)	1. Untreated (Nil)
4	40	4. Triad 125EC at 1.0 L at Z31	1. Untreated (Nil)

DEMONSTRATION OF NEW ANNUAL PASTURE LEGUMES

AIM: To demonstrate the productivity and persistence of annual pasture legumes (NAPLIP cultivar/species) on several soil types in the medium – low rainfall wheatbelt environment.

COMPANY: Department of Agriculture Western Australia
RESEARCH OFFICER: Angelo Loi, South Perth

BACKGROUND: A second generation of annual pasture legumes and their root-nodule bacteria has been released to agriculture in Mediterranean-type environments. These new species emanate from selection activity focussed upon "alternative legumes". In 1992, in response to changing constraints upon production, a program was initiated which sought species with different ideotypic traits to the traditional annual medics and clovers used in agriculture in southern Australia. Traits sought in the new species were deeper root systems, improved persistence from higher hard-seed levels, acid tolerant symbioses, tolerance to pests and diseases and ease of harvesting with conventional cereal harvesters. Several cultivars of species new to Australian agriculture such as biserrula (*Biserrula pelecinus*), French serradella (*Ornithopus sativus*), gland clover (*Trifolium glanduliferum*) and improved varieties of arrowleaf clover (*Trifolium vesiculosum*) and yellow serradella (*Ornithopus compressus*) were developed and have had rapid adoption and impact in southern Australian ley-and phase-farming systems.

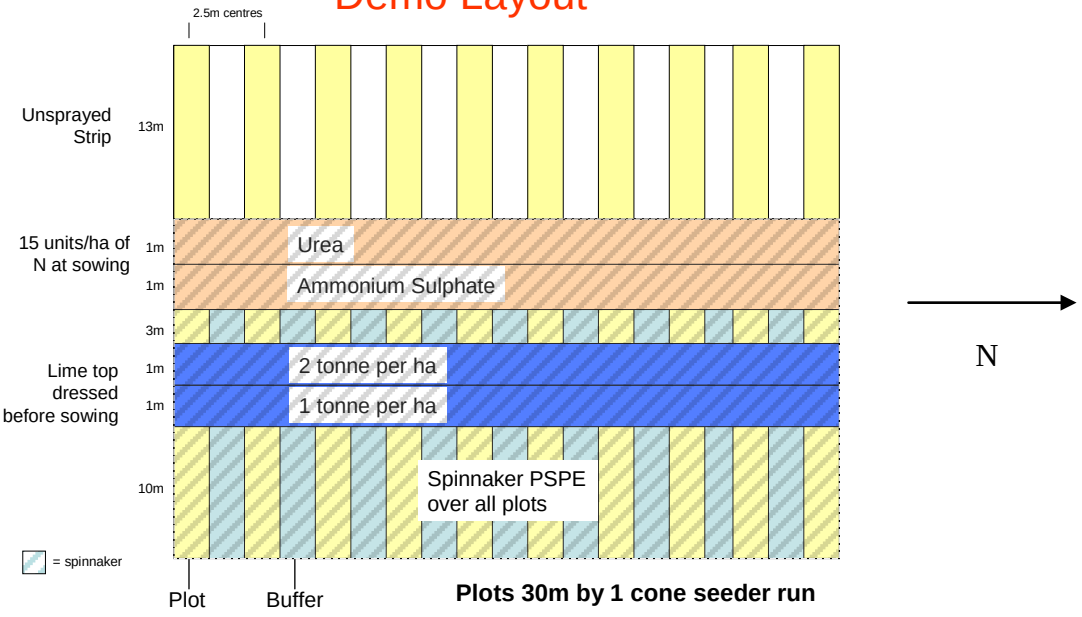
TRIAL DETAILS:
The site was fertilised with 200 kg/ha of superphosphate and 70 kg/ha of muriate of potash. The insecticide Talstar (bifenthrin 100 g/L) was applied after sowing at 120 mL/ha to protect against damage from red-legged earth mites. Two strips of lime (1 and 2 t/ha) and one of urea and one ammonium sulphate (15 units of N equivalent) were top dressed across the plots before sowing. The site was sprayed as post sowing pre emergence with 200 ml/ha of Spinnaker (2/3 of the plots) and later in the season with the herbicide Select (clethodim 240 g/L) to control grasses.

Plots are of 30 by 1.0 m with a 1.2 m buffer between plots, not replicated.
The site was sown on the 9th of May.

TREATMENTS

Treat.	Species	Variety	Kg/ha
1	Yellow serradella	Yelbeni/Charano mix	5+5
2	Hard seed French serradella	Erica/Margurita mix	5+5
3	Yellow serrdella+Gland clover	Charano (2Kg)+ Prima (3Kg) mix	2+3
4	Biserrula	Uninoculated Casbah	7
5	Biserrula	Casbah	7
6	Biserrula	Casbah + Fertitech	7
7	Rose clover	Hykon	15
8	Eastern star clover	Portolu	15
9	Subterranean clover	Izmir	15
10	Burr medic	Scimitar	10
11	Lucerne	Sceptre	10
12	Gland clover	Prima	7
13	Gland clover	Prima +Fertitech	7

Demo Layout



Fence Line

PASTURE COMPARISON

AIM: to compare the quality and growth rates of different forage sources to help make informed decisions about preferred varieties/ systems to improve pasture productivity.

COMPANY: Elders Ltd,
RESEARCH OFFICER: Brad Westphal

BACKGROUND: In some years there is a shortage of quality feed at the start of the season during the autumn feed gap. With an increasing focus on improving pasture productivity this trial was set up to provide a demonstration of the options available to increase productivity both in autumn and also in spring. Improving pastures can provide rotational benefits, soil N, increase soil organic matter and more generally greater productivity and profitability.

TRIAL DETAILS:

SEEDING DETAILS

Variety: See treatments below
Seeding date: 3 May 2005
Seeding method: min till - knife point with press wheels
Seed depth: 0.5cm
Seeding rate: Various
Row spacing: 22.5cm
Seedbed moisture: Good
Seed Bed: slippery due to clay

Fertilisers:

Date	Name	Nutrients	Rate	Units	Timing	Application	
3-May	Agstar Extra	N, P, TE	110	kg/ha	seeding	deep banded	
3-May	Muriate of Potash	K	50	kg/ha	IBS	topdress	
3-May	Urea	N	100	kg/ha	IBS	topdress	
3-Jun	Urea strip	N	50	kg/ha	topdress	topdress	
3-Jun	Super strip	P	100	kg/ha	topdress	topdress	
3-Jun	Urea&Sup strip	N & P	50 & 100	kg/ha	topdress	topdress	

MEASUREMENTS

No.	Assessment	Method	Timing
1	simulated grazing	whipper snipper	20-Jun
2	Dry matter and quality cuts	above ground biomass collected	27-Jul
3	Dry matter and quality cuts	above ground biomass collected	30-Aug

TREATMENTS

Trt #	Treatment	Rate (kg/ha)
1	Grazing Oats (Graza 50)	60
2	Ryegrass (Drummer)	45
3	Legumes*	2.5
4	Mix of all three	30,10,1

*Legumes are a mix of balansa, dalkieth, cadiz, casbah and prima gland all sown a 2.5kg each in treatment 3 and at 1 kg in treatment 4.

LATE SEEDING DIVIDEND SEED TREATMENT

AIM: To look at effects on root development following the application of seed treatments to Wheat and Barley, and in particular the crop safety of Dividend following pasture and fallow.

COMPANY: Syngenta Crop Protection
RESEARCH OFFICER: Simon Kerin, Syngenta Territory Manager

BACKGROUND: DIVIDEND is a unique combination of twin active ingredients for broad spectrum seed-borne disease control in both wheat and barley and is the only seed treatment registered for the control of Pythium related seedling diseases. The result is superior seedling establishment, enhanced early crop development and maximised yield.

TRIAL DETAILS:

Plot number	Date of Seeding	Crop	Product	Rate/Ha
Plot 1	3-August-05	Wheat	Premis	1 L
Plot 2	3-August-05	Wheat	Untreated	
Plot 3	3-August-05	Wheat	Dividend	1.3 L
Plot 4	3-August-05	Wheat	Baytan	1 L
Plot 5	3-August-05	Barley	Raxil	1 L
Plot 6	3-August-05	Barley	Dividend	1.3 L
Plot 7	3-August-05	Barley	Baytan	1 L

Pasture **Fallow**

	Premis Wheat	
	Untreated	
	Dividend Wheat	
	Baytan Wheat	
	Raxil barley	
	Dividend barley	
	Baytan Barley	**N**

PRACTICE FOR PROFIT

AIM: To determine optimal input packages for wheat in the Liebe Group area.

COMPANY: Agritech Crop Research Pty Ltd
RESEARCH OFFICER: Darren Chitty

BACKGROUND: Agritech Crop Research conducted this trial on behalf of the Liebe Group in order to determine the profitability of four levels of crop management inputs. These levels of input were applied to noodle wheat varieties Arrino and Calingiri. Arrino was chosen for its disease susceptibility, with Calingiri being a longer season variety well adapted to the local environment with better disease resistance.

- Low input treatments are based on a farmer delivering grain to the bin at the lowest possible cost, regardless of seasonal conditions.
- District average inputs are based on what is thought to be common grower practice in the Liebe Group area.
- High input treatments simulate a paddock with high yield potential matched with increased management inputs to maximise yields and profitability.
- The Active treatments are dependent on seasonal conditions and are determined by the Liebe R&D Committee.

The trial is intended to run over 10 seasons with this being the fifth year.

TRIAL DETAILS:

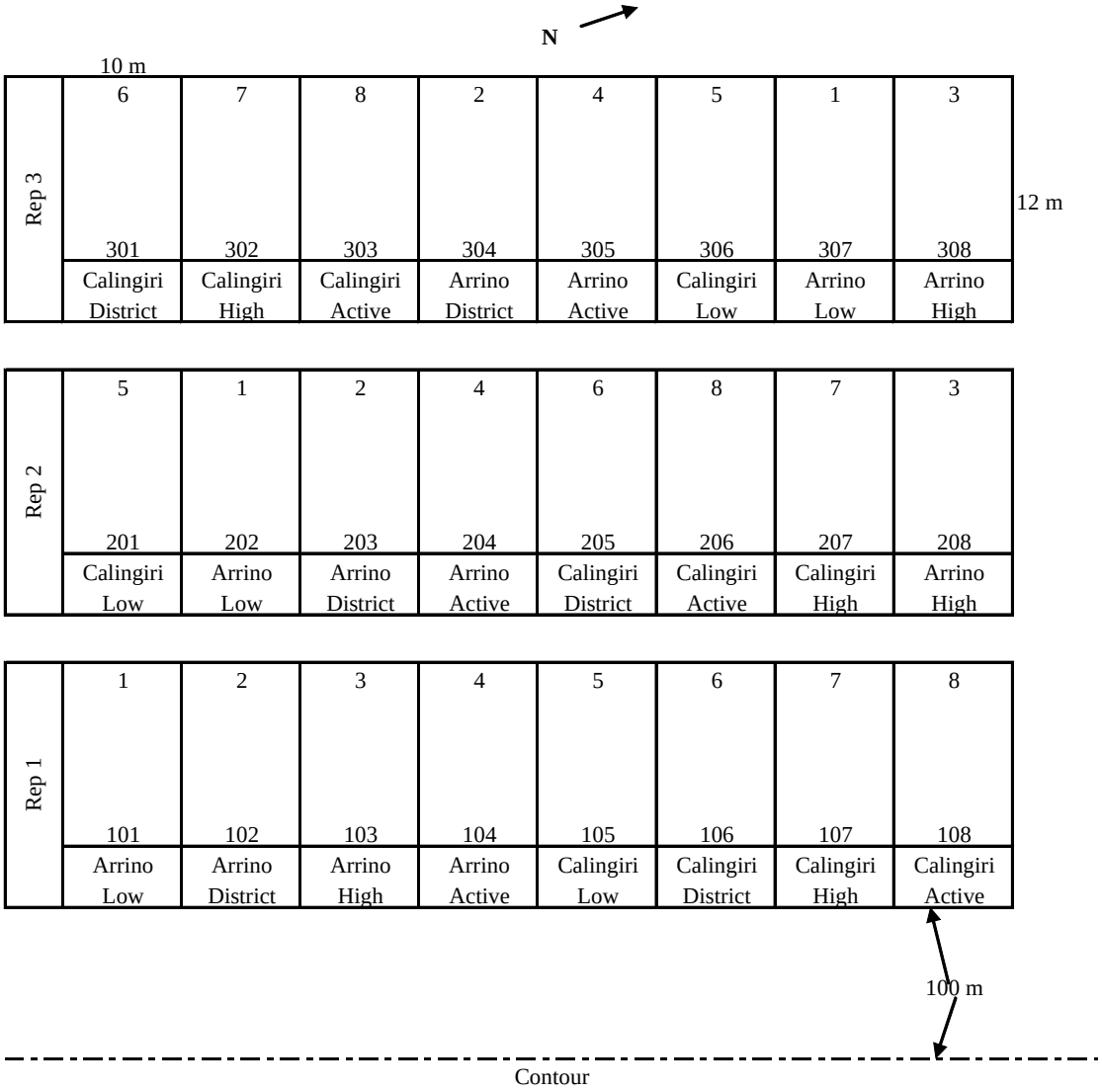
Date	Product	Rate	Placement
18-May-05	Sown		
18-May-05	Roundup	2 L/ha	IBS
	Chlorpyrifos	500 mL/ha	

Treatments

No.	Treatment	Rate	Timing	Appl Code	Date Applied
1 & 5	**ARRINO & CALINGIRI LOW INPUT**				
	Seed	50 kg/ha	Sowing	B	18/05/2005
	Nil seed dressing				
	Glean	10 g/ha	IBS	A	18/05/2005
	DAP	50 kg/ha	sidebanded	C	18/05/2005
	Diuron	350 mL/ha	Z13-Z15	D	12/07/2005
	LVE MCPA	400 mL/ha	Z13-Z15	D	12/07/2005
	Nil fungicide				
2 & 6	**ARRINO & CALINGIRI DISTRICT INPUT**				
	Seed	70 kg/ha	Sowing	B	18/05/2005
	Premis	100 mL/100 kg	with seed	B	18/05/2005
	Trifluralin	1.5 L/ha	IBS	A	18/05/2005
	Logran	35 g/ha	IBS	A	18/05/2005
	Agstar	100 kg/ha	sidebanded	C	18/05/2005
	Urea	50 kg/ha	IBS	C	18/05/2005
	2,4-D Amine	1 L/ha	Post Em	D	12/07/2005
3 & 7	**ARRINO & CALINGIRI HIGH INPUT**				
	Seed	100 kg/ha	Sowing	B	18/05/2005
	Real	150 mL/100 kg	with seed	B	18/05/2005
	Trifluralin	1.5 L/ha	IBS	A	18/05/2005
	Logran	35 g/ha	IBS	A	18/05/2005
	Agstar	140 kg/ha	Sideband	C	18/05/2005
	Urea	80 kg/ha	IBS	C	18/05/2005

	Giant	600	mL/ha	Z13	D	12/07/2005
	Triad (regardless)	500	mL/ha	Early Stem Elong.	D	12/07/2005
	MOP	80	kg/ha	Z12	D	12/07/2005
	Coptrel	250	mL/ha	Z57		
4 & 8	**ARRINO & CALINGIRI ACTIVE MANAGEMENT**					
	Seed	70	kg/ha	Sowing	B	18/05/2005
	Trifluralin	1.5	L/ha	IBS	A	18/05/2005
	Agstar (5.75 units P)	42	kg/ha	Sideband	C	18/05/2005
	LVE MCPA	1.2	L/ha	Z13	D	12/07/2005
	Urea	40	Kg/ha	Z15	D	12/07/2005

Plot Map



DEFINING THE RELATIVE PERFORMANCE OF FIELD PEAS AND ALBUS LUPINS ON THE RED EARTH SOILS OF THE LOW RAINFALL WHEATBELT

AIM: 1. To compare the yield of the new Albus line WALAB2000 with Kiev Mutant in a low rainfall area
2. To compare the performance of Kaspa field pea with the trailing types in a low rainfall area.

COMPANY: Department of Agriculture, Western Australia
RESEARCH OFFICER: Greg Shea (0427 449398), Merredin

BACKGROUND: Kaspa is a high yielding semi-leafless dun-type field pea (Pisum sativum) with shatter-resistant pods, improved standing ability and good early vigour. It is easier to harvest than trailing-type varieties because pods are held above ground level even when the crop lodges. Kaspa is well suited to areas receiving greater than 400 mm average annual rainfall. It flowers about three to five days later than Parafield, but, pod development is rapid and it matures at about the same time as Parafield, (three to seven days earlier than Dundale). Kaspa however, is more determinate than other field pea varieties and will not continue to flower and set pods as readily as other varieties after stress at podding (frost).
The new Lupinus albus variety WALAB2000 has a significantly higher level of resistance to anthracnose than the current variety Kiev Mutant and has potential in the medium to low rainfall area of the Northern Wheatbelt (east of a line from Nabawa to Mingenew to Carnamah) with an anthracnose management package. Its development has been fast tracked in conjunction with the Council of Grain Grower Organisations (COGGO) and GRDC. It is anticipated that WALAB2000 will be released in 2005, with first commercial production in 2006.
Yield and agronomic characteristics:
The seed size, seed colour, protein content and alkaloid level of WALAB2000 are comparable to Kiev Mutant. It flowers about a week later than Kiev Mutant and it yields about 85 per cent of Kiev Mutant. Despite its lower yield, farmers with red loam soils in the medium to low rainfall areas will benefit from growing this variety, as Kiev Mutant is not a choice because of its extreme susceptibility to anthracnose. Based on limited observations, WALAB2000 is similar to Kiev with respect to other lupin diseases, i.e. immune to Cucumber Mosaic Virus, moderately susceptible to brown leaf spot and Bean Yellow Mosaic Virus. It is marginally better than Kiev Mutant for Pleiochaeta root rot resistance.

WALAB2000 has a significantly better resistance to anthracnose than Kiev mutant. This new variety will be targeted at the medium to low rainfall areas of the northern wheatbelt east of a line from Nabawa to Mingenew to Carnamah where anthracnose risk is moderate to low. The level of resistance is insufficient to allow WALAB2000 to be grown in the wetter coastal locations or in the Chapman Valley. Blue lupins prevalent in these areas serve as reservoirs of inoculum and can cause significant yield loss in this variety. This variety also shows potential for other areas outside the northern wheatbelt, for example, the Central Wheatbelt and the Great Southern where blue lupin is not a common weed. It is important to remember that even though anthracnose still poses a disease threat in this zone, it is a manageable threat.
On the red earth soil types of the Midwest there is potential for Albus to be grown. This soil type is also the target soil type for field peas and chickpeas. Information is required about the relative yield performance of field pea and albus lupin

TRIAL DETAILS:

DATE	JOB	RATE/HA	PRODUCT
25-May-05	Sprayed Whole Trial	100 Ml	Wetter
25-May-05	Sprayed Whole Trial	1.2 L	Wipeout 450
27-May-05	Banded Whole Trial	80 kg	DAP
27-May-05	Sown Whole Trial	180 mm spacing with knifepoints	
27-May-05	Sprayed Whole Trial	100 mL	Talstar
27-May-05	Sprayed Whole Trial	1.1 kg	Bladex
27-May-05	Sprayed Whole Trial	2.4 L	Sprayseed 250
28-Jul-05	Sprayed Whole Trial	1 L	Hasten
28-Jul-05	Sprayed Whole Trial	0.3 L	Aramo

ANALYSIS OF CHICKPEA LINES UNDER RECOMMENDED FUNGICIDE REGIMES

AIM: To use the recommended fungicide applications on the eastern states lines of chickpea to determine their ability to withstand West Australian disease pressures**.**

COMPANY: Department of Agriculture, Geraldton.
RESEARCH OFFICER: Wayne Parker, Pulse Development Officer

BACKGROUND: There is keen interest in ascochyta blight resistant chickpea lines. However in order for growers to be confident that these lines offer the ascochyta resistance that is needed and adopt the varieties, they need to see these lines managed as per farmer practice. This requires larger size trial plots implemented with grower machinery and managed as per our ascochyta management package. This will greatly assist in providing confidence to new growers.

This trial will test on a larger scale the yield and ascochyta tolerance of desi chickpea lines targeted for release. It will demonstrate robust ascochyta management packages that accompany variety release.

TRIAL DETAILS:

DATE	JOB	RATE/HA	PRODUCT
25-May-05	Sprayed	0.1% 1.2 L/ha	Wetter Wipeout450
27-May-05	Sprayed	2.4 L/ha 1 L/ha 100 mL/ha	Sprayseed 250 TriflurX Telstar
27-May-05	Sown	110 kg/ha 80 kg/ha	Chickpea seed DAP
29-Mya-05	Sprayed	100 g/ha 0.55 kg/ha	Balance Simagranz
19-Jul-05	Sprayed	1.5 L/ha	Bravo
29-Jul-05	Sprayed	0.25 L/ha 1 L/ha	Aramo Hasten
16-Aug-05	Sprayed	1.5 L/ha	Bravo

TREATMENTS: Fungicide applications, 1.5 L of Bravo at the following timings, wae - Weeks after Emergence.

Timing	4 wae	7 wae	Flowering	Podding
Sonali	X	X	To be assessed	To be assessed
Rupali	X	X	To be assessed	To be assessed
Genesis 836	X	X	To be assessed	To be assessed
Flip94-508	X	Nil	To be assessed	To be assessed
Genesis 090c	X	Nil	Nil	To be assessed

NITROGEN SOURCE, PLACEMENT AND TIMING

AIM: To compare the effects of nitrogen source, placement and timing on wheat establishment, growth, N uptake, grain yield and protein.

COMPANY: CSBP Ltd
RESEARCH OFFICER: Erin Cahill, CSBP Central Regional Agronomis

CSBP
Grow to your full potential.

BACKGROUND: Until recently, most nitrogen was applied to crops as urea close to sowing. However, N-use efficiencies in WA are typically poor, mainly due to leaching of nitrate from our sandy soils during autumn and winter. CSBP and other trials have shown banding urea or Flexi-N can improve the efficiency of N uptake compared to topdressed applications. On average over 22 trials from 2000-2004 the N-use efficiency was increased by 4-8% when Flexi-N was banded on 22cm row spacings. Flexi-N is less toxic when placed close to the seed than urea, and has the added flexibility to act as a carrier for in-furrow fungicides and/or trace elements. The potential for N leaching can be reduced by applying several small applications as the season progresses rather than one large application at sowing, especially in wet seasons where yield potentials are high. Splitting N applications also allows the grower to re-assess the crop's yield potential and likely N demand during the year, thereby exploiting conditions in favourable seasons and saving costs on N in poor seasons.

TRIAL DETAILS:

	BANDED **L or kg/ha**	TD IBS **L or Kg/ha**	4 WAS **L/ha**	8 WAS **L/ha**	**Total N** **kg/ha**
1	Nil	-	-	-	16
2	60 Flexi-N	-	-	-	41
3	55 Urea	-	-	-	41
4	-	60 Flexi-N	-	-	41
5	-	55 Urea	-	-	41
6	120 Flexi-N	-	-		67
7	110 Urea	-	-	-	67
8	-	120 Flexi-N	-	-	67
9	-	110 Urea	-	-	67
10	60 Flexi-N	-	60 Flexi-N	-	67
11	120 Flexi-N	-	60 Flexi-N	-	92
12	120 Flexi-N	-	60 Flexi-N	60 Flexi-N	117

120kg/ha Agstar Zinc basal on all plots.

Management:

13 May Sowed 90kg/ha Calingiri to a depth of 1.5cms into adequate soil moisture using Conserva Pak seeder. Sprayed site beforehand with 0.8 L/ha Sprayseed and 1.5 L/ha Trifluralin. Very few weeds present - mostly grasses. A brief shower of rain fell just after spraying, may have reduced effectiveness of the Sprayseed. Flexi-N treatments applied neat.

8 June Excellent establishment in all plots. Plants at 3 leaf stage. No responses evident. Some minor lucerne flea damage but couldn't see any insects present – recent rain must have suppressed them. Ryegrass present, mainly between plots – looks to have been suppressed but will probably survive.

15 June Sprayed trial site with 250 g/ha Achieve + 1% Supercharge + 700 mL/ha Hoegrass + 70 mL/ha of Dimtheoate.

21 June Sprayed out 4WAS Flexi-N treatments. Sprayed 7 g Eclipse + oil and 200 mL Sonic and 700 mL Zinctrac. Did plant counts – about 190 plts/m^2 in all treatments including N banded.

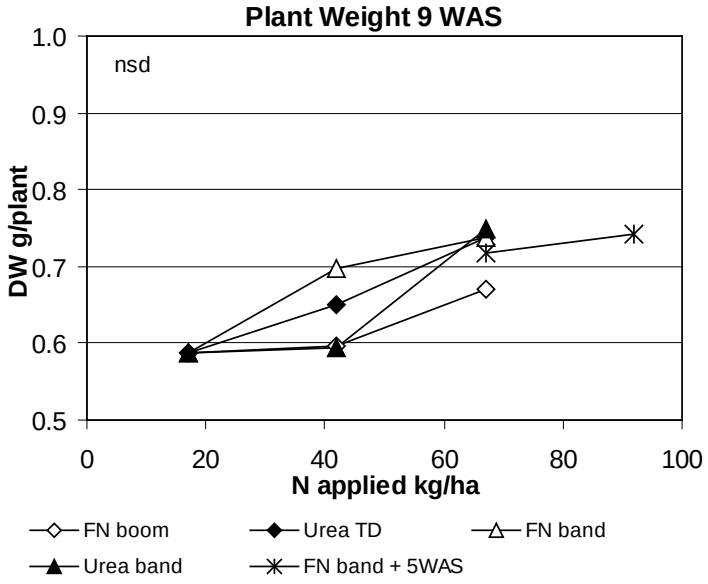
20 July Trial growing well and looking healthy after some apparent herbicide damage. Nitrogen responses are evident. Plant sampled 15 plants per plot then applied 9WAS Flexi-N applications.

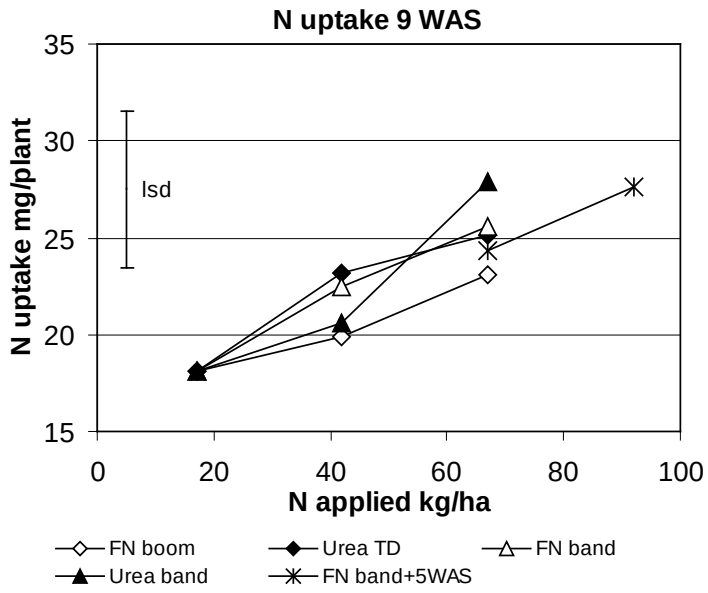
TREATMENT LAYOUT:

Plot	Trt	Banded kg or L/ha	TD IBS	5 WAS	9 WAS	N
1	4	-	60 Flexi-N	-	-	42
2	9	-	110 Urea	-	-	67
3	7	110 Urea	-	-	-	67
4	10	60 Flexi-N	-	60 Flexi-N	-	67
5	6	120 Flexi-N	-	-	-	67
6	1	Basal Only	-	-	-	17
7	5		55 Urea	-	-	42
8	12	120 Flexi-N	-	60 Flexi-N	60 Flexi-N	117
9	8	-	120 Flexi-N	-	-	67
10	3	55 Urea	-	-	-	42
11	11	120 Flexi-N	-	60 Flexi-N	-	92
12	2	60 Flexi-N	-	-	-	42
13	1	Basal Only	-	-	-	17
14	2	60 Flexi-N	-	-	-	42
15	3	55 Urea	-	-	-	42
16	4	-	60 Flexi-N	-	-	42
17	5		55 Urea	-	-	42
18	6	120 Flexi-N	-	-	-	67
19	7	110 Urea	-	-	-	67
20	8	-	120 Flexi-N	-	-	67
21	9	-	110 Urea	-	-	67
22	10	60 Flexi-N	-	60 Flexi-N	-	67
23	11	120 Flexi-N	-	60 Flexi-N	-	92
24	12	120 Flexi-N	-	60 Flexi-N	60 Flexi-N	117
25	12	120 Flexi-N	-	60 Flexi-N	60 Flexi-N	117
26	1	Basal Only	-	-	-	17
27	10	60 Flexi-N	-	60 Flexi-N	-	67
28	9	-	110 Urea	-	-	67
29	11	120 Flexi-N	-	60 Flexi-N	-	92
30	4	-	60 Flexi-N	-	-	42
31	3	55 Urea	-	-	-	42
32	7	110 Urea	-	-	-	67
33	6	120 Flexi-N	-	-	-	67
34	2	60 Flexi-N	-	-	-	42
35	8	-	120 Flexi-N	-	-	67
36	5		55 Urea	-	-	42

DISCUSSION: The trial was sown in mid May into good soil moisture and crop establishment was good with about 190 plants/sq. m in all treatments, even where N was banded. Early responses to N application appeared to be small with good growth even where no Flexi-N or urea was applied. Very dry conditions during July limited plant growth and yield potential.

Plant sampling 9 weeks after sowing (WAS) showed a small but not statistically significant response to N application in terms of plant weight. Differences in plant growth between N sources and placement were not statistically significant. Nitrogen uptake per plant increased significantly with N applied, but again differences between N sources and placement were not statistically significant.





INTERACTION OF RESPONSE TO SEED RATE AND ROW SPACING IN LUPINS

AIM: To identify whether the optimum crop density for Mandelup lupins differs when grown in narrow or wide rows. To determine the optimum crop density for Mandelup lupins.

COMPANY: Department of Agriculture Western Australia
RESEARCH OFFICER: Bob French, Merredin

BACKGROUND: Research over the past five years, both in the Department of Agriculture and by farmer groups, has shown that growing lupins in much wider rows than the traditional 7 to 10 inches rarely results in a significant yield penalty, and can give a yield benefit in harsh seasons. In addition, there is growing interest in wide rows because they facilitate inter-row spraying with non-selective herbicides for troublesome weeds. There is little information on how crop density interacts with row spacing at spacings wider than 50 cm. Some research conducted by WANTFA in medium to high rainfall environments suggested that optimum density was independent of spacing, but in a trial of Martin Harries at Mullewa in 2004 lupin yield declined at high density in 25 cm rows, but not in 100 cm rows. This also raises a question about optimum density. Our current recommendations are based largely on trials done with varieties such as Danja, Gungurru and Merrit. The newly released Mandelup is quite a different plant, and worthy of testing to see if it exhibits the same type of response to crop density as these older varieties.

TRIAL DETAILS:

Date	Job	Rate/Ha	Application
9-May-05	Sown	80 kg	Big Phos + Mn
9-May-05	Sown	Kg	Lupins narrow spacing only
9-May-05	Sprayed	1.1 kg	Simagranz
10-May-05	Sown	80 kg	Big Phos
10-May-05	Sown	kg	Lupins at wide spacing
10-May-05	Sprayed	100 mL	TALSTAR
27-May-05	Sprayed	100 mL	Le Mat
29-May-05	Sprayed	150 mL	Brodal
29-Jun-05	Sprayed	250 mL	Select
29-Jun-05	Sprayed	1 L/100 L Water	Hasten
15-Jul-05	Sprayed	0.32 kg	Fusion Super
15-Jul-05	Sprayed	1 L/100 L Water	Super Charge

MAKING THE CHOICE BETWEEN CROPTOPPING AND DELAYING SOWING TO MANAGE RYEGRASS LEVELS IN DIFFERENT LUPIN VARIETIES

AIM: To determine the interaction between time of sowing and croptopping treatments in lupin varieties with different maturities.

COMPANY: Department of Agriculture, Western Australia
RESEARCH OFFICER: Greg Shea (0427 449398), Merredin

BACKGROUND: In order to get maximum life out of the selective herbicides that are used in lupin and cereal crops, using different herbicide groups is essential. Croptopping is a useful way of achieving this reduction in numbers. The ryegrass that survives the grass selective is likely to be resistant and using paraquat (Gramoxone®), which is a different group, will prevent this "blow out" in numbers. There is often a small loss in yield from crop topping with paraquat but it is a small sacrifice if it allows the following crop to capitalise on lower ryegrass competition as well as allowing preserving the rotation. The new lupin variety Mandelup is suitable for croptopping due to its early maturity and higher yield.

A trial at the Liebe Group site last year showed the relatively low level of yield loss in Mandelup, Quilinock and Belara compared to the large losses in Tanjil and Kalya at the first time of spraying of gramoxone treatment.

The ideal conditions for croptopping with Gramoxone® to maximise yield and minimise ryegrass seed set is to spray when the lupins are at 80% + leaf drop and the ryegrass is at the soft dough stage. Good ryegrass control can be achieved up to the firm dough stage with high rates of Paraquat (Gramoxone® 250) (e.g. 800 mL/ha). However, more reliable results are achieved when ryegrass is sprayed at the soft dough stage.

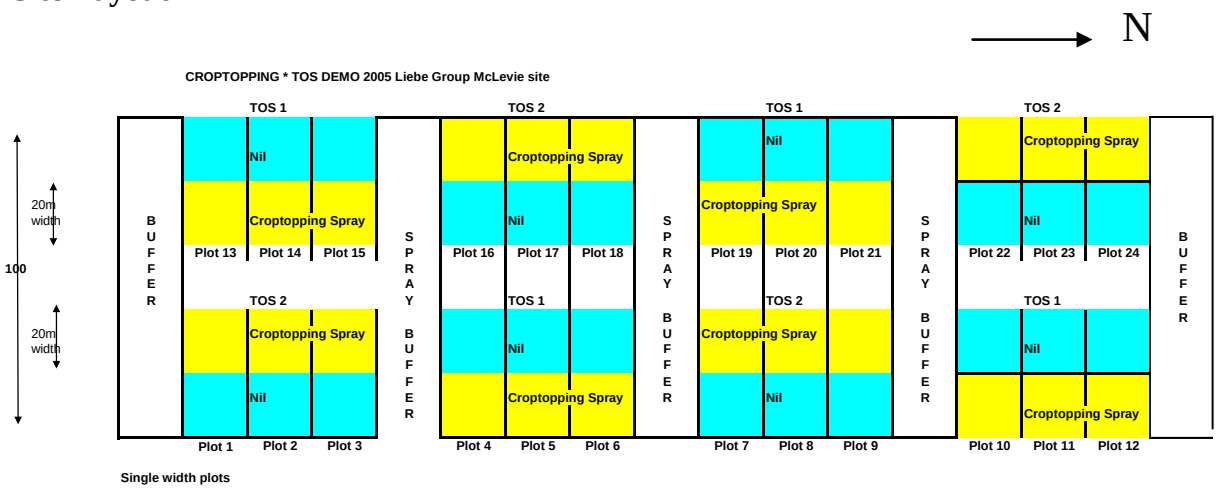
Mandelup has early maturity, reducing the deleterious effects of croptopping on the crop. Varieties with later maturity invariably have greater damage from the Gramoxone treatment as the timing of the spray is co-incidental with more sensitive stages of pod development.

Delayed sowing is used by some growers to improve the knockdown effect on weeds. It is not known whether there is an interaction with croptopping for different varieties. It is expected that at the optimum time to desiccate the seed heads of the grass weeds, a later sown crop will be less advanced and the damage to the developing lupin pods will be greater than for an early sown crop. Comparisons of this level of interaction will be made between varieties with different levels of maturity.

TRIAL DETAILS:

DATE	JOB	RATE/HA	PRODUCT
9-May-05	Sown (knife-points 180mm spacing with Press-wheels)	80 kg	BigPhos + Mn deepbanded
9-May-05		1.1 kg	Simagranz
10-May-05	Sprayed Talstar	100 mL	Simagranz
27-May-05	Sown	80 kg	BigPhos + Mn deep banded
27-May-05	TOS 2	100 mL	Talstar
27-May-05	TOS 1	100 mL	Le Mat
29-May-05	TOS 1	150 mL	Brodal
29-June-05	Sprayed	1 L	Hasten
29-June-05	Whole trial	250 mL	Select
15-July-05	Whole trial	0.32 kg	Fusion Super
15-July-05	Whole trial	1 L	SuperCharge

Site Layout


N
CROPTOPPING * TOS DEMO 2005 Liebe Group McLevie site
100
20m width
20m width
BUFFER
SPRAY BUFFER
SPRAY BUFFER
SPRAY BUFFER
BUFFER
TOS 1
Nil
Croptopping Spray
Plot 13
Plot 14
Plot 15
TOS 2
Croptopping Spray
Nil
Plot 1
Plot 2
Plot 3
TOS 2
Croptopping Spray
Nil
Plot 16
Plot 17
Plot 18
TOS 1
Nil
Croptopping Spray
Plot 4
Plot 5
Plot 6
TOS 1
Nil
Croptopping Spray
Plot 19
Plot 20
Plot 21
TOS 2
Croptopping Spray
Nil
Plot 7
Plot 8
Plot 9
TOS 2
Croptopping Spray
Nil
Plot 22
Plot 23
Plot 24
TOS 1
Nil
Croptopping Spray
Plot 10
Plot 11
Plot 12
Single width plots

WHEAT VARIETY TRIAL 2005

AIM: Comparison of wheat varieties and effect of nitrogen on the yield and quality

COMPANY: Agritech Crop Research for Liebe Group
Field day speakers: Christine Zaicou-Kunesch**,** Department of Agriculture, Geraldton & Peter Burgess**,** Agritech Crop Research Pty Ltd.

TRIAL DETAILS:

Date	Product	Rate	Placement
18-May-05	Sown		
18-May-05	MAPSZC	100 kg/ha	Banded
18-May-05	Roundup Triflur X Chlorpyrifos Logran	2 L/ha 1.5 L/ha 1 L/ha 35 g/ha	IBS
6-Jul-05	Urea	60,100 kg/ha	Post emergent Z14
12-Jul-05	Tigrex Lontrel	500 mL/ha 100 mL/ha	Post emergent Z14

TREATMENT LAYOUT:

Road

Rep 3	Bonnie Rock 301	Arrino 302	Carnamah 303	Tamarin Rock 304	WAWHT 2773 305	Yitpi 306	Calingiri 307	Eagle Rock 308	Drysdale 309	Ruby 310	Wyalkatchem 311	WAWHT 2524 312	60 N
	Bonnie Rock 313	Arrino 314	Carnamah 315	Tamarin Rock 316	WAWHT 2773 317	Yitpi 318	Calingiri 319	Eagle Rock 320	Drysdale 321	Ruby 322	Wyalkatchem 323	WAWHT 2524 324	100 N

Contour bank

DISCUSSION: N response in 2004 trial. This was the 3rd year of wheat and the low nitrogen treatments were particularly susceptible to leaf diseases. Grain yields were at least doubled at 120kg N/ha at seeding compared to the nil N treatment (Table 1). There was a slight decline in grain protein at 30 kg/ha followed by increasing protein up to 120kg N/ha.

Table 1: Grain yield, protein and returns of Tammarin Rock and Wyalkatchem at Buntine in 2004. (Sown on 2 years of wheat stubble)

Variety	N applied at seeding	Grain Yield (kg/ha)	Protein (%)	Return* (Income minus fertiliser cost)
Tammarin Rock	0	1.02	10.1	$195
Tammarin Rock	30	1.58	9.7	$279
Tammarin Rock	60	1.93	9.7	$325
Tammarin Rock	120	2.21	10.2	$331
Wyalkatchem	0	1.29	10.5	$261
Wyalkatchem	30	1.56	10.6	$295
Wyalkatchem	60	2.34	10.2	$425
Wyalkatchem	120	2.57	10.7	$429

* Urea = 410$/t. AH= $204.5 & APW= $197 using golden rewards; APW= $197

Varieties

Variety	Features
Tammarin Rock:	Slightly earlier maturing than EGA Bonnie Rock, AH, acid soil tolerance, Leaf and Stripe rust, good yields, short coleoptile BUT black point and sprouting so low rainfall.
Drysdale	Acid tolerance, maturity slightly later than Tammarin Rock, increased water efficiency, mod resistant to Leaf, stem and stripe rust, screenings risk.
Calingiri	High yielding and early sowing but has plasticity in its development and so also acts as a mid season variety. Note: $14 bonus for Arrino.
WAWHT 2773	Noodle wheat - Calingiri parent, slightly shorter maturity than Calingiri, 2yrs in S4 – needs more testing.
WAWHT 2524	Rust and good yields BUT needs further quality testing to meet ASW grade.
EGA Bonnie Rock	Big areas sown this year. Early maturity with resistance to leaf rust, mod susceptible to stem rust and susceptible to stripe rust. Last years early sown crops did really well (beat the drought). Good tolerance to black point plus $5 premium.
Yitpi	APW with CCN resistance with Mod susceptible to stem and leaf rust and intermediate for stripe rust. Yields not outstanding.

DISEASE CONTROL IN WHEAT AND BARLEY

AIM: To determine the benefit of fungicide management in controlling leaf spot diseases in wheat and barley seeded into a stubble paddock.

COMPANY: Elders Ltd
RESEARCH OFFICER: David Scholz

BACKGROUND: Leaf spot diseases, namely septoria nodorum *(Phaeosphaeria nodorum)* and yellowspot *(Pyrenophora tritici-repentis)* in wheat and net & spot type net blotch *(Pyrenophora teres sp.)* in barley, are often neglected and more importance is placed on other diseases, such as stripe rust. In wheat, yield gains have been demonstrated up to 30% from controlling these diseases (Bhathal et. al., 2003) and they frequently occur together. Barley growers around the region are beginning to realise the benefits of controlling net blotch in barley.

This trial examines the benefits of applying two disease management regimes to Hamelin barley, Arrino & Bonnie Rock wheat. The two packages are a) complete protection (aiming at nil disease) and b) foliar sprays (depending on seasonal conditions). A nil treatment is also included.

TRIAL DETAILS:

Study Design: RCB
Reps: 6
Plot Width: 1.8m
Plot Length: 20m
Plot number: 54
Harvest area: 1.35m*18m

Variety: Arrino, Bonnie Rock, Hamelin
Seeding date: 13 May 2005
Seeding method: knife point with press wheels
Seed depth: 1-2cm
Seeding rate: wheat- 100 kg/ha, barley- 65 kg/ha
Row spacing: 22.5cm
Seedbed moisture: good
Seed Bed: good soil tilth, crumbly

CROP HUSBANDRY

Pesticides:

Date	Name	Rate	Water rate	Timing	Jet size	Pressure
12-May	SpraySeed	3 L/ha	150 L/ha	knockdown	110 03	3 bar
12-May	Treflan	1.5 L/ha	150 L/ha	knockdown	110 03	3 bar
25-Jul	Jaguar	0.75 L/ha	60 L/ha	1st node	110 03	2 bar
25-Jul	Lontrel	0.3 L/ha	60 L/ha	1st node	110 03	2 bar

Fertilisers:

Date	Name	Nutrients	Rate	Units	Timing	Application	Plots
12-May	Urea	N	100	kg/ha	IBS	topdress	all
12-May	Muriate of potash	K	50	kg/ha	IBS	topdress	all
12-May-05	Agstar Extra	N, P te	110	kg/ha	Down tube		all

TREATMENTS

Trt #	Treatment	Rate	which plots	Timing
1	Tilt Xtra	250 mL/ha	Barley: Full & Foliar	1st node (18/7)
2	Folicur	145 mL/ha	Wheat: Full & Foliar	1st node (18/7)
3	Tilt Xtra	250 mL/ha	Barley: Foliar	Ear emergence (22/8)
4	Amistar Xtra	400 mL/ha	Barley: Full	Ear emergence (22/8)
5	Folicur	145 mL/ha	Wheat: Full & Foliar	Ear emergence (22/8)

DON'T CUT HERBICIDE RATES

COMPANY: WA Herbicide Resistance Initiative, University of WA
CONTACT: Professor Stephen Powles

Australian grain growers are acutely aware that they need to keep their costs well under control in the cropping systems that we know and love! Despite herbicides being one of the major costs Incurred in Australian cropping not all in our industry will be aware that herbicide costs in Australia are the lowest that prevail in any developed nation. Additionally, the rates of herbicide used in Australia (e.g. grams/hectare) are the lowest in the world. This is primarily due to economic realities in our relatively low output, low profitability broadacre farming systems. In comparison with other countries we apply much less herbicide per hectare than in other countries. There are many examples where the recommended rate for well-known herbicides are half that which is recommended in other countries. It is important for all in the Australian grain industry to realise that we use herbicides at low rates, by world standards.

It is very unfortunate that in Australian cropping there are cases where users choose to cut herbicide rates below the recommended rate. Presumably, individuals cut rates because they believe that they are saving money by using less herbicide. Some individuals almost automatically cut rates below the label recommended rates. However, this is false economy for at least two reasons. Firstly, by cutting rates there is a far greater probability of killing fewer weeds. The survivors reduce crop yield and inject much fresh seed into the seedbank to become future weed problems. Secondly, at WAHRI we have shown that cutting herbicide rates can speed up resistance in weeds.

At WAHRI, Paul Neve did a very simple but elegant experiment. He sprayed a known herbicide susceptible ryegrass population at a range of rates of diclofop (sold as Hoegrass etc). As expected, when he cut rates some ryegrass plants survived. He kept these survivors and allowed them to produce seed among themselves and he then sprayed these progeny plants and compared them with their parents. Paul found that more of these progeny survived diclofop. He then did the same thing again by taking the progeny, surviving a cut rate of diclofop and letting them produce seed. The next generations were resistant! The bottom line from this research is that in just four generations in which ryegrass plants were treated at cut rates of diclofop, Paul ended up with an herbicide resistant ryegrass population! Even worse, Paul found that the population was not only diclofop resistant but showed cross-resistance to some other herbicide groups.

The implications of these experiments are clear. Cut herbicide rates can rapidly lead to resistance. We should not cut rates of herbicides below the label recommended rate. This is especially true in Australia because we already use herbicides at low rates, by international standards. Cutting rates below the recommended label rate can rapidly lead to resistance, especially in a cross-pollinated weed like ryegrass.

This experiment by Paul Neve is a great example of research that is immediately applicable. All those interested in herbicide use in Australia who see this data will recognize how quickly cut rates can lead to resistance. The response is clear - use herbicides at label recommended rates and do NOT cut herbicide rates!

This research is published: Neve P & Powles S.B. (2005) Recurrent selection with reduced herbicide rates results in the rapid evolution of herbicide resistance in Lolium rigidum. Theoretical & Applied Genetics.

The journal article is available by contacting me on 64887833 or spowles@plants.uwa.edu.au

EXTRACT OF THE SITUATIONAL ANALYSIS ON NO-TILLAGE SYSTEMS

CONTACT: Rolf Derpsch

Herbicide resistance, soil compaction, moisture retention and residue handling are just some of the challenges facing growers who no-till farm in WA. As the leading proponent of this farming system, the WA No-Till Farmers Association (WANTFA) recognised it was timely to review practice in the state's broadacre grain-growing areas and endeavour to provide a positive direction for the future.

In February/March 2005, WANTFA — with the support of GRDC and the Agriculture Department's National Landcare Sustainable Industries Initiative — commissioned Rolf Derpsch, a consultant based in Paraguay, to prepare a situation analysis of no-till technology in WA. Report specifications included a review of no-till's status in WA, an assessment of challenges, acknowledgement of knowledge gaps where systems in use in other parts of the world could successfully be applied, recommendations for the way forward and steps required to develop a sustainable no-till system.

WANTFA's Dr Ken Flower accompanied Rolf and together they completed an itinerary that covered nearly 4000km from Mullewa to Salmon Gums and Albany. Information was provided by close to 500 farmers and 30 scientists to enable the report to be compiled. Mr Derpsch identified that all over the world the no-tillage technology has shown to be the most effective and most economic way to control wind and water erosion and allow for a sustained food and fibre production. Within Australia the highest percentage of no-tillage adoption has been achieved in Western Australia (>80%), but sustainability of the system seems to be threatened by herbicide resistant weeds as well as by cereal monoculture and little diversification of crops. There is a need for a more holistic approach to weed and nutrient management using crop rotation, cover crops and adequate management practices. (Derpsch, 2005)

Those farmers who want to elevate no-tillage a step further will have to go for full stubble retention (no baling, no sheep, no burning) so as to keep the soil surface permanently covered with high amounts of crop residues. Tyne seeders have their limitation in relation to the amount of crop residues they can handle. On several occasions farmers have reported burning the residues because their tyne machines would not have been able to seed properly into what was seen as excessive mulch cover (even with ideal distribution of tynes in 4 sections of the seeder). To be able to seed adequately through thick residue layers, it is the opinion of the author that tyne seeders will have to give way to appropriately designed disc seeders. (Derpsch, 2005)

However, for those growers who keep sheep in the system, Rolf has come to the conclusion that if farmers do not want, or are unable to separate sheep from the cropping areas, it will probably be better to stick to the tines and **not** move to discs. (Derpsch, 2005)

During the farm visits some farmers reported that they would till the soil once in a while for various reasons (e.g., burying ryegrass seeds, loosening the soil, eliminating compaction, etc). One has to be aware that interrupting a no-tillage system with occasional tillage will lead to a situation where the farmers will never see the full benefits of the system. While up to now successful no-till seeding with discs has developed mainly in the higher rainfall areas of the South, research and farmers have to prove that the technology is also applicable for the drier areas. The higher residue cover in fact should play an important role in storing more moisture in the soil, thereby increasing the water use efficiency. Building up soil carbon in the soil in long-term no-tillage will also increase water use efficiency, by increasing the water-holding capacity of the soil. (Derpsch, 2005)

Mr Derpsch is internationally regarded as an acknowledged authority on sustainable agriculture and travels the world consulting with industry leaders and students interested in sustainability. WANTFA is pleased to offer a summary of this timely report, Situation Analysis on No-tillage Systems.
Should you wish to receive a copy of this analysis please do not hesitate to contact WANTFA on (08) 9622 3395 or at erin.wright@wantfa.com.au

SPRING FIELD DAY AERIAL DEMONSTRATION

COMPANY: Syngenta Crop Protection
CONTACT: Simon Kerin, Syngenta Territory Manager

At the Liebe Group Spring Field Day, Syngenta Crop Protection is pleased to bring along Graham Barrett, an independent aerial application expert from the Eastern States. Graham will be presenting on aerial application, different set-ups for aircraft and a general overview of what is required for aerial application and also involved in the aerial application dye night.

The Application Dye night is going to involve the Case IH Aim Command ground rig, the Hardi Air Assist ground rig and one of Ross Blaxell's aerial sprayers. These rigs will do a few different runs changing nozzles, water rates, pressure or speed. We will then be able to view the fluorescent dye using black light torches in the evening.

The aim of the evening is to showcase the optimal boom set-ups and also demonstrate the differences in droplet spectrum that occur from a simple change of boom set-up. Below is a short biography of Graham Barrett.

Biography- Graham Barrett manages Spraycheck. Spraycheck was created in 1994 out of the need to get practical set-up information in a time when the use of AU5000 Rotary Nozzles was being questioned and the introduction of CP nozzle and no set-up information for them.

Graham is an accredited SAFE analyst and has participated in various programs and research programs over the years in Arkansas, Colorado and Kansas.

While solving application problems Spraycheck has developed and patented various booms and nozzle for the industry, some of which are now being exported overseas.
Spraycheck specialises in the solving of application problems and being the only active agricultural pilot doing this type of work, here and overseas, Graham is able to give practical information to pilots and applicators all over Australia.

Spraycheck has also introduced the concept to New Zealand and South Africa.

SIMPLE WATER RATE CHOICES TO MAKE THE MOST OF CONTACT HERBICIDES

COMPANY: Landmark
CONTACT: Trent Kensett-Smith

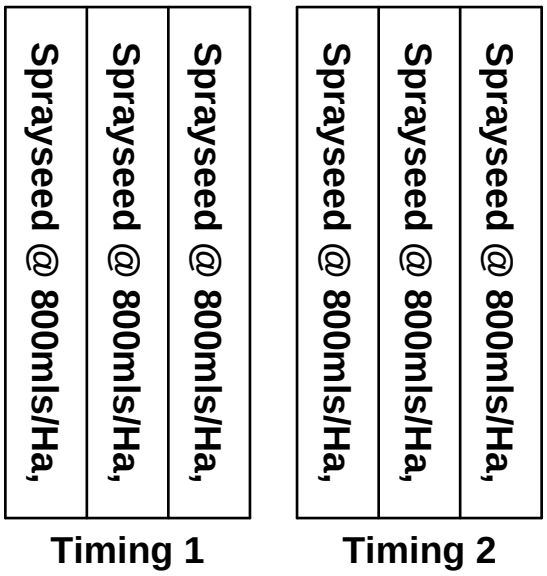
AIM: To demonstrate some simple things we may forget about making the most of contact herbicides.

•The thought behind this demonstration came from two factors.

1. A reluctance, on many fronts, to lift water rates, and
2. The understanding of which chemicals we use that are actually contact herbicides.

•The simplest actions and efforts can affect outcomes greatly. Sometimes we all forget this. Generally these simple things are also very cheap issues to fix. The adage "the more you spend, the more you get" does not always ring true.
•The demonstration is more a thought provoker and a discussion raiser than a means to showcase any new technologies. Join us for a practical look at, and an open discussion regarding some of the simple things being done differently which may lead to more effective use of our inputs.

DEMONSTRATION LAYOUT:



MARKET OUTLOOK

COMPANY: Grain Pool
CONTACT: Gavin Bignell (**0427518504)**

Barley:
Barley prices have firmed over the past month with the Malting Barley Pool indicator at $190-$200/tonne for the 05/06 season, and feed at $155-$165. The most significant influences for Barley prices in the short to medium term are going to come from the Black Sea Region and Canada for feed and malt respectively.

The Russian and Ukrainian harvest has been better than expected with reports now quoting that the region may export up to 6mmt this season, about 2mmt more the previous estimate. This will almost certainly see more feed barley shipped from this region into the Middle East. The Middle East is a major market for WA feed barley so we can expect this increased production to put downward pressure on feed barley values.

The Canadian harvest is underway despite rain delaying progress in some areas last week. Continued unfavourable weather over the next month would help hold malting prices firm as more barley will be unable to make malting specification and therefore reduce the quantity of malting barley available to compete with WA malting barley into China.

AgraCorp has moved to flat pricing for all cash and contract barley deliveries this harvest to give growers more flexible pricing options for 2005-06. Flat pricing will remove all discounts and premiums from the pricing equation, giving more growers certainty on the final price of their barley this season. In addition, growers delivering their barley to the Grain Pool this harvest can expect greater rewards for their quality grain following a recent review of Grain Pool's premium and discount pricing schedule

Canola:
Over recent months Canola futures prices have been closely following Soybeans. Improving crop conditions in the US soybean region have driven oilseed prices to new lows, taking Winnipeg canola futures down as well. The prime soybean growing region has received the rain required to improve soybean pod filling potential and increased the production outlook.

Canada is poised for an extremely good year with the potential to produce up to 8.7 million tonnes of Canola. Canada competes strongly with WA Canola and as a result we will be watching the Canadian harvest closely over the next month or so.

The short term outlook for oilseeds will remain volatile in the coming weeks due to yield uncertainty. This may present some pricing opportunities in a year where potentially the world Canola balance sheet is going to be very healthy.

Lupins:
Lupins values traditionally closely follow the Soybean market as they can be a protein substitute for Soybean meal. Currently the soybean crop in the United States appears to be in better shape than previously predicted and this is having a bearish affect on prices. Soy meal values on the Chicago Board of trade will have a significant effect of the price we will be able to achieve for lupins, as a result Soy meal values will be closely watched moving into harvest.

Another major factor that is going to affect lupin prices this season is the size of the Canadian Feed Pea crop. Some of our European markets will substitute Lupins with Canadian feed peas. Canada is looking like producing a record crop of Peas this year, which will put pressure on lupin prices into some of our key markets. In addition, the US has significantly increased its Pea production over the last few years, which will reduce the level of Canadian Peas moving into the US.

For more market information please contact your local GrainPool Region Manager Peter Scott - 0429374253 (Geraldton Zone) or Gavin Bignell – 0427518504 (Kwinana North Zone).

LIEBE GROUP GRDC SOIL HEALTH PROJECT

AIM: A Sustainable dryland community achieved through proactive research on effective management of the soil resource

RESEARCH OFFICER: Ben Parkin, Project Coordinator
COMPANY: Liebe Group

BACKGROUND: The long term trial site is now into its third year with the purpose of investigating the potential of biological and organic matter inputs to increase soil water storage and target long-term yield increases and soil improvement. The trial has been sown to Wyalkatchem wheat and will be sown to lupins in 2006. The brown manure and organic matter treatments have resulted in the most significant improvement in grain yield and protein, with up to a 650 kg/ha yield increase over the control treatment. More detailed results from 2004 are available in the 2005 Liebe Group R&D results book published earlier this year. The long-term research site is also host to research efforts from other parties including CSIRO Sandplain Farming Systems, CSIRO Precision Agriculture Initiative, Department of Agriculture Compaction Control Research and UWA Soil Biology Initiative.

Eight satellite sites have been established over the last 3 years with the aim of identifying key constraints to yield and testing suitable management practices to overcome the primary constraints. Sub surface acidity and compaction have featured at many of these sites located throughout the Liebe region. Numerous trials looking at lime application and placement and deep ripping have been conducted with much of this work in collaboration with the Department of Agriculture's Subsurface Acidity Project. A shallow leading tyne deep ripper and airseeder bin combination has been used to demonstrate a possible technique for amelioration of acidic subsoils. This set-up allows for placement of lime at predetermined depths in the soil profile with the aim of improving subsoil pH so as to reduce aluminium toxicity and allow plants to access a greater proportion of the water and nutrients in the profile.

As part of the current Liebe Group GRDC project we are also conducting a trial on 'skip row' seeding configuration of wheat in a low rainfall environment with alkaline subsoil. The objective of this work is to improve the availability of stored soil moisture and is a concept that may be useful on soils that have limited rooting depth through either physical or chemical constraints, low water holding capacity or in seasonally variable low rainfall environments. Some of the aims of this work are to reduce the level of screenings in wheat without sacrificing too much yield potential and possibly providing some yield stability from year to year i.e. higher yields in poor years but lower yields in good years.

CLIMATE RISK MANAGEMENT AT THE MAIN TRIAL SITE

AIM: To trial climate risk management models PYCAL (Potential Yield Calculator) and Yield Prophet (run from the APSIM model) and to determine whether these tools are effective in predicting yield potential and therefore are useful for farmer decision making.

COMPANY: Liebe Group in collaboration with CSIRO and Department of Agriculture, funded by National Landcare Program.

RESEARCH OFFICER: Brianna Peake

BACKGROUND:

PYCAL – a computer model developed by DAWA, gives an indication of water limited **POTENTIAL** yield based on the French Schultz equation. Which is calculated as:
Potential Yield (kg/ha) = Crop Water Use (mm) – Evaporation (110mm) x Water Use Efficiency.
Crop water use is estimated as the sum of plant available water at the start of growing season (April 1) and the growing season rainfall. The Water Use Efficiency can be calibrated for each paddock using past yields and rainfall data.

Yield Prophet – is the commercialisation of the APSIM model (Agricultural Production Systems sIMulator). APSIM uses site-specific soil characterisation data and the soil water and nitrogen content at time of sowing. This information coupled with historic rainfall data is used to calculate the probabilities of achieving certain yields given decile years.

These models, coupled with the Seasonal Forecasts from DAWA CROP (Climate Risks and Opportunities) team and Bureau of Meteorology can be used to give an indication of potential yield. At the Liebe Main Trial site we have run these models throughout the season for both the heavy and light soil types.

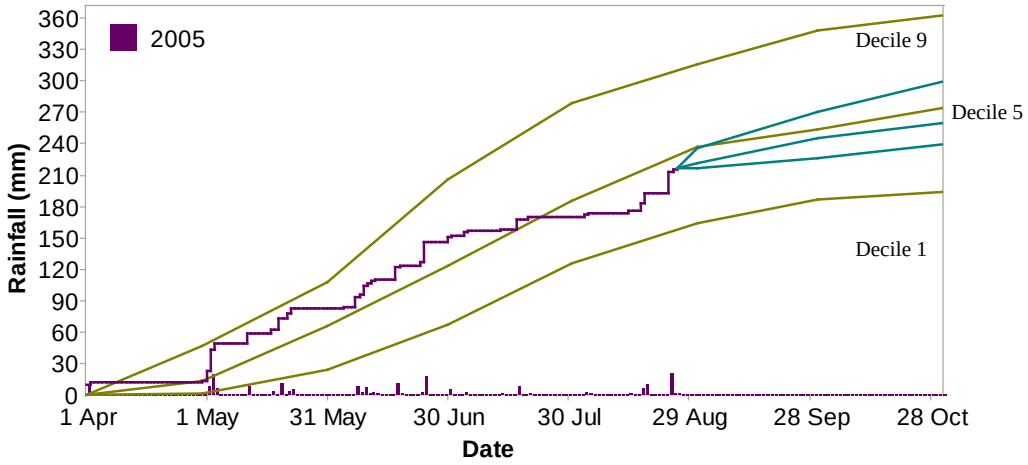


Figure 1: Main Trial Site's cumulative 2005 growing season rainfall to date vs. historical rainfall deciles 1, 5 and 9, with decile finishes 1, 5 and 9.

Currently the Main Trial Site is tracking on approximately a Decile 4 year that means the paddock has received as much rain as the lowest 40% of historical rainfall years. If the Main Trial Site receives average rainfall for the remainder of the year (neutral ENSO), which is was what DAWA's August Seasonal Forecast was predicting, then the Main Trial Site will most likely end up with a Decile 4 rainfall growing season at the end of October.

On September 1st PYCAL and Yield Prophet were run for the Main Trail Site and the details are included below.

Ian Hyde – Main Trial Site

Location: Dalwallinu (McLevie bin)
Soil Type: Sand over Gravel
Red Clay

Variety: Sand over Gravel – Calingiri
Red Clay - Wyalkatchem
Sowing Date: 17th May 2005

Farmers Target Yield: 2.5 T/ha for both soil types

Units of N applied at seeding:
Sand over gravel - 36 kg/ha
Red Clay – 34 kg/ha
Additional N applications:
Sand over gravel – 23 kg/ha on the 9th July

Table 1: Rainfall in mm (up to 1st of Aug)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	GSR	Total
Median	14	17	24	21	47	67	60	46	25	17	12	11	**283**	**359**
Actual	3	3	27	14	69	68	19	51					**170**	**202**

Simulation Date: 1st of September 2005
YIELD FORECAST (t/ha)

Decision Support Tool	Soil Type	Decile 2	Decile 4	Average	Decile 8
PYCAL	Sand over gravel	2.0	2.1	2.2	2.5
	Red Clay	2.0	2.2	2.3	2.6
Yield Prophet	Sand over gravel	2.0	2.1	2.3	2.8
	Red Clay	2.4	2.5	2.6	3.0

Calibrated WUE of 13.22 kg/mm/ha for sand over gravel and 13.74 for red clay.

If the season does finish with average rainfall, as predicted by DAWA, then as the decile graph shows, the Main Trail Site is most likely to finish with a Decile 4 rainfall (another 36 mm required). If this is the case PYCAL and Yield Prophet are both predicting 2.1 T/ha for the lighter country. However for the red loamy soil PYCAL is predicting a yield of 2.2 T/ha that is 0.3 T/ha less than what Yield Prophet is predicting for this soil type. The models are predicting that Ian's target yield of 2.5 T/ha may not be achieved on the lighter soil but looks more likely to be achieved on the heavier soil depending on the model. We are very eagerly awaiting the harvest period to see whether the models are predicting in the ball park of real yield potential.

Most importantly these simulations have been run throughout the season from seeding to present. After harvest the accuracy of the initial predictions from the beginning of seeding will be compared with the predictions that are being generated now. Ideally these models would be able to give decent indications of yield potential within the first 6 weeks of sowing when extra N application decisions are being made. Once again, harvest is eagerly awaited to determine the usefulness of these tools.

TRIALS AND DEMONSTRATIONS IN THE LIEBE AREA

This is a current list of Trials and Demonstrations in the Coorow, Perenjori and Dalwallinu Shires. This information will form the bulk of the Liebe R&D Results Book that will be distributed to the Liebe Group Members in February 2006. All farmers in the Liebe area and surrounding areas can also use it as a trials database. This database can be a useful reference for you to identify local research relevant to you – especially when considering the adoption of new technologies.

FARMER	LOCATION	TYPE	TITLE	COMPANY	CONTACT
WHEAT					
Ian Hyde	MTS	Trial	Practise for Profit	Agritech	Darren Chitty
Ian Hyde	MTS	Trial	Cereal Variety Trial	Agritech	Darren Chitty
Ian Hyde	MTS	Trial	Disease management	DAWA	Ciara Beard
Ian Hyde	MTS	Trial	Disease control	Elders	Dave Scholz
Gary Butcher	Pithara	Trial	Wheat NVT	Agritech	Darren Chitty
Mike Bothe	Coorow	Trial	Wheat NVT	Agritech	Darren Chitty
Peter Bryant	Maya	Trial	Wheat NVT	Agritech	Darren Chitty
Stacey	Coorow	Trial	Longreach PB	Agrisearch	Melissa Morgan
Stacey	Coorow	Trial	Pack seed wheat	Agrisearch	Melissa Morgan
Stacey	Coorow	Trial	AGT	Agrisearch	Melissa Morgan
Grant Hudson	Goodlands	Trial	Wide row x variety x s.r	Liebe Group	Ben Parkin
BARLEY					
Ian Hyde	MTS	Trial	Disease control	Elders	Dave Scholz
Bob Nixon	Kalannie	Trial	Barley on acid soils	DAWA	Chris Matthews
Bob Nixon	Kalannie	Trial	Early maturing Barley	DAWA	Chris Matthews
LUPINS					
Ian Hyde	MTS	Trial	Row spacing x seeding rate x variety	DAWA	Bob French
Ian Hyde	MTS	Trial	Time of sowing x croptopping	DAWA	Greg Shea
Bruce White	Carnamah	Trial	Lupin CVT	Gero RSU	Steve Cosh
Bobby Nixon	Kalannie	Trial	Yellow Lupin	DAWA WHRS	Chris Matthews
Bobby Nixon	Kalannie	Trial	Narrow leaf Lupin	DAWA WHRS	Chris Matthews
PASTURE					
Ian Hyde	MTS	Trial	Pasture CVT	DAWA	Angelo Loi
Ian Hyde	MTS	Trial	Pasture	Elders	Dave Scholz
Stan Hathaway	Kalannie	Demonstration	NyPa forage	Elders	Dave Scholz
Stan Hathaway	Kalannie	Demonstration	Pasture	Elders	Dave Scholz
Gary Butcher	Pithara	Trial	Perennial Grass	DAWA + Grain and Graze	Geoff Moore

Ross Fitzsimons	Buntine	Trial	Perennial Grass	DAWA + Grain and Graze	Geoff Moore
PULSES					
Ian Hyde	MTS	Trial	Field Pea vs. Albus Lupin	DAWA	Greg Shea
Ian Hyde	MTS	Trial	Chickpea variety trial	DAWA	Wayne Parker
Bruce White	Carnamah	Trial	Chickpea CVT	GERO RSU	Steve Cosh
LIVESTOCK					
Mike Dodd	Buntine	Trial	Cereal & Pasture on saltland	DAWA	Tim Wiley
Mike Dodd	Buntine	Trial	Iceplant herbicide control	DAWA	John Borger
MISC.					
Brian and Stuart McAlpine	Buntine	Demo	YP and variable rate fertiliser	CSIRO	Mike Robertson
Stan Hathaway	Kalannie	Trial	CAN vs. Urea	Elders	Dave Scholz
SOIL HEALTH					
Tony Mason	Perenjori	Trial	Lime & DR – Barley	Liebe Group	Ben Parkin
Peter Bryant	Latham	Trial	Lime & DR - Wheat	Liebe Group	Ben Parkin
Brian McCreery	Kalannie	Trial	Lime & DR – Wheat	Liebe Group	Ben Parkin
Brian McAlpine	Maya West	Trial	Lime & DR – Wheat	DAWA & Liebe Group	Chris Gazey
Brian McAlpine	Maya West	Trial	Lime & DR – Wheat	Liebe Group	Ben Parkin
Ian Bowman	Carnamah	Trial	Lime	Liebe Group	Ben Parkin
Garry Helliwell	Maya	Demo	Lime & Tillage	Liebe Group	Ben Parkin
Garry Helliwell	Maya	Demo	Graveyard line nutrients	DAWA	Chris Gazey
Vince Bryant	Buntine West	Trial	EMRC Compost	Agritech	Darren Chitty

LIEBE GROUP COMING EVENTS

Date	Event	Place	Contact
13th September	Liebe General Meeting	Liebe Group Office	Brianna Peake – 9664 2030
10th October	Liebe General Meeting	Liebe Group Office	Brianna Peake – 9664 2030
12th October	Grain & Graze Field Walk	Grain & Graze farms	Brianna Peake – 9664 2030
22nd October	Liebe Annual Dinner	Wheatlands Motel Dalwallinu	Jill McGregor – 9664 2030
12th December	Liebe General Meeting	Liebe Group Office	Brianna Peake – 9664 2030

COMING EVENTS FOR 2006

- Trials Review Day
- Annual General Meeting
- GRDC Soil Health Project Review
- Chemcert Course
- Crop Update
- Financial Management Course
- Women's Field Day
- Employee workshops
- Spring Field Day
- International Study Tour
- Numerous Field Walks

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