



Department of
Agriculture and Food



Research Library

Experimental Summaries - Plant Research

1976

Experimental summary 1975/76

D.J. Gillespie

Follow this and additional works at: <https://researchlibrary.agric.wa.gov.au/rqmsplant>



Part of the [Agronomy and Crop Sciences Commons](#), [Oceanography and Atmospheric Sciences and Meteorology Commons](#), [Soil Science Commons](#), and the [Weed Science Commons](#)

Recommended Citation

Gillespie, D J. (1976), *Experimental summary 1975/76*. Department of Agriculture and Food, Western Australia, Perth. Report.

This report is brought to you for free and open access by Research Library. It has been accepted for inclusion in Experimental Summaries - Plant Research by an authorized administrator of Research Library. For more information, please contact jennifer.heathcote@agric.wa.gov.au, sandra.papenfus@agric.wa.gov.au.

IMPORTANT DISCLAIMER

This document has been obtained from DAFWA's research library website (researchlibrary.agric.wa.gov.au) which hosts DAFWA's archival research publications. Although reasonable care was taken to make the information in the document accurate at the time it was first published, DAFWA does not make any representations or warranties about its accuracy, reliability, currency, completeness or suitability for any particular purpose. It may be out of date, inaccurate or misleading or conflict with current laws, policies or practices. DAFWA has not reviewed or revised the information before making the document available from its research library website. Before using the information, you should carefully evaluate its accuracy, currency, completeness and relevance for your purposes. We recommend you also search for more recent information on DAFWA's research library website, DAFWA's main website (<https://www.agric.wa.gov.au>) and other appropriate websites and sources.

Information in, or referred to in, documents on DAFWA's research library website is not tailored to the circumstances of individual farms, people or businesses, and does not constitute legal, business, scientific, agricultural or farm management advice. We recommend before making any significant decisions, you obtain advice from appropriate professionals who have taken into account your individual circumstances and objectives.

The Chief Executive Officer of the Department of Agriculture and Food and the State of Western Australia and their employees and agents (collectively and individually referred to below as DAFWA) accept no liability whatsoever, by reason of negligence or otherwise, arising from any use or release of information in, or referred to in, this document, or any error, inaccuracy or omission in the information.

D.J. GILLESPIE

Research Officer, Plant Research Division

A. PASTURE DETERIORATION

1) Sub clover variety screening for root rot resistance

During 1975 a large clover variety screening programme in both the field and controlled environment cabinets was undertaken in an attempt to select varieties showing some resistance to root rot attack.

Field trials met with problems due to the necessity for using undisturbed established pasture areas, difficulty with competition from weeds and other clover varieties, and limited seed supplies of most varieties. A technique was finally developed late in the season and will be used for testing this year.

Trials using controlled environment cabinets were more successful apart from some initial problems. Using soil from known root rot areas, large differences between varieties in seedling survival have been found. In the most recent experiment sixty varieties were screened and survival at four weeks ranged from 100% to zero.

The survival figures for some of the more commonly grown varieties are given in Table 1.

TABLE 1

Seedling Survival at Four Weeks

Variety	Survival (as a percentage of viable seed)
Daliak	95
Nangeela	94
Dinninup	92
Jarrahdale B	90
Wenijup	86
Trikkala	80
Seaton Park	67
Midland B	50
Larissa	49
Howard	48
Woogenellup	39
Clare	39
Yarloop	39
Mt. Barker	21

It is encouraging to note that the ranking of varieties in this trial corresponds very closely with field observations of relative susceptibility to root rot.

2) Climatic influences

Severe autumn pasture deterioration apparently caused by clover root rot was reported over wide areas of the south coast in 1973. Since then only a few isolated cases have been reported. A possible explanation for the severe attack of 1973 is that it could have been due to climatic influences, if it could be shown that 1973 was climatically different to other years.

With this in mind, daily rainfall patterns, number of wet days and daily maximum and minimum temperatures were examined for a number of centres along the south coast for the years 1972-75. Of the climatic variables studied, both the number of wet days and the total amount of rain falling soon after the break of the season were significantly higher in 1973 than in the other years.

TABLE 2

Rainfall (mm) and number of wet days from the break of the season (average of eight centres)

	1st 20 days after break				2nd 20 days				3rd 20 days				TOTAL 1st 60 days			
	1972	1973	1974	1975	1972	1973	1974	1975	1972	1973	1974	1975	1972	1973	1974	1975
Average rainfall	46	114	64	60	41	80	93	45	52	132	133	54	139	326	289	159
Mean	70.9				64.7				92.7				228.2			
Significance between years	***				***				***				***			
L.S.D between year means	27.1				21.9				41.1				65.3			
Number of wet days	8.4	11.0	7.4	7.9	6.4	10.6	7.5	6.0	6.4	12.6	12.8	7.0	21.1	34.2	27.6	20.9
Mean	8.7				7.6				9.7				26.0			
Significance	**				***				***				***			
L.S.D between year means	1.7				1.7				3.3				4.5			

None of the other variables studied showed any consistent differences between 1973 and the other years.

The effects of different watering regimes on root rot severity are currently being investigated in the phytotron.

3) Paddock monitoring investigations

Farm paddocks at Karridale were again monitored during 1975 for clover density, hard seed levels, seedling death and root rot levels. As in 1974, high levels of root rot were present, especially in the older pastures and again there were no large losses of clover seedlings after the break of the season as had been the case in 1976.

B. CULTIVAR EVALUATION IN HIGH RAINFALL AREAS

1) Midland B/Woogenellup

This trial has now concluded after six years and collating results has commenced.

In spite of the apparent theoretical advantages that Midland B has over Woogenellup in much higher hard seed levels, generally higher seed yields and small prostrate seedlings less accessible to grazing, these advantages have not been sufficient to enable Midland B to predominate in the Mt. Barker environment. Figures from the 1974 seed set and 1975 germination indicate that Midland B accounts for about 62% of the clover present. This is almost identical to the figures given 12 months before (See Table 3).

(Table 3 overleaf).

TABLE 3

Clover Proportions After Six Years

Initial Mixture	Clover Variety	1974 Seed Set (%)	1975 Germination(%)	1975 July Yield (%)	Average (%)
Mid.B	Mid.B	95	96	96	96
	Woog.	4	4	4	4
	Others	1			
Woog	Mid.B	11	25	29	22
	Woog.	89	73	68	76
	Others		2	3	2
Mid.B x Woog. 1:1	Mid.B	55	61	64	60
	Woog.	45	39	36	40
	Others				
Mid.B x Woog. 9:1	Mid.B	76	76	72	75
	Woog.	24	24	28	25
	Others				
Mid.B x Woog. 1:9	Mid.B	63	49	52	55
	Woog.	37	45	41	41
	Others		6	7	4

Initial observation of the trial results indicates that a possible reason why Midland B has not overtaken Woogenellup is that Woogenellup has a much higher seedling survival rate than Midland B. On average, over all years and all treatments, 49% of the Woogenellup seed yield in December has been counted as viable plants the following July. Only 25% of the Midland B seed yields are present in July of the following year.

2) Midland B/Seaton Park/Yarloop/Larissa

Half of this trial was cropped to oats during 1975. Measurements continued on the uncropped area which was grazed as a block with wethers. A similar set of results to last year was obtained with Seaton Park outperforming both Yarloop and Midland B. Seaton Park comprises about 60% of both the seed yield and autumn seedling numbers in the plots where it is present.

The proportion of Yarloop in the mixed plots with both Larissa and Midland B is still approximately 50%.

The effect of cropping on the balance of each mixture will be monitored this year and in 1977.

C. LUCERNE TRIALS

Two lucerne variety trials were sown in September 1974 at Esperance Downs Research Station. One trial was set stocked with cattle in May 1975 and the other has been rotationally grazed with sheep since that time.

Variety persistence was measured in May 1975 and spring productivity was measured during September/October.

TABLE 5

Lucerne density and persistence - May 1975

Variety	Sheep grazing trial		Cattle grazing trial	
	Density (plants/sq.m)	% survival since Oct 1974	Density (plants/sq.m)	% survival since Oct 1974
Denmat	8.8	37	-	
Aragon	14.1	72	-	
C.P.I. 16601	19.1	89	-	
Siro peruvian	14.1	57	17.2	52
Paravivo	13.3	55	17.2	62
Cancreep	5.9	31	15.8	76
Hunter River	13.9	89	15.4	64
Hunter River + Daliak	9.6	50	14.6	66

TABLE 6

Lucerne spring production - 1975

Variety	Sheep grazing trial	Cattle grazing trial
	6 weeks prod'n (kg/ha)	6 weeks prod'n (kg/ha)
Denmat	186	-
Aragon	215	-
C.P.I. 16601	226	-
Siro peruvian	306	665
Paravivo	289	621
Cancreep	108	572
Hunter River	151	482
Hunter River + Daliak	144	675