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1973 Lupin cultivar comparison

G Walton

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1973 EXPERIMENTAL SUMMARY

LUPIN CULTIVAR COMPARISON

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WESTERN AUSTRALIAN

DEPARTMENT OF AGRICULTURE

Comparison of lupin varieties.

May to October Rainfall (mm)	Location	Unicrop		Wheat
		Uniharvest	WB2	
638	Badgingarra R.S.	2094	2385	
560	W. Dandaragan	1125	1550	
518	Mt. Barker R.S. *	1809	1781	1173
505	Darkan +	874		1435
500	Myrup *	2940		
489	Mayanup *	2606	2278	1223
470	Eneabba *	1660	2000	553
	Eneabba		1802	
401	Chapman R.S.		2935	2874
377	Watheroo *	1856	1949	928
373	Avondale R.S.			3427
355	Esperance D.R.S. +	1504	1926	4088
	E. Gibson *	2341	2233	777
340	Gnowellen *	2205	-	1132
333	Lk. Camm *	2572	2353	2091
326	Eradu *		1685	445
276	Lk. Grace +	1287	1370	1866
273	Ongerup	936	537	
265	Kukerin +	697	830	1710

These 1973 results don't give a good fit to the relationship between yield and May to October rainfall based on the 1971 and 1972 results. (Graph).

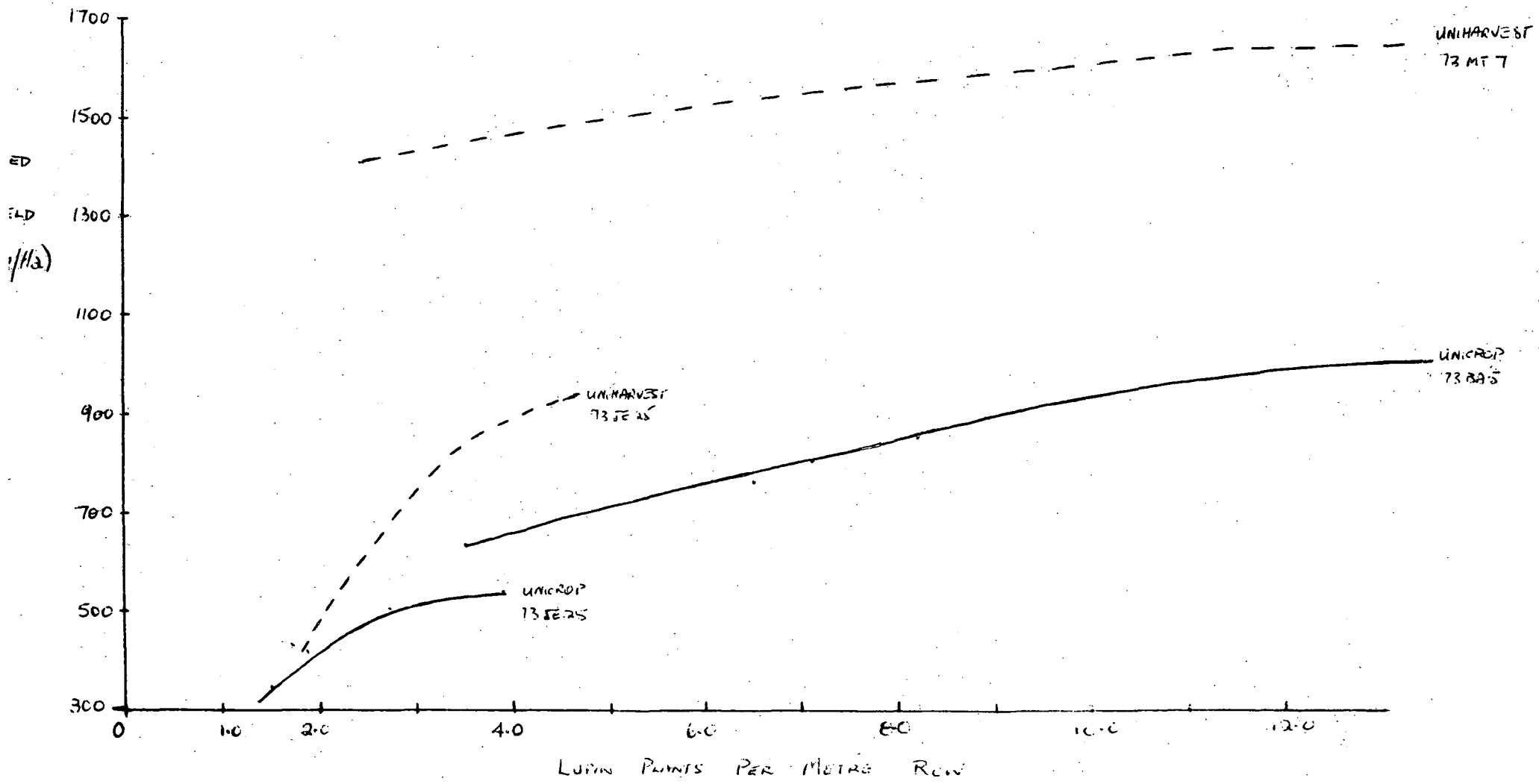
At a market price of \$77 per tonne, "break even" point for lupin is 333 kg/ha which is at the 150 mm May to October rainfall level.

* Lupins Gross Return exceeds that of wheat for one reason or another.

(Wheat at \$90 per tonne, Lupins at \$77 per tonne)

+ Wheat Gross Return exceeds that of lupins.

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No. 73LG6

TITLE: Grain legume variety trial.
LOCALITY: C.P. Smith. Kukerin.
RAINFALL: May to October: 265 mm.
SOIL: 0-20 cm. grey sand with gravel/yellow brown sandy gravel.
VEGETATION: Mallee, Morrell.
HISTORY: Second crop site on old land.
RECORD: Date seeded: 15/6/73 into moist soil.
Rate super: 202 kg/ha.
Rate Urea on
Cereals : 90 kg/ha.
Rate of
Seeding : Lupins - 90 kg/ha
Field Peas - 84 kg/ha
Cereals - 50.4 kg/ha

Trial inspected on 10/10/73: Trial site dry, plants beginning to wilt. Peas browned off and died with some pods formed. Derrimut hanging on better than White Brunswick.

Uniharvest lupins have primary in full flower while Unicrop has 4-5 small pods on the primary.

Harvest Results (kg/ha)

Variety	Rep 1	Rep 2	Rep 3	Mean	Price FOB \$/tonne	Total \$/ha.
Gambee Wheat	1760.2	1741.5	1629.2	1710.3	90	153.90
Clipper Barley	1722.8	1722.8	1685.3	1710.3	64	109.40
Unicrop lupin	786.5	861.4	842.7	830.2	77	63.90
Uniharvest lupin	-	702.2	692.4	697.3	77	53.67

No. 73LG7

TITLE: Grain legume variety trial.
LOCALITY: T. Morgan, Lake Grace.
RAINFALL: May to Oct: 276 mm.
SOIL: 15 cm. grey brown sand with gravel, 15-37 cm. white/yellow gritty gravelly clay, >37 cm. yellow. " " "
VEGETATION: Mallee, Grevillea scrub.
HISTORY: First crop 1972 (Wheat) on fallow. Stubble fire harrowed. Scarified 31/5/73.
RECORD: Date seeded: 1/6/73 into moist soil.
 Rate super
 No. 1 Mix : 258.4 kg/ha
 Rate Urea
 on cereal : 91.8 kg/ha.
 Rate of
 Seeding : Lupins 90 kg/ha; Field peas 84kg/ha
 Cereals 50.4 kg/ha.

Trial inspected on 10/10/73 - Site weed-free. Lupins about 60 cm high. Spray damage knocked flowers on Unicrop primary spike, 1-3 pods set. Lateral spikes have young pods.

Uniharvest has young pods and flowers on primary. Field Peas have good pod set and fill.

Harvest Results (kg/ha)

Variety	Rep 1	Rep 2	Rep 3	Mean	Price FOB /tonne	Total \$/ha.
Falcon Wheat	1750.9	1919.4	1928.8	1866.4	\$ 90	167.94
Clipper Barley	1629.2	1722.8	1601.1	1651.0	64	105.66
Unicrop lupin*	1170.4	1413.8	1526.2	1370.1	77	105.49
Uniharvest lupin*	1254.6	1320.2	-	1287.4	77	99.87
Derrimut pea	2518	2080	2324	2307.3	61+	140.73
White Brunswick Pea	2525	2440	2023	2329.3	61+	142.07

* Approx 5% of Plants affected with Split Seed problem.

+ Based on 'protein equivalent.'

No. 73LG8

TITLE: Grain legume variety trial.
LOCALITY: L. Mason, East Lake Camm.
RAINFALL: May-Oct: 333 mm. (61 mm during April)
SOIL: 0-45 cm. white/yellow sand
 45-60 cm. yellow sand clay
 >60 cm. gravelly clay.
VEGETATION: Grevillea, low scrub.
HISTORY: New land, first crop 1972 with 209 kg No. 1 mix/ha.
DATE SEEDED: 17/5/73.
RATES OF FERTILISER: 280 kg/ha super
 86.2 kg/ha urea
RATES OF SEEDING: Lupin 90 kg/ha
 Field peas 84 kg/ha
 Cereals 50.4 kg/ha
RECORD: Trial inspected on 10/10/73. Plant density in lupins seems low as well as peas. No wilting of lupins yet. Peas still green with good pod fill.
 Self sown wheat throughout plots.
 Unicrop has 6-10 pods on primary with pods on laterals.
 Uniharvest has 4 pods on primary and flowering on laterals.

Harvest Results (kg/ha).

Variety	Rep 1	Rep 2	Rep 3	Mean	Price FOB /tonne \$	Total \$/ha.
Falcon Wheat	2078.6	2078.6	2116.0	2091.1	90	188.19
Clipper Barley	1441.9	1217.2	1292.1	1317.1	64	84.29
Unicrop lupin	2471.8	2303.3	2284.6	2353.2	77	181.18
Uniharvest lupin	1546.7	2565.5	2602.9	2571.7	77	198.04
Derrimut Pea	2081	2487	2552	2373.3	61	144.71
White Brunswick Pea	2301	2383	2376	2353.3	61	143.58

No. 73A15

TITLE: Rates of seed with L. albus cv WB2.
LOCALITY: Avondale Research Station. Paddock 1B.
RAINFALL: May to Oct: 373 mm.
SOIL: Red gritty sand over old granite at 52 cm.
VEGETATION: York gum, Jam.
HISTORY: 1970 - Daliak sub. pasture.
 1971 - Turret rape crop.
 1972 - Clipper Barley bulk crop.
 Total Super Bank = 2,000 kg/ha.
RECORD: Date of seeding: 25/5/73 (Treflan pre-emergence used)
 Rate of super : 224 kg/ha.
 Rates of seeding: 100, 140, 180, 210, 260, 290 kg/ha.

Trial Rated for height and density 18/10/73.

Seeding	100	140	180	210	260	290kg/ha
Mean Rating	3.75	3.25	4.5	5	5	4.25

(Rating 0-5) 5 = 90 cm. tall, complete clover.

The WB2 plants had 8-12 pods on primary and 14-17 pods on laterals.

Reduction in lateral stem development from 4 to 3 with increasing plant density.

Lupin establishment counts 26/7/73. (Plants/m drill row).

Seed Rate	100	140	180	210	260	290kg/ha
WB2 Plant count	3.3	4.0	4.9	5.1	6.6	7.3

Coefficient of Variation = 14.5%.

LSD between seed rate; $p < 0.05 = 1.9$

Replications N.S.

Harvest Yield (kg/ha)

Seed Rate:	100	140	180	210	260	290
Rep. 1	2471.8	2724.6	3174.0	3249.0	3417.5	3398.8
" 2	2509.3	3052.3	3146.0	3398.8	3380.0	3454.9
Mean	2490.5	2888.4	3161.0	3323.9	3398.7	3426.8

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No. 73C3

TITLE: Rate of seed with L. albus cv WB2.
LOCALITY: Chapman Research Station. Paddock 6A2.
RAINFALL: May to October = 401 mm.
SOIL: Red silty loam.
VEGETATION: Curara (Acacia) and Standback (Hakea)
HISTORY: Second crop site 1973.
RECORD: Date seeded: 17/5/73
 Rate super: 232 kg/ha
 Rates of seed: WB2 - 106.8, 137.8, 189.3, 217.3, 253.1 kg/ha.
 Unicrop - 67.2, 123.2kg/ha.
 Trial inspected 4/9/73 - the albus at this stage look very good as a crop. Cutworms found on the L. albus pods.

Lupin establishment count, 3/7/73.

Seed Rate:	WB2					Unicrop	
		107	138	189	217	253	67
Plant count/m row	3.1	4.9	6.6	7.7	8.3	4.5	6.7

WB2 x Seed Rate treatments: coefficient of variation = 8.0%

LSD's between seed rate Means $p < 0.05 = 1.4$

$p < 0.01 = 2.3$

Replications N.S.

Harvest Results (kg/ha)

Seed Rate:	WB2					Unicrop	
		107	138	189	217	253	67
Rep. 1	2256.5	2500.0	3061.7	2172.2	2902.5	2209.7	2602.9
Rep. 2	-	2256.5	2050.5	2125.4	2846.3	2949.3	3267.7
Mean	2256.5	2378.2	2556.1	2148.8	2874.4	2579.5	2935.3

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No. 73MT8

TITLE: Application of N. fertiliser to lupin crop.
LOCALITY: Mt. Barker Research Station. Paddock N2A.
RAINFALL: May to October: 518 mm.
SOIL: Gravelly loamy sand.
VEGETATION: Jarrah, Redgum.
HISTORY: Cropped 1970,71, subclover pasture 1972.
RECORD: Seeded: 17th May 1973.
Rates seeded: Uniharvest lupin 92 kg/ha.
Rates fertiliser: 230 kg plain super/ha.
0, 29, 57 and 120 kg 34:0
Agran/ha applied at seeding
(17/5/73) and 24/5/73.

Trial quadrat sampled for Weed and Lupin dry matter values on
13/7/73 and 27/9/73.

* Sampled 13/7/73. 3 quadrats per plot (sample size 1.08 m²)
W = weeds L = lupins.

* See Page 10.

Rates of Nitrogen	Nitrogen T.D. at seeding (kg/ha)								Nitrogen T.D. after seeding					
	0		29		57		120		29		57		120	
	L	W	L	W	L	W	L	W	L	W	L	W	L	W
Mean Wt. gms.	14.88	12.7	13.35	9.82	13.2	9.38	12.02	10.32	13.93	11.3	13.42	8.38	13.67	10.3

2 quadrat sampled per plot: 27/9/73 (Sample size 0.72 m²)

Rates of N.	Nitrogen T.D. at seeding (kg/ha)								Nitrogen T.D. after seeding.					
	0		29		57		120		29		57		120	
	L	W	L	W	L	W	L	W	L	W	L	W	L	W
Mean Wt. gm.	386.9	145.2	322.2	189.1	338.5	153.3	287.4	211.3	303.9	193.5	296.8	165.7	342.9	189.3

Dry matter - oven dried and weighed in grams. Application of Nitrogen has boosted weed growth and thereby suppressed lupin growth.

Lupin establishment count taken 28/6/73.

Grand Mean plant No. per m drill row = 7.4

Coefficient of variation = 11.1%.

No significant differences for Replications, Nitrogen treatments (rates and time)

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Mean Harvest Yields (kg/ha)

Time of Application	Rates of N.			
	0	10	20	40
T.D. at Seeding	1479.3	1541.7	1504.3	1466.8
T.D. after Seeding		1379.5	1470.0	1376.3

Harvest Result (kg/ha)

Seed Rate	101	135	184	215	249	258
Rep. 1	1872.6	1610.4	1741.5	1872.6	1685.3	2003.7
Rep. 2	1835.1	1741.5	1966.2	1928.8	2134.8	1816.4
Mean	1853.8	1675.9	1853.8	1900.7	1910.0	1910.0

No. 73N3

TITLE: Grain legume variety trial.
LOCALITY: Newdegate Research Station. Paddock N3.
RAINFALL: May to October: 277 mm.
SOIL: White loamy sand over gravel.
VEGETATION: Mallee.
HISTORY:

RECORD: Date seeded : 15/5/73, ploughed 4 weeks
Rate superphosphate : prior 263 kg/ha.
Rates seeded : Lupins 89.6 kg/ha, Peas
89.6 kg/ha, Barley 45 kg/ha,
Wheat 47 kg/ha.
Rate of Urea on
Cereals : 1512 kg/ha.

Trial inspected 10/10/73 - Severe competition from Erodium plants.
Lupins wilting badly. Unicrop set 10 pods on primary spike and
pods on 1st order lats. Uniharvest set 6-8 pods on the primary
spike. Peas have wilted with numerous pods and good fill.
Cereals have a dense stand.

Comment:

Hail storm wiped out trial. Visual assessment of yield (from No.
of pods per plant) was Unicrop - 900 kg/ha
Uniharvest - 750 kg/ha