1976

1976 Growing season results report

M L. Poole

DEPARTMENT OF AGRICULTURE

Western Australia

RESULTS REPORT
1976 GROWING SEASON

1. 76 BU 15 Sunflower Varieties x Rates of Seeding x Times of Seeding on Busselton Sand at Ruabon.

2. 76 BU 4 Miscellaneous Species x Rates of H.23408 Treeton.

3. 76 AL 36 Rape Varieties under severe blackleg conditions.

4. CB 49 Trials Seed Softening Methods and Effect of harrowing on Emergence.

by M.L. Poole
PLANT RESEARCH DIVISION

76 BU 15 Sunflowers - Rates of Seeding x Varieties x Times of Planting

Cooperating Advisers - Stan Dilkes and George Olney.

AIM To test the performance of sunflowers at a range of seeding rates and two times of planting at this site.

Location : Ruabon (E. Busselton) Keith Forrest.

Soil Type: 1m Busselton sand over clay. This soil type is under water in winter and water remains perched over the clay well into summer. A sunflower trial was conducted on this site to test the proposition that sufficient water was stored plus rainfall to grow a crop.

Treatments Hysun 20 x 2.5 / Sunfola 68 5 / 7.5 / 10 / 12.5 Kg/ha x Sept. planting & Oct. planting

Varieties x Times Main Plots. Rate - split plots. Reps 4.
Sown 22.9.76 & 20.10.76

Results

1. Plant densities plants/ha

Variety / Seeding Rate Kg/ha	Sunfola 68		Hysun 20	
	1st Top	2nd Top	1st Top	2nd Top
2.5	25397	37962	30952	29629
5	44048	56944	51191	65277
7.5	73809	74999	92857	123610
10	91667	113888	108333	143054
12.5	108353	108332	130953	156943

2. Flowering Times

	September Planting	October Planting
HYSUN 20	2/12	24/12
Sunfola 68/2	4/12	24/12

3. Yields Kg/ha. Hand harvested. Two quadrats each 2m x plot width.

Rate Seeding	Yield Hysun 20 Sept. Planting	Yield Sunfola Sept Planting	Yield Hysun 20 Oct. Planting	Yield Sunfola Oct Planting
2.5 Kg/ha	354	242	168	133
5 Kg/ha	406	248	276	259
7.5 Kg/ha	431	625	283	201
10 Kg/ha	332	447	240	245
12.5 Kg/ha	504	353	204	354

4. Soil Moisture. To follow the depletion of soil moisture a September planted high density and a low density plot, and nearby bare soil were sampled for soil moisture. Depths of sampling were 0-10 cm, 50-60 cm and 90-100 cm.

Soil Moisture % (Gravimetric).

Plot	Depth Sample	24/11	8/12	21/12	29/12	6/1	14/1
High density	5	11.5	5.2	3.5	3.3	2.5	2.6
	50	14.0	7.9	5.9	7.1	6.7	5.3
	100	16.3	17.4	15.6	19.6	14.7	10.5
Low density	5	10.5	4.0	3.6	2.4	1.7	1.5
	50	13.5	8.4	5.7	7.3	5.6	3.8
	100	17.0	16.4	16.1	20.9	15.3	10.6
Bare Soil	5	13.5	11.2	8.6	8.1	4.6	1.4
	50	16.0	9.4	6.1	7.0	6.9	4.1
	100	17.5	16.7	16.2	18.7	14.8	11.2

(N.B. Grass weeds (Couch) depleting water for last two samplings of bare ground).

Rainfall	Av.	1976/77
Sept	73	53
Oct	55	42
Nov	23	60
Dec	13	9
Jan	9	12

Moisture Holding Capacity

depth	sand texture	moisture % 1/10 atm	½ atm	15 atm	avail moisture Np. (i.e. % 1/10 atm -% 15 atm)
5 cm	medium sand	6.6	4.5	2.7	3.9
50 cm	loamy sand	5.7	4.0	2.4	3.3
100 cm	loamy sand	10.5	7.8	5.0	5.5

CONCLUSION The varieties used were both fairly late maturing. November rainfall was well above average and despite the good vigour and health of the crop during the growing season yields were very disappointing. Although seed set was good, seed fill was poor, the crop suffering severe moisture stress in the post flowering period. The soil profile was still quite damp at 100 cm at maturity and obviously the plants were unable to exploit this water.

Earlier planting is not possible as the site is waterlogged until early spring. Varieties maturing two weeks earlier are available now and will be tried next year.

Oil contents and linoleic acids will be available later.

76 BU 4 Miscellaneous Species Trial x Rate H.23408

Co-operating Advisers - Stan Dilkes and George Olney.

AIM. The original aim of this trial was to measure the performance of a range of crops, in terms of growth and yield, at this high rainfall site. However very heavy ryegrass infestation occurred and the opportunity was taken to try the new post emergence ryegrass herbicide Hoechst 23408.

Location. Treeton. John McLean.

Site A reasonably well drained hillside. Sandy loam.

Treatments
Span rapeseed
Zephyr rapeseed
Norin 20 rapeseed

SV 6823 rapeseed x Hoe 23408 @ 1,3 1/ha. (+ wetting agent).

Glenelg linseed
Unicrop lupin
Uniharvest lupin
Canary seed.

Design Varieties were main plots x 3 reps.
Hoe. 23408 applied as Cross strips x 2 reps.

Yields - Crop Dry Wt. Crop Yield, WRG dry wt.

Crop	Rate Hoe	Clean Seed Kg/ha	Dry Weight Crop Kg/ha	Dry Weight W.R.G. Kg/ha
Glenelg Linseed	Nil	662	2,224	1537
	1 lt + WA	929	2,580	70
	3 lt + WA	948	2,769	Nil
Norin 20 Rape	Nil	559	2,177	1432
	1 lt + WA	945	3,514	70
	3 lt + WA	901	3,500	Nil
Uni-harvest Lupin	Nil	1,585	4,670	1601
	1 Lt + W.A.	2,555	6,956	272
	3 Lt + W.A.	2,541	6,611	Nil
Unicrop Lupin	Nil	1,877	4,876	1599
	1 Lt + W.A	2,146	5,360	150
	3 Lt + W.A.	3,203	8,237	Nil

Conclusion. Lupins yielded best with yields around 2500 Kg/ha. The control of ryegrass by H.23408 was outstanding. The herbicide was applied late when the ryegrass was tillering and the crops were 20 cm high and some yield reduction had probably occurred already. Cropping systems using herbicides such as H.23408 in combination with lupins, show great promise in the S.W. region.

76 AL 36/3342 EX Rape Variety Trial

Co-operating Adviser - Steve Trevenan.

Aim To test the performance of a number of rapeseed varieties which have demonstrated tolerance of blackleg.

Location Mettler D. Tillbrook

Site The trial was conducted on rape stubble to maximize disease incidence.

Design 15 Varieties x 3 reps.

Results Ratings reflect density and vigour combined (0-5)

Variety	Rating 12.8.76	Rating 2.12.76	Shattering 2.12.76	Yields Kg/ha
Span - Till	4	2.2	Nil	546
Span - Cert	2.5	1.3	Nil	273
Arlo	1	1.2	7%	276
SV 3823		3.8	45%	497
Tower	0.5	0.7	20%	o
Midas	3	3.5	0	625
Zephyr	1	1.5	0	343
N 20	4	3.7	40%	506
N 35	5	3.3	20%	630
N 32	4	3.7	25%	682
N 36	3.5	4.2	0(g)	710
N 40	3	2.6	5%	609
N 37	5	3.7	0	850
N 31	4	3.3	15%	528
Yu Dal	3	5.0	0(g)	549

(g) = still green

Conclusion This trial reaffirms last years results that several of the new lines are much more tolerant of blackleg than the previously used Canadian varieties. Tower once again performed very poorly and was almost wiped out by the disease. Midas performed best of the commercial varieties. The suspected difference between the low erucic span certified and the high erucic "span - tillbrook" was confirmed. "Span Tillbrook" did show reasonable tolerance. The very good tolerance of Yu dal is interesting. Once again excessive shattering was a problem in several varieties and must be considered a serious disadvantage.

76 MA 9 Miscellaneous Crop Trial

Co-operating adviser - John Guimelli

AIM To test the performance of a range of crops at this site.

Site. Manjimup, D. Simcock.

Details Sown 26.8.76 200 Kg/ha super
100 Kg/ha Agran 34:0
Reps. 3

Results

	Variety	Yield Kg/ha
	Wheat	1187
	Oats	1125
*	Lupins - Ultra	224
	Lupins - Unicrop	876
	Lupins - Uniharvest	718
	Linseed - Glenelg	1359
	Rapeseed - Span	1593
	Rapeseed - Norin 20	1162
	Rapeseed N. 37	1171
	Rapeseed N. 35	1359
	Canary Seed	750
	Sunflower VNH II MK	N/A
	Sunflower Hysun 30	N/A
	Sunflower Sunfola 68/2	N/A

* Sown at low rate.

Conclusion. Yields low for this site. Reasons not obvious perhaps sown too late. Most profitable crop is Canary Seed.

CB 49 TRIALS

M. POOLE

1. Seed Softening Several methods of artificially softening CB 49 seed have been examined.

a) Treatment with H_2SO_4

Germination %

H_2SO_4 Conc. hours	0.5N	IN	4.5N	9N	18N	36N
1 hrs	7	12	11	12	15	5
2 hrs	5	7	6	5	9	28
4 hrs	9	12	8	8	17	99
6 hrs	8	8	7	6	25	98
24 hrs	5	3	6	2	45	89

Notes 1) No abnormal seedlings at any level.
2) No death at any level.
3) Seed to acid ratio approx. 1:2.

Conclusion: Complete softening occurs with 36N H_2SO_4 treatment for 4 hours. Lower concentrations are not effective.

Batches of 2 bags in an enamel bath were treated in 1976. Germination percentage obtained was 80-95%. Seed was covered completely with acid. Wetting the seed coat with acid was not effective - the seed must be soaked in the acid. The acid can only be used for 2 or 3 batches after which it becomes mucilagenous and carbonized.

2. Effect of harrowing on germination

M. POOLE

76 BA 27. Badgingarra Research Station The objective of this trial was to examine the effect of renovation (harrowing) on re-establishment of CB 49. Plots were topdressed with 30, 60, 120, 240 Kg/ha of 35% germination CB 49. Appropriate plots were then worked with harrows to partially bury the seed. A - sinizine treatment for grass control was included in the design but was never applied. The trial was on wheat stubble and CB 49 stubble. Germination % of topdressed seed - 40%.
Plant Counts On 22.6.76 (Sown 27.4.76).

Rate of Seed T.D. Kg/ha	Top dressed Plants/m^2	Topdressed, harrowed Plants/m^2
30	0.2	3.0
60	0.2	9.3
120	0.7	11.0
240	0.5	20.4

Plots were swamped by wild radish and grass weeds and not harvested.

b) Fluctuating Temperatures — M. POOLE

The aim of this trial was to attempt to simulate diurnal fluctuations of temperature, known to soften seed, with more rapid fluctuations over a shorter period.

Treatments were

1. 85°C/Ambient on 4 hr cycle.
2. 60/15C on 12 hr cycle.

These treatments are obviously opportunistic - we had the ovens available - and this is an exploratory trial.

Date	85/ambient				60°/15°C				Control 15°C
	Germ	Hard	Abn	Dead	Germ	Hard	Abn	Dead	Germ
30.7.76	21	77	1	1	21	77	1	1	21
16.8.76	28	44	0	28	20	80	0	0	22
27.8.76	22	48	2	28	26	70	2	2	24
10.9.76	34	36	0	30	28	68	2	2	20
24.9.76	22	76	0	2	32	64	2	2	21
8.10.76	6	42	0	52	48	50	0	2	22
22.10.76	2	51	0	47	33	64	1	2	22

Comment 1. The 85°C/amb. treatment obviously was too severe, with a high percentage of seed Bill.

2. 60/15°C. increased germ by a small %.

3. Trials looking at rapid fluctuation and temperatures in the range 65/15 70/15 75/15 are indicated.

c) Other Treatments. Several attempts have been made to soften seed by scarification. The serradella dehuller will bring germination up to 30-40% but the rest of the seed is badly damaged and forms abnormal seedlings. The barley pearler is better, with 50-60% germination, but adjustment is very critical.

Fate of Other Trials

76 AL 35 — Rape Varieties under blackleg conditions at Kojaneerup M.H. Hood.

Not worth harvesting due to insect attack (weevils) at one end. Early ratings same as 76 AL 36.

76 AL 37)
76 AL 38)
76 AL 39) — Sunflower Agronomy trials at Albany - results not available when this went to press.

76 DE 4. — Miscellaneous Crop Trial. Denmark, T. Cysta. Results not yet available.

76 JE 28 — Miscellaneous Crops Trial. Not Sown.

Esperance Sunflower Trials. Conducted in conjunction with Ric Madden - separate report available.

Manjimup Sunflower Trial - Conducted in conjunction with Gerry Parlevlich. Separate report being prepared.