1984

Low rainfall pasture project

M. A. Ewing

D E P A R T M E N T O F A G R I C U L T U R E

W E S T E R N A U S T R A L I A

SUMMARY OF EXPERIMENTAL RESULTS, 1984

LOW RAINFALL PASTURE PROJECT

M.A. EWING
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INDEX

(1) VARIETY EXPERIMENT

(a) Rows -

EXPERIMENTAL TITLE: Medic Species Evuluation - Rows.

EXPERIMENTAL NUMBER: 84M39

LOCATION: Merredin Research Station.

SOIL TYPE: Sandy Clay Loam.

ORIGINAL VEGETATION: Salmon Gum, Gimlet.

HISTORY: Old developed land.

SOWING DATE: 23/5/84.

SITE PREPARATION: Harrowing in late April to remove melons - cultivated in early May - sprayed 22/5/84 with 2 l/ha Sprayseed.

SEEDING RATE: 0.5 g/M row.

FERTILIZER: 200 kg/ha Super Cu Zn Mo No 1.

RESULTS:

VARIETY NAME/NUMBER	MEDIC SPEIES	DAYS SOWING TO FLOWING	COWPEA APHID RATING (1-9 SCALE) 1 = 0	BLUE GREEN APHID RATING (1-9 SCALE) 1 = 0	SEED YIELD (g/m
CYPRUS	M.TRUNCATULA	91.000	5.500	5.500	20.430
JEMALONG	M.TRUNCATULA	106.500	3.500	6.000	20.078
ASCOT	M.TRUNCATULA	-	3.000	3.000	-
AKBAR	M.TRUNCATULA	97.500	7.000	5.500	7.710
PARAGGIO	M.TRUNCATULA	103.000	5.000	4.000	36.315
SEPHI	M.TRUNCATULA	99.500	4.500	2.500	27.363
HARBINGER	M.LITTORALIS	93.500	4.000	5.500	27.165
TORNAFIELD	M.TORNATA	98.000	5.000	5.000	13.105
SWANI	M.TORNATA	89.500	5.500	5.500	2.670
PARAGOSA	M.RUGOSA	104.500	2.500	2.000	28.748
SAPO	M.RUGOSA	87.500	1.500	2.000	48.600
PARAPONTO	M.RUGOSA	96.500	1.000	1.500	53.650
SAVA	M.SCUTELLATA	82.500	1.500	1.500	63.240
SERENA	M.POLYMORPHA	79.000	5.500	4.500	36.880
CIRCLE VALLEY	M.POLYMORPHA	96.500	4.500	3.000	40.450
SA 264	M.SCUTELLATA	91.000	2.000	2.000	44.810
SA 279	M.TRUNCATULA	89.000	6.500	6.000	23.305
SA 369	M.TRUNCATULA	-	0.000	0.000	-
SA 1179	M.TORNATA	90.500	4.500	5.000	1.660
SA 1477	M.POLYMORPHA	99.500	5.000	4.500	12.440
SA 1620	M.TRUNCATULA	91.000	6.000	6.000	16.960
SA 1965	M.RUGOSA	97.000	2.000	2.000	44.170
SA 2339	M.ACULEATA	94.000	3.000	3.500	27.230
SA 2556	M.RUGOSA	95.000	3.000	4.000	23.405
SA 2649	M.POLYMORPHA	84.000	5.000	4.000	40.020
SA 2652	M.POLYMORPHA	84.000	5.500	3.000	31.380
SA 2666	M.POLYMORPHA	-	0.000	0.000	0.595

VARIETY NAME/NUMBER	MEDIC SPEIES	DAYS SOWING TO FLOWING	COWPEA APHID RATING (1-9 SCALE) 1 = 0	BLUE GREEN APHID RATING (1-9 SCALE) 1 = 0	SEED YIELD (g/m
SA 2702	M.POLYMORPHA	93.000	6.000	5.500	55.364
SA 2728	M.POLYMORPHA	98.500	3.500	3.500	13.263
SA 2867	M.POLYMORPHA	-	2.000	2.000	1.420
SA 3009	M.TRUNCATULA	98.000	2.500	1.500	53.185
SA 3036	M.TRUNCATULA	91.000	5.500	6.000	20.260
SA 3411	M.POLYMORPHA	114.500	3.500	3.500	14.113
SA3436	M.POLYMORPHA	83.500	6.000	5.500	24.243
SA3456	M.POLYMORPHA	92.500	5.000	5.00	6.385
SA3904	M.POLYMORPHA	98.000	5.000	5.000	41.655
SA4314	M.ROTATA	98.000	6.000	5.000	8.335
SA4870	M.ROTATA	98.500	2.500	3.000	52.208
SA 4982	M.TRUNCATULA	103.500	5.500	5.000	22.068
SA 4985	M.TRUNCATULA	101.500	6.000	6.500	16.823
SA 5671	M.TRUNCATULA	87.500	6.500	6.500	12.903
SA 5940	M.SCUTELLATA	93.000	1.000	1.000	49.850
SA 5943	M.SCUTELLATA	100.000	1.000	1.500	22.0[illegible]
SA 6078	M.TORNATA	94.500	5.000	5.500	7.64[illegible]
SA 6116	M.ROTATA	115.000	5.000	5.500	9.46[illegible]
SA 6249	M.TRUNCATULA	94.500	5.000	6.000	4.810
SA 6256	M.TORNATA	84.000	2.000	3.000	29.090
SA 6360	M.TRUNCATULA	88.500	5.500	4.500	34.9[illegible]
SA 6766	M.TRUNCATULA	88.500	4.500	5.000	8.5[illegible]
SA 7175	M.TRUNCATULA	98.000	4.500	3.000	47.265
SA 7176	M.TRUNCATULA	99.000	5.000	5.000	22.565
SA 7183	M.TRUNCATULA	97.500	4.500	5.000	37.663
SA 7184	M.TRUNCATULA	97.500	6.000	6.000	24.975
SA 7595	M.TRUNCATULA	98.000	5.500	5.500	14.240
SA 7611	M.TRUNCATULA	98.000	4.000	5.500	36.068
SA 7883	M.TRUNCATULA	101.000	5.000	4.000	29.625
SA 8015	M.TRUNCATULA	102.000	5.500	6.000	25.178
SA 8250	M.POLYMORPHA	88.500	6.000	5.500	25.680
SA 9691	M.TRUNCATULA	96.500	5.500	6.500	15.86[illegible]
SA 9854	M.TRUNCATULA	105.500	3.000	7.000	6.9[illegible]
SA 9884	M.TRUNCATULA	93.500	6.500	6.500	3.343
SA 10523	M.TRUNCATULA	101.500	4.500	6.500	14.453
CD.50.3	M.MUREX	118.000	5.000	5.000	0.73[illegible]
CD.53.1	M.MUREX	115.000	5.000	6.000	0.5[illegible]
CD.64.4.1	M.MUREX	120.000	6.000	6.000	0.2[illegible]
CD.64.11.1	M.MUREX	119.500	5.500	5.500	0.302
CD.71.3	M.MUREX	114.500	5.500	6.000	1.325
N 3120	M.POLYMORPHA	95.000	3.500	3.500	49.463
N 3121	M.POLYMORPHA	81.000	4.000	6.000	34.290
N 3146	M.POLYMORPHA	84.000	4.500	3.500	48.198
N 3172	M.MUREX	97.000	4.000	5.000	10.070
N 3283	M.TRUNCATULA	91.000	5.500	5.500	23.823
N 3293.01	M.POLYMORPHA	93.500	5.000	4.000	34.018
N 3691	M.POLYMORPHA	95.500	2.000	3.000	34.232
N 3797	M.TRUNCATULA	96.500	4.000	4.500	28.490
N 3856	M.TRUNCATULA	92.500	6.500	3.500	27.708
N 4816	M.POLYMORPHA	87.500	4.000	3.500	28.500
N 4946.01	M.POLYMORPHA	89.500	1.500	3.000	54.513
N 4954	M.POLYMORPHA	82.000	4.000	4.500	49.098
N 4960	M.POLYMORPHA	86.500	5.500	3.500	54.110

VARIETY NAME/NUMBER	MEDIC SPEIES	DAYS SOWING TO FLOWING	COWPEA APHID RATING (1-9 SCALE) 1 = 0	BLUE GREEN APHID RATING (1-9 SCALE) 1 = 0	SEED YIELD (g/m
N 4964	M.POLYMORPHA	81.000	5.500	4.500	49.820
N 4965	M.POLYMORPHA	85.000	4.500	3.000	38.475
N 4966	M.POLYMORPHA	92.500	5.500	4.000	46.410
N 4967	M.POLYMORPHA	94.000	6.500	3.500	40.398
N 4969	M.POLYMORPHA	89.000	4.500	4.500	47.703
N 4970	M.POLYMORPHA	88.500	4.000	3.500	50.173
N 4972	M.POLYMORPHA	91.500	4.500	4.000	44.045
N 4977	M.POLYMORPHA	95.000	5.500	5.500	18.963
N 4980	M.POLYMORPHA	87.500	4.000	3.500	61.385
N 4986.01	M.POLYMORPHA	81.000	5.500	4.500	40.747
N 4986.02	M.POLYMORPHA	84.000	4.500	4.500	55.613
N 4990.02	M.POLYMORPHA	83.000	5.000	3.500	33.758
N4991	M.POLYMORPHA	91.000	4.500	3.500	54.908
N 4994	M.POLYMPRPHA	94.000	4.000	4.500	25.005
LIB 793.2/4	M.POLYMORPHA	82.000	2.000	2.500	55.720

COMMENTS:

Rows 2 metres long and one metre apart were sown at 2 cm sowing depth. Soil was moist at the time of sowing. Seed was lime pelleted and inoculated prior to sowing using the strain CC169. Weeds were controlled between the rows.

Aphids were observed in the rows in early spring and populations fluctuated up and down depending on weather conditions. The rating in the table above were done when damage to plants was near its peak on 21/9/84.

(b) Small Plots -

EXPERIMENTAL TITLE: Legume Pasture Evaluation - small plots

EXPERIMENTAL NUMBER: 84M40

LOCATION: Merredin Research Station.

SOIL TYPE: Sandy Clay Loam.

ORIGINAL VEGETATION: Salmon Gum, Gimlet.

HISTORY: Old developed land.

SOWING DATE: 24/5/84.

SITE PREPARATION: Site cultivated in late April, Sprayseeded on 22/5/84 at 2 L./ha and then cultivated with combine 23/5/84.

SEEDING RATE: 5 gram / square metre.

FERTILIZER: 200 kg/ha Super Cu Zn Mo No 1.

RESULTS:

VARIETY NAME/NUMBER	MEDIC SPECIES	PLANT EMER-GENCE COUNT (m2)	DAYS SOWING TO FLOW-ERING	GROWTH HABIT (1-9 SCALE) 1=PROS-TRATE 30/7/84	WINTER VIGOUR RATING (1-9 SCALE) 1=POOR 30/7/84	SEED YIELD (kg/ha)
CYPRUS	M.TRUNCATULA	460	91.5	5.5	5.5	646
JEMALONG	M.TRUNCATULA	670	100.5	7.5	7.0	579
AKBAR	M.TRUNCATULA	230	95.5	3.0	2.5	328
PARAGGIO	M.TRUNCATULA	660	102.5	6.5	6.5	430
SEPHI	M.TRUNCATULA	610	99.0	6.0	7.0	370
HARBINGER	M.LITTORALIS	730	92.0	5.5	6.0	150
TORNAFIELD	M.TORNATA	400	94.0	4.5	3.5	242
SWANI	M.TORNATA	360	88.0	3.5	3.5	106
SAPO	M.RUGOSA	430	99.0	6.0	5.5	490
PARAPONTO	M.RUGOSA	310	95.0	6.5	5.5	900
SAVA	M.SCUTELLATA	390	86.0	7.5	6.5	1068
SERENA	M.POLYMORPHA	640	75.0	8.0	7.5	907
CIRCLE VALLEY	M.POLYMORPHA	590	97.5	8.0	8.0	524
NUNGARIN	T.SUBTERRANEAN	670	97.0	2.0	4.5	135
BEENONG	T.CHERLERI	830	113.5	2.0	4.5	229
KONDININ	T.HIRTUM	790	116.0	4.5	5.5	265
3172	M.MUREX	430	95.5	5.5	5.5	141
5320	M.MUREX	510	113.5	5.0	6.5	48
CD 50.3	M.MUREX	410	119.0	2.5	4.0	17
CD 53.1	M.MUREX	470	119.0	5.0	5.5	3
CD 64.4.1	M.MUREX	820	118.0	2.0	5.0	2
CD 64.11.1	M.MUREX	720	118.0	3.5	5.0	2
CD 71.3.20	M.MUREX	680	115.5	3.5	5.5	2
2617	M.POLYMORPHA	860	92.0	7.5	8.0	465
4946.01	M.POLYMORPHA	990	89.5	8.0	8.0	517
3120	M.POLYMORPHA	560	88.5	7.0	6.5	1041
3146	M.POLYMORPHA	480	87.0	7.0	6.5	981
3293.01	M.POLYMORPHA	430	92.0	6.0	6.0	297
4816	M.POLYMORPHA	400	86.5	7.0	6.0	847
4960	M.POLYMORPHA	530	90.0	5.5	6.0	929
4964	M.POLYMORPHA	620	81.0	8.0	8.0	826
4965	M.POLYMORPHA	420	83.0	5.5	5.5	697
4970	M.POLYMORPHA	730	86.0	7.0	7.0	647
4972	M.POLYMORPHA	460	90.5	6.0	6.0	825
4977	M.POLYMORPHA	560	90.0	6.5	6.5	581
4986.01	M.POLYMORPHA	370	85.5	7.0	5.5	1154
4986.02	M.POLYMORPHA	600	86.5	7.0	7.0	1088
4990.02	M.POLYMORPHA	760	83.5	6.5	6.5	1087
4991	M.POLYMORPHA	430	83.0	6.5	6.5	648
4994	M.POLYMORPHA	720	92.0	7.0	7.0	341

COMMENTS:

The experiment was sown by hand in 1 square metre plots. The seeding rate of 50 kg/ha was chosen to give plant density levels associated with mature pasture stands. The plots were defoliated twice during the year using a reel mower. Plots were subject to attack by cow pea and blue green aphids and were untreated. Lucerne flea were sprayed using 50 ml of Rogor on 12/6/84.

(c) Large Plots -

EXPERIMENTAL TITLE: Medic Species Evaluation - large plots.

EXPERIMENTAL NUMBER: 84M41.

LOCATION: Merredin Research Station.

SOIL TYPE: Sandy clay loam.

ORIGINAL VEGETATION: Salmon Gums, Gimlets.

HISTORY: Old developed land.

SOWING DATE: 22/5/84.

SITE PREPARATION: Harrowed to remove melons in late April - cultivated in early May and sprayed with Sprayseed at 2 L./ha, then sown within an hour.

SEEDING RATE: Sown with 8 row cone seeder at 1 - 2 cms depths with harrows on.

FERTILIZER: 191 kg/ha Super Cu Zn Mo No 1.

RESULTS:

MEDIC VARIETY/ NUMBER	PLANT EST. COUNT (m2)	DRY MATTER CUT UNGRAZED (KG/HA) 17/8/84	DRY MATTER CUT GRAZED (KG/HA) 31/10/84	DRY MATTER CUT UNGRAZED (KG/HA) 9/11/84	SEED YIELD (KG/HA) GRAZED	SEED YIELD (KG/HA) UNGRAZED
CYPRUS	76	999	2413	3094	330	339
SAPO	69	436	1533	2419	206	389
SEPHI	67	765	2282	3368	190	308
PARAGGIO	74	682	2193	2857	180	336
HARBINGER	71	511	1441	2231	142	232
TORNAFIELD	62	536	1504	2044	200	309
SERENA	62	1138	2141	2928	611	1267
CIRCLE VALLEY	56	1220	2381	4127	395	888
SAVA	64	667	2458	3421	299	654
PARAPONTO	71	437	1301	2283	278	541
3146	65	1536	2640	3667	739	1276
3293.01	74	1361	2000	3319	292	576
4816	67	1288	2642	3480	604	1061
4964	72	1360	2347	3072	629	1397
4965	62	1114	2749	3018	587	1044
4970	59	1154	2266	3410	684	1108
4972	70	841	2486	3653	568	1038
4980	77	1149	2742	3674	658	1193
4986.01	49	1422	2667	2135	704	1137
4991	62	1306	2967	2444	743	1155
4994	71	1105	1911	3194	448	627
4946.01	60	1363	2752	3952	570	1304
3172	65	1054	1702	3036	240	369
5320	62	1263	1709	2549	25	156

COMMENTS:

The site was sown into moist soil on 22/5/84. Pre sowing weed control was excellent. The whole site was sprayed with 50 ml/ha of Rogor on 12/6/84 for R.L.E.M. & lucerne flea control.

Half of each plot was fenced to exclude sheep and half of each plot was subject to paddock grazing. Sheep were introduced in late July.

Cow pea and blue green aphids were present on the site for much of the growing season, but did not do severe damage.

All plots were inoculated and lime pelleted with the strain CC169. A number of the varieties appeared pale early in the season and poor nodulation was suspected. They were Harbinger, Tornafield, Sapo and Paraponto.

Samples of mature leaf and stems were taken for coumestrol evaluation. Levels were recorded as a trace for all plots except Cyprus, 4986.01 and 4991 which were 38 ppm in 1 rep and Tornafield which was 38 ppm in two reps.

EXPERIMENTAL TITLE: Medic Species Evaluation - large plots

EXPERIMENTAL NUMBER: 84WH40

LOCATION: Wongan Hills Research Station. Paddock 5HB.

SOIL TYPE: Gravelly loamy sand.

ORIGINAL VEGETATION: Mallee scrub.

SOWING DATE: 15/5/84.

SITE PREPARATION: Site sprayed with Sprayseed at 2 L./ha on the 9/5/84.

SEEDING RATE: Seeded with seed and super through tubes at about 2 cms depth.

FERTILIZER: 100 kg/ha Superphosphate.

RESULTS:

MEDIC VARIETY / NUMBER	SEED YIELD (kg/ha)
CYPRUS	56
SAPO	33
SEPHI	24
PARAGGIO	19
HARBINGER	58
TORNAFIELD	27
SERENA	201
CIRCLE VALLEY	96
SAVA	9
PARAPONTO	18
3146	180
3293.01	72
4816	182
4964	256
4965	263
4970	263
4972	161
4980	311
4986.01	86
4991	259
4994	128
4946.01	139
5320	21

COMMENTS:

Plots were sown disc drill. A light chain was dragged behind to act as harrows. Seeding rate was 10 kg/ha, all seed being inoculated and lime pelleted using strain CC169. The site was grazed as part of the paddock for the whole of the season. Plots were heavily grazed and at time of sampling seed for yield replications 1 and 2 extensively disturbed. As a result reps 3 and 4 only were sampled.

EXPERIMENTAL TITLE: Medic Species Evaluation - large plots

EXPERIMENTAL NUMBER: 84N22

LOCATION: Newdegate Research Station.

SOIL TYPE: Gray loamy sand over clay.

ORIGINAL VEGETATION:

HISTORY:

SOWING DATE: 28/5/84.

SITE PREPARATION: Cultivated in late April. The site was sprayed on 28/5/84 with 1 L./ha Sprayseed + 1.5 L./ha Trifluralin. The site was cultivated immediately after spraying and sown with an 8 row tyned cone seeder.

SEEDING RATE: 10 kg/ha

FERTILIZER: 100 kg/ha Superphosphate.

RESULTS:

MEDIC VARIETY / NUMBER	SEED YIELD (kg/ha)
CYPRUS	100
SAPO	69
SEPHI	175
PARAGGIO	127
HARBINGER	38
TORNAFIELD	148
SERENA	684
CIRCLE VALLEY	395
SAVA	31
PARAPONTO	246
3146	640
3293.01	572
4816	672
4964	1104
4965	332
4970	684
4972	735
4980	552
4986.01	824
4991	738
4994	560
4946.01	791

COMMENTS:

The plots were sown with 10 kg/ha of seed lime pelleted and inoculated with strain CC169. Insects caused severe damage to reps 1 and 3 and some damage to reps 2 and 4. After spraying with 2 L./ha DDT reps 2 and 4 recovered. The plots were ungrazed.

EXPERIMENTAL TITLE: Medic Species Evaluation - large plots

EXPERIMENTAL NUMBER: 84LG39

LOCATION: KONDININ, property J. West.

SOIL TYPE: Red clay loam.

ORIGINAL VEGETATION:

SOWING DATE: 23/5/84.

SITE PREPARATION: Sprayed prior to sowing with 1 L./ha Sprayseed.

SEEDING RATE: 10 kg/ha.

FERTILIZER: 160 kg/ha Superphosphate.

COMMENTS:

The site was slow to nodulate and early growth was poor. However, in spring plants picked up, nodulated and produced well. The site was ungrazed through the growing season but a large number of sheep got onto the plots at senesence and ate the area out and caused significant disturbance making seed harvesting unworthwhile.

EXPERIMENTAL TITLE: Pasture Species Evaluation

EXPERIMENTAL NUMBER: 84M56.

LOCATION: Merredin Research Station.

SOIL TYPE: Sandy clay loam.

ORIGINAL VEGETATION: Gravelly loamy sand.

HISTORY: Old developed land.

SOWING DATE: 24/5/84.

SITE PREPARATION: Cultivated in late April (raked clear of summer weeds prior to cultivation). Site sprayed with 2 L/ha Sprayseed 22/5/84.

SEEDING RATE: 25 kg/ha.

FERTILIZER: 200 kg/ha Super Cu Zn Mo No 1.

RESULTS:

PASTURE SPECIES AND VARIETIES	PLANT COUNTS (m2)	DRY MATTER CUT UNGRAZED (KG/HA) 6/8/84	DRY MATTER CUT UNGRAZED (KG/HA) 17/10/84	DRY MATTER CUT GRAZED (KG/HA) 10/10/84	SEED YIELD (KG/HA) UNGRAZED	SEED YIELD (KG/HA) GRAZED
SUB. CLOVER - NORTHAM NUNGARIN	99	863	2664	2163	217	158
MEDIC - SERENA HARBINGER TORNA	131	889	1164	891	347	201
T. CHERLERI - BEENONG	130	561	2755	2843	394	295
T. HIRTUM - HYKON KONDININ MIX	129	524	2638	2052	210	186
SERRADELLA - M34 GT046 DP4 MIX	132	391	2197	1664	84	64
T. GLOBOSUM T. BATMANICUM T. PAUC	112	487	2197	1783	50	33
T.BRACHYCALCYNUN MIX	82	386	2024	1502	66	62
NATURAL PASTURE	-	243	-	-	-	-

COMMENTS:

Plots were sown with a 12 row tyned cone seeder at 25 kg/ha. Seed w inoculated and lime pelleted with appropriate strain of rhizobium. Half plots were subject to paddock grazing and half were exclosed.

EXPERIMENTAL TITLE: Serradella Variety Trial

EXPERIMENTAL NUMBER: 84M57.

LOCATION: Merredin Research Station - Paddock 6.

SOIL TYPE: Acid loamy sand.

ORIGINAL VEGETATION:

HISTORY: Old developed land.

SOWING DATE: 24/5/84.

SITE PREPARATION: Site cultivated in late April and sprayed with 2 L/ha Sprayseed on 22/5/84.

SEEDING RATE: 20 kg/ha.

FERTILIZER: 191 kg/ha Super Cu Zn Mo No 1.

RESULTS:

SERRADELLA VARIETY AND NUMBER	PLANT COUNTS (m2)	DRY MATTER CUT UNGRAZED (KG/HA) 15/8/84	DRY MATTER CUT UNGRAZED (KG/HA) 12/10/84	DRY MATTER CUT GRAZED (KG/HA) 11/10/84
M 34	49	443	5312	4727
M115	55	649	3606	2363
M133	38	273	4268	2798
M167	57	339	3016	2661
DP 3	35	434	2681	3313
DP 4	47	419	3628	4400
DP 5	42	450	4211	3980
DP 6	58	276	3835	3114
GM065.2	43	498	3803	3682
GM107	47	559	3723	3780
GT046	47	410	3223	3096
PITMAN	42	284	2502	3066

COMMENTS:

The experiment was sown with an 8 row tyned cone seeder. Seed was dehulled except the variety Pitman. 0.66 kg/plot of hulled seed Pitman was treated with boiling water prior to sowing. The large quantity of hulled seed did not flow well through the cone seeder distributors resulting in uneven distribution in the plots.

Half the plot areas were fenced off from the surrounding paddock, the remainder was subject to paddock grazing. Seed yields were not available at the time of summary preparation.

(2) PASTURE ESTABLISHMENT SYSTEMS

EXPERIMENTAL TITLE: Times and Methods of Sowing of Serena and Circle Val. Medics

EXPERIMENTAL NUMBER: 84TS38.

LOCATION: Eneabba.

SOIL TYPE: Grey sand over gravel.

ORIGINAL VEGETATION:

SOWING DATE: First time sown 15/5/84.
Second time sown 15/6/84.
Third time sown 11/7/84.

SITE PREPARATION: 15/5/84 sowing, sprayed 1.5 L./ha of Sprayseed. Second and third time of sowing Sprayseed plots cultivated prior to sowing as drift of chemical was a problem.

SEEDING RATE: 10 kg/ha.

FERTILIZER: 100 kg/ha topdressed by farmer.
120 kg super drilled.

RESULTS:

SOWING TIME AND VARIETY	SEED YIELD (KG/HA)
EARLY - SS & DD SERENA	1798
EARLY - SS & DD CIRCLE VALLEY	1241
MEDIUM - SS & DD SERENA	498
MEDIUM - SS & DD CIRCLE VALLEY	383
LATE - SS & DD SERENA	75
LATE - SS & DD CIRCLE VALLEY	39

COMMENTS:

The early break to the season meant that good weed control was possible at all times of sowings. As a result observations were dropped on the direct drilled plots and only made on the plots in which weed control was best. The site was ungrazed throughout the season.

EXPERIMENTAL TITLE: Broadleaf Herbicides On Sub. Clover Under Wheat

EXPERIMENTAL NUMBER: 84M61.

COMMENTS:

Experiment abandoned. The site was sown on new land to avoid weeds. Establishment of sub. clover plants was extremely poor and uneven and measurements of herbicide reaction differences would not have been possible.

(3) PASTURE GRAZING (DEFOLIATION EXPERIMENTS)

BACKGROUND:

Most of the evaluation of M. polymorpha had up to 1984, been conducted under low or nil grazing conditions. A series of trials were conducted in 1984 to investigate the effects of grazing on production and seed yield of M. polymorpha. Defoliation of the trials was by grazing (84M43, 84LG33 and 34) and by mowing with a reel mower (84M42).

EXPERIMENTAL TITLE: Pasture Grazing (defoliation) Experiments

EXPERIMENTAL NUMBER: 84M43.

LOCATION: Merredin Research Station.

SOIL TYPE: Sandy Clay Loam.

ORIGINAL VEGETATION: Salmon Gums, Gimlets.

HISTORY: Old developed land.

SOWING DATE: 24/5/84.

SITE PREPARATION: Site cultivated late April. Sprayseeded on 22/5/84 at 2 L./ha. Site cultivated with combine 23/5/84. Site also harrowed 23/5/84.

SEEDING RATE: 20 kg/ha seed inoculated and lime pelleted with strain CC169. Site sown extremely shallow with tynes just touching the soil surfce (1 cm).

FERTILIZER: 200 kg/ha of single superphosphate (plain).

RESULTS:

PASTURE DRY MATTER PRODUCTION FOLLOWING CONSTANT GRAZING

VARIETY NAME/ NUMBER	24/5/84 to 6/8/84	6/8/84 to 25/8/84	23/8/84 to 17/9/84	12/9/84 to 4/10/84
SERENA	1724	2265	2711	1324
CIRCLE VALLEY	1477	3174	2653	1519
N 4986.01	1432	2649	2328	1456
N 4964	1589	2996	3582	127
N 4972	1737	3005	2633	1760
M. POLY MIX1 *	1823	2740	2002	867
M. POLY MIX2 **	1756	2851	4014	932

DRY MATTER GRAZING PRIOR TO EXCLUSURE FOR PASTURE PRODUCTION MEASUREMENTS SHOWN ABOVE

VARIETY NAME/ NUMBER	6/8/84	23/8/84	12/9/84	5/10/84
SERENA	1724	1622	1802	2079
CIRCLE VALLEY	1477	1845	1705	2781
N 4986.01	1432	1248	1433	2309
N 4964	1589	1585	2368	1996
N 4972	1737	1781	1956	2429
M. POLY MIX1 *	1823	1902	2254	2427
M. POLY MIX2 **	1756	1581	2307	2356

* Mix contains equal proportions of Serena, Circle Valley, N3146, N4816, N4964, N4965, N4970, N4972, N4977, N4980, N4986.01 and N4991

** Mix containing Serena, Circle Valley, N4986.01, N4972 and N4991.

	SEED YIELD (kg/ha)					
	UNGRAZED	GRAZED 26/7/84 TO 6/8/84	GRAZED 26/7/84 TO 23/8/84	GRAZED 26/7/84 TO 12/9/84	GRAZED 26/7/84 TO 5/10/84	MEAN
SERENA	686	798	692	649	601	685
CIRCLE VALLEY	532	528	402	309	260	406
N 4986.01	958	846	795	806	660	813
N 4964	1059	895	817	813	626	842
N 4972	716	887	636	817	624	736
M. POLY MIX1 *	757	731	651	700	641	696
M. POLY MIX2 **	739	905	726	741	637	750
MEAN	778	799	674	691	578	704

COMMENTS:

60 m long plots were fenced with a U shaped fence with the open end facing the centre of the paddock. A cross fence between the two sides of the U was moved down the plots to exclose the sheep grazing the paddock from an increasingly large proportion of the plots as the season progressed. Sheep were introduced to the paddock on 26/7/84. The residual dry matter cuts indicate that the sheep maintained the residual pasture level at around 2 t/ha for most of the season. The area was sprayed for R.L.E.M and Lucerne Flea control on 12/6/84 with 50 ml/ha of Rogor (R).

EXPERIMENTAL TITLE: Medic Species Defoliation Trial.

EXPERIMENTAL NUMBER: 84LG34.

LOCATION: Pingrup, property B. Smith.

SOIL TYPE: Grey clay with shallow layer of coarse sand at surface.

ORIGINAL VEGETATION: Mallee.

HISTORY:

SOWING DATE: 18/5/84.

SITE PREPARATION: Spray with 2 L./ha Sprayseed prior to sowing.

SEEDING RATE: 14 kg/ha.

FERTILIZER: 160 kg/ha Super.

RESULTS:

DRY MATTER PRODUCTION (kg/ha) FOLLOWING GRAZING

	DRY MATTER PRODUCTION kg/ha					
	15/5/84* TO 8/8/84	8/8/84 TO 12/9/84	12/9/84 TO 26/9/84	26/9/84 TO 9/10/84	9/10/84 TO SENESCENCE	TOTAL
SERENA	1079	2202	961	655	594	5491
CIRCLE VALLEY	839	2263	1316	682	183	5283
N 4972	672	2672	945	1446	429	6164
N 4980	697	3001	1646	1626	849	7818
M. POLYMORPHA MIX **	529	2891	1262	1029	388	7128
CYPRUS	316	1083	548	735	1537	4219

RESIDUAL DRY MATTER LEVELS (kg/ha) FOLLOWING GRAZING PRIOR TO MEASUREMENT OF GROWTH PERFORMANCE.

	DRY MATTER PRODUCTION (kg/ha)			
	8/8/84	12/9/84	26/9/84	9/10/84
SERENA	745	2147	2591	2947
CIRCLE VALLEY	661	1311	2187	2426
N 4972	708	1422	1798	2927
N 4980	717	1725	2766	2901
M. POLYMORPHA MIX	823	1675	2795	3454
CYPRUS	441	590	1294	1187

* SOWN 15/5/84.
** Contains a mix of equal proportions of Serena, Circle Valley, N 4986.01, N 4972 and N 4991.

SEED YIELD OF AREAS SUBJECT TO VARIOUS DURATIONS OF GRAZING.

VARIETY	SEED YIELD (kg/ha)					
	SECTOR 1	SECTOR 2	SECTOR 3	SECTOR 4	SECTOR 5	MEAN
SERENA	1064	889	900	854	703	882
CIRCLE VALLEY	877	924	760	630	316	701
N 4972	946	962	875	757	781	864
N 4980	898	871	892	869	713	849
M. POLYMORPHA MIX	1023	951	893	765	765	879
CYPRUS	534	533	390	321	227	401
MEAN	890	855	795	699	584	764

SECTOR 1 - UNGRAZED

SECTOR 2 - GRAZED FROM 15TH JULY TO 8TH AUGUST.

SECTOR 3 - GRAZED FROM 15TH JULY TO 12TH SEPTEMBER

SECTOR 4 - GRAZED FROM 15TH JULY TO 28TH SEPTEMBER

SECTOR 5 - GRAZED FROM 15TH JULY TO 9TH OCTOBER

COMMENTS:

The plots were sown on 15/5/84 and were sprayed on 8/6/84 with 1 L./ha of Fusilade for annual ryegrass control. A U shaped fence was erected around the plots as described for 84M43 and sheep introduced on the 15/7/84. The sheep remained grazing the area throughout the length of the observations.

EXPERIMENTAL TITLE: Medic Species And Defoliation Trial.

EXPERIMENTAL NUMBER: 84LG33.

LOCATION: Kondinin.

COMMENTS:

The experiment was abandoned due to poor early growth of the plots. This was caused by poor nodulation probably resulting from seed being mixed with trace element superphosphate.

EXPERIMENTAL TITLE: Medic Species Evaluation Under Defoliation By Mowing.

EXPERIMENTAL NUMBER: 84M42.

LOCATION: Merredin Research Station.

SOIL TYPE: Sandy clay loam.

ORIGINAL VEGETATION: Salmon Gum, Gimlet.

HISTORY: Old developed land.

SOWING DATE: Rep 1 and 2 24/5/84.
Rep 3 and 4 25/5/84

SITE PREPARATION: Cultivate in late April, sprayed with Sprayseed 22/5/84 at 2 L./ha. Site was then cultivated with combine on the 23/5/84 and also harrowed on the same day.

SEEDING RATE: Site sown by hand top dressing at 50 kg/ha onto the surface and raked lightly by hand.

FERTILIZER: 200 kg/ha.

RESULTS:

MEDIC VARIETY NAME/NUMBER	DEFOLIATION TREATMENT	PLANT ESTABLISHMENT COUNTS (m2) 26/6/84	FINAL DRY MATTER RESIDUAL (kg/ha)	SEED YIELD (kg/ha)
SERENA	UNGRAZED	449	6748	908
CIRCLE VALLEY	UNGRAZED	347	6556	459
N 4964	UNGRAZED	419	7615	995
N 4972	GRARAZED	356	6527	729
M POLYMORPHA MIX 1	UNGRAZED	370	7485	756
SERENA	LIGHT DEFO	485	4101	430
CIRCLE VALLEY	LIGHT DEFO	303	4775	293
N 4964	LIGHT DEFO	409	4441	624
N 4972	LIGHT DEFO	286	5152	525
M POLYMORPHA MIX 1	LIGHT DEFO	388	5152	569
SERENA	MODERATE D	406	4241	540
CIRCLE VALLEY	MODERATE D	327	4853	287
N 4964	MODERATE D	436	4197	575
N 4972	MODERATE D	308	4857	564
M POLYMORPHA MIX 1	MODERATE D	440	5086	558
SERENA	SEVERE DEF	382	4313	652
CIRCLE VALLEY	SEVERE DEF	327	4167	342
N 4964	SEVERE DEF	439	4451	769
N 4972	SEVERE DEF	320	4779	644
M POLYMORPHA MIX 1	SEVERE DEF	350	4540	558

DRY MATTER PRODUCTION (kg/ha) ON UNGRAZED PLOTS THROUGH 1984

MEDIC VARIETY NAME/NUMBER	DEFOLIATION TREATMENT	DRY MATTER PRODUCTION (kg/ha) 31/7/84	31/8/84	18/9/84	FINAL MATURE
SERENA	UNGRAZED	1992	4778	8482	6748
CIRCLE VALLEY	UNGRAZED	1794	4691	8769	6556
N 4964	UNGRAZED	1266	4692	9121	7615
N 4972	UNGRAZED	1735	4177	7411	6527
M POLYMORPHA MIX 1	UNGRAZED	2117	4149	9551	7485

QUANTITIES OF DRY MATTER COLLECTED DURING MOWER DEFOLIATION (kg/ha)

MEDIC VARIETY NAME / NUMBER	DEFOLIATION LEVEL	DRY MATTER REMOVED kg/ha 24/7/84	10/8/84	24/8/84	3/9/84	19/9/84
SERENA	LIGHT DEFO	9	80	417	121	56
CIRCLE VALLEY	LIGHT DEFO	2	41	162	62	36
N 4964	LIGHT DEFO	11	121	373	117	50
N 4972	LIGHT DEFO	1	16	105	48	28
M POLYMORPHA MIX 1	LIGHT DEFO	5	63	275	95	38
SERENA	MODERATE D	29	194	361	61	42
CIRCLE VALLEY	MODERATE D	45	156	305	52	39
N 4964	MODERATE D	77	243	360	58	34
N 4972	MODERATE D	12	79	228	39	41
M POLYMORPHA MIX 1	MODERATE D	20	117	257	48	31
SERENA	SEVERE DEF	52	564	117	6	9
CIRCLE VALLEY	SEVERE DEF	61	474	173	4	11
N 4964	SEVERE DEF	76	563	172	7	10
N 4972	SEVERE DEF	42	349	161	5	12
M POLYMORPHA MIX 1	SEVERE DEF	80	515	168	7	11

COMMENTS:

10 m X 2 m plots were hand sown at a seeding rate equivalent to 50 kg/ha to give plant numbers similar to those expected in a mature pasture stand. The site was sprayed for R.L.E.M. and lucerne flea control early and later for control of cow pea and blue green aphids.

Plots were mown using an Alroy reel mower 5 times during the season at four severities of defoliation (nil and 3 levels). The severities of defoliation were achieved by setting the height of the mower differently. For the first cut the heights were 1, 2 and 3 cms respectively for severe moderate and light. The height were raised 1/2 cm for each catagory for the 2nd and 3rd cuts and then held constant for the 4th & 5th cuts.

A large quantity of sand was collected in the initial severe cut and this required careful removal.

Seed yields were less suppressed in the severe defoliation plots than on the light and moderate plots. Examination of the dry matter removal figures show that most of cut material was removed early in the season before flowering while the lighter cutting treatments were defoliated later.

Aiming to generate severity of cut treatments by cutting to predetermined heights was largely ineffective. The low absolute levels of material removed from the plots indicates that either the catching system was poor or the mowing itself may have caused serious plant damage.

(4) CEREALS FOLLOWING PASTURES

BACKGROUND:

A number of pasture species evaluation trials were commenced in 1982. Three of these were cropped in 1984. Two were a failure as a result of Roundup damage (84M49 and 50). Results from the third trial (cereal following two years of pasture are set out below).

EXPERIMENTAL TITLE: Pasture Species Evaluation.

EXPERIMENTAL NUMBER: 84ME47.

LOCATION: Walgoolan.

SOIL TYPE: Loamy sand over clay.

ORIGINAL VEGETATION: Mallee.

SOWING DATE: 11/6/84.

SITE PREPARATION: Sprayed late May with 2 L./ha Sprayseed.

SEEDING RATE: 42 kg/ha (Bodallin wheat).

FERTILIZER: 150 kg/ha Superphosphate Mo.
N Rates Agran 34:0 - 72, 151, 302 and 453.

RESULTS:

TREATMENT		MEAN	MEAN AS % OF TR. 1.
1. GERALDTON	WHEAT	0.540	100 (3)
2. NORTHAM	WHEAT	0.456	84 (3)
3. NUNGARIN	WHEAT	0.550	102 (3)
4. CYPRUS	WHEAT	0.587	109 (3)
5. HARBINGER	WHEAT	0.618	114 (3)
6. TORNAFIELD	WHEAT	0.547	101 (3)
7. SWANI	WHEAT	0.547	101 (3)
8. SERENA	WHEAT	0.606	112 (3)
9. CIRCLE VALLEY	WHEAT	0.659	122 (3)
10. KONDININ ROSE	WHEAT	0.609	113 (3)
11. NATURAL PASTURE	WHEAT-ON	0.537	99 (3)
12. NATURAL PASTURE	WHEAT-25N	0.946	175 (3)
13. NATURAL PASTURE	WHEAT-50N	1.140	211 (3)
14. NATURAL PASTURE	WHEAT-100N	1.221	226 (3)
15. NATURAL PASTURE	WHEAT-150N	1.218	225 (3)

(5) PASTURE WHEAT ROTATION EXPERIMENTS

BACKGROUND

Two long term trials are continuing, one at Wongan Hills and are at Merredin Research Station. At Wongan Hills the experiment investigates methods of maintaining pasture in a 1:1 rotation and at Merredin continuous crop is compared to 1:1 and 1:2 pastures. In addition the effects of crop establishment systems on pastures is examined by comparing direct-drilling and conventional crop establishment.

EXPERIMENTAL TITLE: Place of Rose Clover in Rotation Systems.

EXPERIMENTAL NUMBER: 82WH39.

1984 DETAILS:

Early May cereal sections sprayed with 1 L./ha Roundup. Early June sprayed with 2 L./ha of Sprayseed. 22/6/84 sprayed 2 L./ha of Sprayseed and cultivated with 3 point linkage scarifier. Sown 26/6/84 into weedfree seedbed using 91 kg/ha superphosphate and 50 kg/ha Gamenya. Nitrogen not applied at seeding (by error) but topdressed later.

Pasture resowing treatments 25/5/84 N applied to natural pasture plots in pasture phase in error.

RESULTS:

1984 CEREAL PHASE YIELDS

	GRAIN YIELD
Kondinin Rose - 10 kg/ha - no top up	1954
Kondinin Rose - 5 kg/ha topped up	2063
Kondinin Rose - 10 kg/ha topped up	2022
Kondinin Rose - 20 kg/ha topped up	1979
Nungarin - 10 kg/ha no top up	2179
Nungarin - 5 kg/ha topped up	2110
Nungarin - 10 kg/ha topped up	2207
Nungarin - 20 kg/ha topped up	2266
Natural Pasture - Nil N	1910
Natural Pasture - 25 N	2266
Natural Pasture - 50 N	2347
Natural Pasture - 100 N	2319
Natural Pasture - 150 N	2453

1984 PASTURE PHASE

	CLOVER PLANT COUNT (m2)	SEED YIELD
Kondinin Rose - 10 kg/ha - no top up	17	
Kondinin Rose - 5 kg/ha topped up	16	
Kondinin Rose - 10 kg/ha topped up	25	
Kondinin Rose - 20 kg/ha topped up	54	
Nungarin - 10 kg/ha no top up	31	108
Nungarin - 5 kg/ha topped up	28	
Nungarin - 10 kg/ha topped up	32	
Nungarin - 20 kg/ha topped up	47	77

EXPERIMENTAL TITLE: Minimum Tillage Cereal Pasture Rotation.

EXPERIMENTAL NUMBER: 82M47.

1984 EXPERIMENTAL DETAILS:

1). Cereal plots.

Conventional plots were scarified to 10 cm on 15/5/84. Nitrogen was applied prior to sowing on 1/6/84. Direct drill plots were sprayed with 2 L./ha Sprayseed immediately before sowing. Plots sown 6/6/84 using 45 kg/ha Gamenya and 100 kg/ha superphosphate.

2). Pasture Phase.

Topdressed on 16/5/84 with 103 kg/ha superphosphate and 23 kg/ha Nungarin. Sub. clover was topdressed onto appropriate plots.

RESULTS:

1984 CEREAL YIELDS

ROTATION	GRAIN YIELD (kg/ha)	
	DIRECT DRILL (Combine)	CONVENTIONAL SOWING (Scarify - Combine)
CONTINUOUS CROP - NIL N	764	884
- 25 N	1189	1468
- 50 N	1577	1593
- 100 N	1609	1796
- 200 N	1827	1811
1:1 ROTATION	718	1226
1:2 ROTATION	765	1413