

1981

Pasture trials at Esperance

M DA BOLLAND

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DEPARTMENT OF AGRICULTURE

WESTERN AUSTRALIA

SUMMARY OF EXPERIMENTAL RESULTS 1981

PASTURE TRIALS AT ESPERANCE

M.D.A. Bolland

INTRODUCTION

Most of the 1981 data viz seed yield results, and hardseed data, has not yet been completely processed, and thus only some of the data can be presented in this summary.

SECTION I: MEDIC SPECIES TRIALS

SECTION II: LUCERNE VARIETY TRIALS

SECTION I

80SG39 - MEDIC SPECIES AND STRAIN SEED YIELD TRIAL

K. Holt
N.E. Salmon Gums

Soil Type: New land alkaline medium heavy soil.

Mean Annual Rainfall: 300 mm, 200 mm of which on average falls during the growing season.

Length of Growing Season: About 4 months.

Trial Sown: 4/6/80

Seeding Rate: 50 kg ha⁻¹

Inoculum: M. polymorpha NA2290; M. rugosa Paragossa; All other - Group A.

Fertilizer: 1980 - 400 kg ha⁻¹ super No. 1; 1981 - 400 kg ha⁻¹ plain super.

RESULTS: Seed yield data, mean of 4 replicates. Plots undefoliated.

Species and Strain	Mean Seed Yield (gm ⁻²)	
	1980	1981*
<u>M. truncatula</u>		
Cyprus	0.24	14.45
Zuara 3	0.60	3.18
<u>M. tornata</u>		
Tornafield	0.67	0.00
Swani	0.26	0.45
<u>M. littoralis</u>		
Harbinger	0.28	4.53
Sabratha	2.75	11.13
W. Azizia A ₅	0.08	3.00
<u>M. scutellata</u>		
Sava	0.92	0.00
Sair	0.07	0.00
<u>M. rugosa</u>		
Sapo	0.02	0.00
<u>M. polymorpha</u>		
Serena	7.25	4.98
Circle Valley	0.18	0.00

LSD 5% 1.31 3.77

* Includes only fresh burrs formed 1981, and not total yield. Fresh burrs picked out by hand.

COMMENTS: (1) Both 1980 and 1981 were very dry seasons,
(2) Sabratha, Cyprus, Serena and Harbinger produced most seed, Cyprus and Harbinger during 1981, Sabratha and Serena in both seasons.

Soil Type: Very heavy old land, alkaline Kumarl soil

Mean Annual Rainfall: 330 mm, with about 220 mm falling during the growing season.

Length of Growing Season: About 4 months.

Trial Sown: 4/6/80

Seeding Rate: 50 kg ha⁻¹

Inoculum: *M. polymorpha* NA2290; *M. rugosa* Paragossa; all others Group A.

Fertilizer: 1980 - 200 kg ha⁻¹ super No. 1; 1981 - 200 kg ha⁻¹ plain super.

RESULTS: Seed yield data, mean of 4 replicates. Plots undefoliated.

Species and Strain	Seed Yield (gm ⁻²)	
	1980	1981*
<u><i>M. truncatula</i></u>		
Jemalong	7.15	0.3
Cyprus	13.75	3.0
Zuara 3	11.08	3.13
<u><i>M. tornata</i></u>		
Tornafield	36.78	2.10
Swani	12.95	2.43
<u><i>M. littoralis</i></u>		
Harbinger	17.70	1.47
Sabratha	8.00	8.43
W. Azizia A ₅	23.68	3.97
<u><i>M. scutellata</i></u>		
Sair	12.85	4.63
Sava	57.15	6.63
Robinson	9.93	3.20
<u><i>M. rugosa</i></u>		
Sapo	13.75	0.10
Paraponto	24.20	1.77
<u><i>M. polymorpha</i></u>		
Serena	56.65	11.23
Circle Valley	31.60	0.77
	LSD 5%	
	11.07	1.62

* Includes only fresh burrs formed during 1981, which were carefully handpicked.

COMMENTS: (1) Both 1980 and 1981 were very dry years, particularly the latter.

80SG24 - MEDIC SPECIES AND STRAIN SEED YIELD TRIAL Salmon Gums Research Station

Soil Type: Deep coarse sand over alkaline clay - old land.

Mean Annual Rainfall: 330 mm, with about 220 mm falling during the growing season.

Length of Growing Season: About 4 months.

Trial Sown: 4/6/80.

Seeding Rate: 50 kg ha⁻¹.

Inoculum: *M. polymorpha* NA2290; *M. rugosa* Paragossa; all others Group A.

Fertilizer: 200 kg ha⁻¹ super No. 1 in 1980

RESULTS: Seed yield data for 1980 only mean of 4 replicates. Plots undefoliated.

Species and Strain	1980 Seed Yield (gm ⁻²)
<u><i>M. truncatula</i></u>	
Jemalong	1.33
Cyprus	2.50
Zuara 3	2.10
<u><i>M. tornata</i></u>	
Tornafield	1.43
Swani	1.60
<u><i>M. littoralis</i></u>	
Harbinger	6.08
Sabratha	1.28
W. Azizia A ₅	2.08
<u><i>M. scutellata</i></u>	
Sair	4.20
Sava	3.03
Robinson	1.58
<u><i>M. rugosa</i></u>	
Sapo	2.65
Paraponto	2.48
<u><i>M. polymorpha</i></u>	
Serena	5.30
Circle Valley	2.08

LSD 5%

0.97

Soil Type: New land alkaline Circle Valley sand.

Mean Annual Rainfall: 350 mm, with about 220 mm falling during the growing season.

Length of Growing Season: 5 months.

Trial Sown: 5/6/80

Seeding Rate: 50 kg ha⁻¹.

Inoculum: *M. polymorpha* NA2290; *M. rugosa* Paragossa; all others Group A.

Fertilizer: 1980 - 400 kg ha⁻¹ super No. 1; 1981 - 400 kg ha⁻¹ plain super.

RESULTS: Seed yield data, mean of 4 replicates. Plots undefoliated.

Species and Strain	Seed Yield (gm ⁻²)	
	1980	1981*
<u><i>M. truncatula</i></u>		
Cyprus	15.00	7.08
Jemalong	1.00	4.70
Zuara 3	22.75	12.10
<u><i>M. tornata</i></u>		
Tornafield	6.50	4.88
Swani	18.00	0.00
<u><i>M. littoralis</i></u>		
Harbinger	14.75	21.28
Sabratha	34.00	11.05
W. Azizia A ₅	8.75	10.90
<u><i>M. scutellata</i></u>		
Sava	35.75	24.73
Sair	31.00	19.45
Robinson	21.25	16.40
<u><i>M. rugosa</i></u>		
Sapo	4.75	3.48
Paraponto	8.25	5.10
<u><i>M. polymorpha</i></u>		
Serena	58.25	17.50
Circle Valley	21.00	6.85
	LSD 5%	
	8.87	3.84

* Includes only fresh seed formed during 1981 - burrs carefully picked out by hand.

COMMENTS:

Both 1980 and 1981 were very dry years.

Soil Type: New land heavy alkaline soil in high rainfall mallee region.

Mean Annual Rainfall: 450 mm, of which about 350 mm occurs during the growing season.

Length of Growing Season: About 6 months.

Trial Sown: 10.6.80.

Seeding Rate: 50 kg ha⁻¹.

Inoculum: NA2290 for *M. polymorpha*; Paragosa for *M. rugosa*; Group C for Daliak and Nungarin; Group A the rest.

Fertilizer: 1980 - 400 kg ha⁻¹ super No. 1; 1981 - 400 kg ha⁻¹ plain super.

RESULTS: Seed yield data for 1980, 1981 yet to be threshed and cleaned.

Species and Strain	Days From Sowing To 1st Flower *	Mean (4 reps) Seed Yield (gm ⁻²)	Species and Strain	Days From Sowing To 1st Flower *	Mean (4 reps) Seed Yield (gm ⁻²)
<u><i>M. truncatula</i></u>			<u><i>M. scutellata</i></u>		
Cyprus	79	15.75	Robinson	91	14.50
Jemalong	84	7.50	Sava	84	24.50
SAD 7176	84	16.50	Sair	79	18.25
SAD 6297 (Sephi)	84	6.00	<u><i>M. rugosa</i></u>		
SAD 633 (Sanza)	93	1.50	Sapo	84	8.0
SAD 2411	84	4.50	Paraponto	84	11.5
Zuara 3	84	12.00	Paragossa	84	4.25
<u><i>M. tornata</i></u>			<u><i>M. aculeata</i></u>		
Tornafield	86	13.25	SAD 4311	91	4.00
Swani	76	1.00	SAD 2629	85	1.00
Saleq	91	15.75	SAD 4175	101	4.75
SAD 2562	91	12.25	<u><i>T. subterranean</i></u>		
<u><i>M. littoralis</i></u>			<u>ssp subterranean</u>		
Harbinger	80	14.25	Daliak	84	2.00
Sabratha	75	10.50	Nungarin	79	8.00
W. Azizia A ₅	79	13.25			
<u><i>M. polymorpha</i></u>					
Serena	72	39.50			
Circle Valley	84	13.00			

LSD 5% = 3.17 gm⁻²

* Sown in 1980 after break of the season. Seedlings emerged 6 days later.

COMMENTS:

Both 1980 and 1981 springs were very dry for this region of the alkaline mallee soils.

S E C T I O N I I

81ES28 - SAD BLANKS (South Australian Department of Agriculture Breeding Lines). Lines donated by I. Kaehne.

Ireland Farms, Gibson

Sown: 20/7/80

Soil Type: Old land sand (15 cm) over gravel over clay.

Mean Annual Rainfall: 600 mm, with a growing season of about 6½ months.

Sowing Rate: 4 kg ha⁻¹. Seed inoculated and lime pelleted just prior to sowing.

Inoculum: Group A inoculum.

Fertilizer: (i) At sowing: 200 kg ha⁻¹ super No. 1; 100 kg ha⁻¹ muriate of potash; 25 kg ha⁻¹ Agran 34.

(ii) Autumn 1981: 200 kg ha⁻¹ plain super.

Management: Grazed heavily with sheep for 3 weeks, spelled for 6 weeks. Herbage yield cuts done before sheep re-introduced.

RESULTS: (1) Plant Density (lucerne plants m⁻²).
Data mean of 3 replicates.

Variety	Plants/m ²		Variety	Plants/m ²	
	9/2/81	6/8/81		9/2/81	6/8/81
B9	24	13	B49	20	6
B18	21	6	B50	21	3
B22	21	6	B52	22	3
B25	20	8	B53	26	7
B26	23	4	B55	20	3
B27	21	11	B57	22	6
B28	27	2	B58	22	12
B29	22	4	B59	22	10
B30	26	9	B60	20	11
B38	22	8	B61	20	6
B40	24	4	Springfield	18	11
B43	27	12	CUF101	18	10
B44	24	12	Hunter River	24	6

LSD 5% 9/2/81 = 6.2
 6/8/81 = 4.3

Results cont. 81ES28...

(2) Dry Weight Herbage Yields (kg ha⁻¹)
Data mean of 3 replicates.

Variety	Dry Weight Herbage Yields of Tops of Lucerne (kg ha ⁻¹)		
	22/4/81	3/7/81	20/11/81
B9	3993	3437	402
B18	2039	1660	432
B22	1461	1663	417
B25	2687	2823	493
B26	3583	1607	640
B27	2855	3237	642
B28	3373	513	280
B29	4150	1550	588
B30	3583	3370	317
B38	3245	1710	590
B40	2243	1487	293
B43	5983	5087	450
B44	3851	3307	728
B49	2713	1133	672
B50	2673	1387	613
B52	4696	2603	657
B53	2653	1247	428
B55	1230	980	532
B57	2823	2403	750
B58	3023	4073	615
B59	3523	4150	763
B60	4013	2477	887
B61	2610	2890	488
Springfield	2883	3610	882
CUF101	3879	6807	957
Hunter River	1993	1723	415

LSD 5%

1256

1296

194

Soil Type: Flemming gravelly sand. Old land.

Mean Annual Rainfall: 610 mm, with a growing season of about 7 months.

Sown: 23/7/80.

Seeding Rate: 4 kg ha⁻¹. Seed inoculated and lime pelleted just prior to sowing.

Inoculum: Group A.

Fertilizer: (i) At sowing: 200 kg ha⁻¹ super No. 1, 100 kg ha⁻¹ muriate of potash.

(ii) Autumn 1981: 200 kg ha⁻¹ plain super.

Management: Grazed heavily with sheep for 3 weeks, spelled for 6 weeks.

RESULTS: Data mean of 2 replicates.

Line	Lucerne Plants Per m ² 16/2/81	Dry Weight Herbage Yield (kg ha ⁻¹)			Line	Lucerne Plants Per m ² 16/2/81	Dry Weight Herbage Yield (kg ha ⁻¹)		
		13/3/81	21/8/81	23/10/81			13/3/81	21/8/81	23/10/81
C4-7	16	740	1127	447	C35-23	6	396	690	242
C4-17	15	690	1250	838	C35-24	5	490	947	446
C4-22	14	536	527	480	C35-25	9	503	487	263
C4-24	19	707	1187	622	C35-26	11	1383	1164	604
C16	14	1499	1007	444	C35-27	8	806	1567	320
C17	14	1000	903	730	C35-28	8	438	630	640
C18	8	604	690	621	C36-8	5	457	540	361
C19	12	821	854	554	C36-13	7	843	990	712
C34-2	10	921	740	594	C36-14	8	1506	711	455
C34-3	6	745	667	273	C36-15	11	724	907	508
C34-4	13	682	1204	452	C36-19	5	1731	723	489
C34-5	8	1479	910	638	C36-20	10	1568	1030	639
C34-12	8	716	460	296	C36-23	7	678	1183	634
C34-13	8	519	547	461	C36-25	5	240	677	244
C34-14	7	403	684	547	C36-26	8	608	670	465
C34-15	5	331	330	433	C36-27	9	668	743	606
C34-16	11	586	787	665	C36-28	8	779	1561	660
C34-17	6	435	437	434	C36-29	10	535	837	801
C34-19	9	402	657	686	C36-32	11	824	1260	531
C34-20	5	1142	1003	373	CUF101	6	595	670	832
C34-23	4	476	1227	396	CUF101	9	1083	390	585
C34-24	5	762	763	287	Hunter River	15	562	844	702
C34-25	5	504	654	329	Hunter River	9	623	623	762
C35-2	5	1226	767	807	Springfield	7	597	1120	745
C35-4	7	1413	883	742	Springfield	11	571	727	494
C35-5	6	461	747	386	Springfield	11	820	1204	701
C35-7	9	753	634	555	Springfield	6	852	903	512
C35-11	10	657	687	720	Springfield	9	879	1384	747
C35-14	5	409	1114	386	Springfield	13	858	1047	706
C35-20	13	677	873	640	Springfield	6	1064	1057	766

LSD 5%

6.7 596 582 312

Sown: 20/6/80

Soil Type: New land deep Gibson sand.

Mean Annual Rainfall: 610 mm, with a growing season of about 6½ months.

Seeding Rate: 4 kg ha⁻¹. Inoculated and lime pelleted just prior to sowing.

Inoculum: Group A.

Fertilizer: (i) At sowing 400 kg ha⁻¹ super No. 1, 100 kg ha⁻¹ muriate of potash, 25 kg ha⁻¹ Agran 34.

(ii) Autumn 1981 and Spring 1981: 200 kg ha⁻¹ plain super and 100 kg ha⁻¹ muriate of potash.

Management: Continuously grazed with cattle.

RESULTS: Plant counts done only on this trial.

Variety	Lucerne Plants/m ²	
	16/2/81	24/7/81
Hunter River	26	19
CUF101	14	11
Siriver	20	18
Sirdtasman	15	12
Sheffield	15	14
Springfield	20	14
Wakefield	12	9
Falkiner	25	26
Nova	17	20
C3 Comp	18	10
Sarajac	9	19
Thor	14	13

LSD 5%

13

23

81ES30 - LUCERNE VARIETY EVALUATION TRIAL

Ireland Farms, Gibson

Sown: 19/7/80

Soil Type: 15 cm sand over gravel over clay - old land.

Mean Annual Rainfall: 600 mm with a growing season of about 6½ months.

Sowing Rate: 4 kg ha⁻¹. Seed inoculated and lime pelleted just prior to sowing.

Inoculum: Group A

Fertilizer: (i) At sowing: 200 kg ha⁻¹ super No. 1, 100 kg ha⁻¹ murate of potash, 25 kg ha⁻¹ Agran 34.

(ii) 200 kg ha⁻¹ plain super autumn 1981.

Management: Grazed heavily with sheep for 3 weeks, spelled for 6 weeks. Herbage yields assessed just prior to re-introducing sheep.

RESULTS: Mean of 3 replicates.

Variety	Lucerne Density/m ²		Dry Weight Herbage Yield of Tops (kg ha ⁻¹)		
	9/2/81	6/8/81	24/4/81	3/7/81	11/9/81
CUF101	24	3	2436	2927	630
Siriver	39	4	2721	2606	855
Maxidor	42	4	2209	2517	707
Matador	43	3	1771	2454	621
Pioneer 572	42	4	2454	2244	680
AS13	42	3	1906	1652	473
Sheffield	24	3	1954	1526	463
Hunter River	47	2	1979	1468	352
Springfield	37	2	2540	1910	667
LSD 5%	11.0	0.91	765	534	134

Sown: 6/8/80

Soil Type: Deep Banskia sand. Old land.

Mean Annual Rainfall: 630 mm, with a growing season of about 7 months.

Seeding Rate: 4 kg ha^{-1} seeding. Seed inoculated and lime pelleted just prior to

Inoculum: Group A.

Fertilizer: (i) At sowing: 120 kg ha^{-1} Agras No. 1, 100 kg ha^{-1} KCl.
(ii) Autumn and Spring 1981: 200 kg ha^{-1} plain super, 50 kg ha^{-1} muriate of potash.

Management: Grazed heavily with sheep for 3 weeks, spelled for 6.

RESULTS: Mean of 3 replicates.

Variety	Lucerne ₂ Plants/m ² 13/2/81	Dry Weight Herbage Yield (kg ha ⁻¹)			Average Width of 10 Random Crowns (cm) 21/10/81
		23/4/81	20/8/81	21/10/81	
Hunter River	23	1257	2420	244	10.4
CUF101	21	1320	2730	256	6.2
Nova	26	848	1430	230	7.6
Springfield	23	959	3240	219	8.0
Sheffield	22	716	1793	237	8.4
Siriver	26	1630	3893	403	7.4
Sirotasman	26	1073	2630	304	6.4
WL 318	29	1331	1550	286	9.7
Dekalb 167	29	838	2053	158	9.7
Dekalb 185	24	1234	1890	190	7.6
Pioneer 545	20	642	1280	127	8.2
Pioneer 581	27	669	2240	218	6.2
Matador	27	1139	2510	272	6.9
Maxidor	24	1372	2597	181	6.9
Resistador II	33	1204	1250	288	8.4
LSD 5%	7.6	510	860	73	1.35