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# 1976 Report on field trials with early-maturing subterranean clover crossbred strains and selections

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## Report on Field Trials with Early-Maturing

### Subterranean Clover Crossbred Strains and Selections, 1976

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#### 1. Drilled Trials in Wheatbelt Districts

A series of 9 trials to compare the crossbred subterranean clovers Nungarin, 239.2 and 584.1B with Northam and Geraldton was sown in representative, dry wheatbelt localities in 1976. The trials were sown in randomised blocks with four replications on sites which carried little or no clover. Plot size was 4.22 metres by 40 metres.

Superphosphate was applied at rates related to past applications and soil type, but was usually about 200 kg a hectare. Copper, zinc and molybdenum were applied where necessary. Seed was sown at 30 kg a hectare.

The location of the trials and brief details of soils and climate are tabulated below:

Trial No.	Farmer	District	Surface soil	Average rainfall	Growing season (months)
76GE7	Barnetson	Pindar	l.s.	337-	3-
76LG5	Mason	Lake King	l.s.	348	4+
76ME5	Gillett	Bencubbin	l.s.	318	3
76ME6	Birtles	Noongaar	s.l	297-	3
76MO11	Worley	Kalannie	l.s.	318	3½
76MO12	Thompson	Burakin	l.s.	n.a.	3½
76NA6	Marsh	Karlgarin	s.l.	334	4+
76NO1	Diver	Wyalkatchem	s.	333	3½
76TS10	Quinn	Perenjori	l.s.	371-	3½

\*  
 l = loam or loamy  
 s = sand or sandy  
 Minus signs in this column indicate that the trial site is east of the recording station and may receive less average annual rainfall than shown.

Early establishment of seedlings was reduced on a number of trials by critical dry periods in late May-June. Following rains were generally below average and trials at Wyalkatchem, Burakin and Kalannie failed to set seed.

1976 growing season rainfall at, or near to, trial sites is shown below:

Rainfall, May-Oct. (mm)

	<u>1976</u>	<u>Average</u>
Bencubbin	156	211
Burakin	152	n.a.
Hyden (Karlgin n.a.)	249	227
Kalannie	120*	227
Lake King	204**	233**
Mullewa (Pindar n.a.)	84	208
Perenjori	147	244
Walgoolan (Noongaar n.a.)	153	206
Wyalkatchem	177	238

\* September rainfall not available. Average of 29 mm used to give 204.

\*\* June-Oct. rainfall. May rainfall not available.

In view of the light rainfall, good results were obtained from these trials.

Seedling density was measured at five sites.

Locality	Seedlings/dm <sup>2</sup>				
	Geraldton	Northam	Nungarin	584	239
Bencubbin	1.83	2.03	1.17	1.68	1.57
Burakin	0.84	0.76	0.64	0.50	0.65
Kalannie	0.53	0.45	0.45	0.43	0.79
Lake King	2.25	2.19	1.29	2.00	2.45
Noongaar	0.93	1.18	0.98	0.62	0.89
Mean	1.28	1.32	0.91	1.05	1.27

In those experiments which established well, there was little difference between varieties in either growth or ground cover. The performance of all varieties at Lake King and Karlgin was excellent and reflected the better rainfall received in those districts.

Seed Yields

Strain	Seed yields (kg/ha)					LSD's P < .05
	Ger.	Nor.	Nun.	584	239	
1. Lake King	571	563	737	462	555	134
2. Karlgarin	292	247	297	216	233	N.S.
3. Bencubbin	6.0	17.6	17.8	7.1	18.2	N.S.
4. Noongaar	43.3	47.4	39.1	24.5	37.9	N.S.
5. Perenjori	29.9	18.1	18.8	19.5	19.9	N.S.
6. Pindar	8.2	14.7	15.9	5.6	15.8	7.64
Mean	158	151	188	122	147	
Mean of 1 & 2 May-Oct. rain > 200 mm	432	405	517	339	394	
Mean of 3 - 6 May-Oct. rain < 200 mm	21.9	24.5	22.9	14.2	23.0	

2. Grazing Trial, Merredin Research Station

The district trials discussed in the previous section were sown in farm paddocks and when established will receive the same cropping and grazing treatments as the paddocks. The aim in these trials is to observe the responses of the clover cultivars to varied commercial management in different environments. There are obvious difficulties in successfully conducting such trials, not the least of which involve extremes of management and possible selective grazing of a small area of atypical herbage in a large paddock.

To try and retain most of the virtues of this plan but increase controls in management, a mini-ley trial (76M5) was started at the Merredin Research Station in 1976. The five test cultivars, Nungarin, 239.2, 584.1B, Northam and Geraldton were sown in four blocks in reach of three adjoining plots A, B and C. In addition, one large sub-plot of a mixture of the test clovers was sown in each plot. Plots A, B and C were of sufficient size to carry up to six dry sheep continuously through the year. Areas within the plots not occupied by test varieties were sown with the non-estrogenic Uniwager sub. clover. Plots A, B and C will be subjected to different rotations of pasture and wheat. Seed yields and the persistence of clover strains will be the main criteria measured but wheat yields for several years should also provide evidence of the comparative success of the pastures.

This method of evaluation is relatively untried. If it

is shown that no serious defects are involved, and that the relative merit of cultivars in a farm system can be accurately predicted, then for the evaluation of morphologically similar strains of a species this method should be preferable to the full scale animal husbandry trial. The chief advantages would be that the effect of grazing could be measured earlier, and a greater range of strains could be tested more precisely at more sites and at less expense.

1976 was a bad year to start this trial. Good rains fell in April and May, but 21 mm in June and 13 mm in July were not enough to carry most plants through to better conditions in August and September.

Seedling Density and Seed Yields, 1976

	Plants/dm <sup>2</sup> 14.7.76				Seed yields (kg/ha) 2.3.77			
	A	B	C	Mean	A	B	C	Mean
Nungarin	1.40	1.27	2.03	1.57	6.43	5.28	29.38	13.7
239.2	0.73	1.66	2.79	1.73	4.40	5.93	21.28	10.5
584.1B	1.73	2.04	3.05	2.27	8.20	8.78	28.78	15.3
Northam	1.73	2.09	2.84	2.22	7.45	7.05	22.05	12.2
Geraldton	1.62	2.15	3.03	2.27	3.20	2.55	17.90	7.9
Mixtures	2.91	2.64	3.85	3.13	8.6	9.8	22.3	13.6

Detailed comments on the results from this first, dry year are not warranted. However, the low seed yield of Geraldton relative to the other cultivars is interesting, as also is the superiority of plot C. The possibility that the latter may have been caused by differences in soil type will be investigated.