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# Pasture Species Investigations - High Rainfall Area

D A. Nicholas

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PASTURE SPECIES INVESTIGATIONS

HIGH RAINFALL AREA

D.A. Nicholas

1969-70

Sheep bodyweights and greasy wool weights - kg/head, 1969-70.

Pasture	Rate	*6/3	⊕6/3	1/5	24/7	26/8	16/9	5/12	4/2	5/3	*6/3
Currie Cocksfoot	4 sh/ac	2.85	32.1	31.1	33.2	38.0	41.3	51.4	52.1	47.8	5.08
	5 "	2.84	32.1	30.8	31.5	37.2	40.9	51.5	49.6	47.8	5.31
	6 "	2.85	32.4	29.3	28.8	31.8	36.4	44.5	42.3	37.9	4.18
	Average		32.2	30.4	31.2	35.7	39.5	49.1	48.0	44.5	4.86
Aust. Phalaris	4 sh/ac	2.84	32.4	30.2	33.5	39.4	42.7	53.1	55.4	49.3	5.54
	5 "	2.85	32.4	30.6	30.2	34.4	37.4	48.0	46.2	40.0	4.45
	6 "	2.86	32.2	31.3	30.8	36.0	44.0	51.6	51.2	45.9	4.95
	Average		32.3	30.7	31.5	36.6	41.4	50.9	51.9	45.1	4.98
Kangaroo Valley Ryegrass	4 sh/ac	2.84	32.4	32.0	35.4	39.2	42.4	53.1	53.9	49.8	5.31
	5 "	2.84	32.5	30.6	30.5	34.2	37.8	49.3	48.2	46.1	4.49
	6 "	2.87	32.2	31.0	30.9	37.7	40.6	53.5	53.3	48.7	5.27
	Average		32.4	31.2	32.3	37.0	40.3	52.0	52.8	48.2	5.02
Annual	4 sh/ac	2.87	32.4	30.6	32.8	35.6	39.0	47.5	47.9	44.1	4.49
	5 "	2.87	32.0	31.7	30.2	33.2	36.4	50.7	52.4	48.2	4.95
	6 "	2.83	32.1	30.5	31.4	35.5	40.1	51.4	49.9	46.3	4.68
	Average		32.2	30.9	31.8	34.8	38.5	49.9	50.1	46.2	4.71

\* greasy wool weight

⊕ bodyweight after shearing.

Animal - Weaners were placed on trial on 6/3/69. No handfeeding was required on any treatment. Differences in pattern of bodyweight change largely explained by rate of stocking and quality of paddock.

e.g. Phalaris at 5 sh/ac, K.V.R. at 5 sh/ac and Annual at 4 sh/ac were poorer than average plots.

Pasture - The pastures consisted almost entirely of annual species; in most paddocks the clover + annual grass component was greater than 90%. The perennial grasses did not contribute significantly to pasture production. The Phalaris and cocksfoot persisted but that was all. Therefore the relatively small differences in bodyweight between species was due to paddock variation.

68NA1/2303EX. Clover Cultivar Grazing Trial. 'Gilros' Pastoral Co.  
1969.

TABLE I. Wool data - Shorn 23.4.69. Placed on plots 21/11/68  
Previous shearing-September 1968

		Greasy Wt.	Clean Wt.	Yield	Diam.
		(kg)	(kg)	(%)	(micron)
Geraldton	2.2 s/ac	2.63	1.82		21.0
	3.0 "	2.54	1.79		21.7
	Average	2.58	1.81	70.0	20.8
Uniwager	2.2 s/ac	2.83	1.86		20.3
	3.0 "	2.71	1.83		20.4
	Average	2.77	1.84	67.6	20.3
Dwalganup	2.2 s/ac	2.82	1.98		20.9
	3.0 "	2.63	1.84		20.8
	Average	2.72	1.91	69.4	20.8
Daliak	2.2 s/ac	2.80	1.91		20.7
	3.0 "	2.75	1.91		21.1
	Average	2.77	1.91	68.8	20.9
Seaton Park	2.2 s/ac	2.74	1.88		20.8
	3.0 "	2.75	1.91		20.7
	Average	2.74	1.89	69.2	20.7
Dinninup	2.2 s/ac	2.76	1.91		20.7
	3.0 "	2.88	1.87		20.9
	Average	2.82	1.89	67.2	20.8
Woogenellup	2.2 s/ac	2.88	2.05		21.0
	3.0 "	2.69	1.98		20.3
	Average	2.78	1.99	71.7	20.6
Mt Barker	2.2 s/ac	2.98	2.20		21.3
	3.0 "	2.84	1.98		20.8
	Average	2.91	1.95	67.2	21.0

TABLE II. Sheep body weight - kg/head. (8 sheep per plot)

		12/5	5/6	4/7	24/7	28/8	20/10	18/11	18/12	16/1	20/2	20/3
Geraldton	3 s/ac	44.0	44.8	44.5	45.4	49.9	61.1	64.4	62.0	63.3	57.7	56.8
	4 "	42.3	44.2	40.8	42.0	46.2	58.4	60.5	59.0	60.5	53.9	51.2
Uniwager	3 "	44.1	47.4	44.0	44.7	48.5	60.7	63.8	62.1	61.8	56.1	54.8
	4 "	41.6	43.7	38.3	38.7	43.2	53.8	56.4	54.3	54.3	47.7	45.1
Dwalganup	3 "	45.1	49.0	43.4	44.9	51.9	63.8	65.8	62.6	66.3	61.4	61.0
	4 "	43.9	45.3	41.4	42.4	46.0	57.1	61.4	61.4	64.0	55.0	53.1
Daliak	3 "	44.8	47.9	45.8	47.0	50.9	61.4	64.4	62.2	62.3	57.6	56.2
	4 "	44.0	43.9	40.5	42.1	45.6	58.8	60.7	58.2	58.2	52.2	50.0
Seaton Park	3 "	46.1	49.6	47.6	47.8	52.9	63.5	66.8	66.1	67.2	61.6	59.9
	4 "	43.9	45.0	41.5	41.8	46.5	60.1	62.7	61.9	60.4	52.6	50.3
Dinninup	3 "	43.2	47.4	44.9	46.0	49.9	60.7	65.6	65.8	67.5	62.6	60.9
	4 "	42.2	46.6	43.1	42.9	46.4	57.6	62.3	61.2	62.3	54.8	52.0
Woogenellup	3 "	47.1	50.8	49.5	49.6	55.9	65.9	70.0	69.6	71.0	68.0	65.7
	4 "	46.6	50.1	45.9	45.9	51.9	64.5	68.3	67.0	68.8	64.1	61.1
Mt Barker	3 "	47.4	50.3	48.5	49.4	53.9	64.7	67.1	67.6	68.1	63.8	60.5
	4 "	47.5	50.4	45.4	47.0	51.0	63.3	60.3	66.3	68.2	61.2	56.6

## 68NA1/2303EX Clover Cultivar Grazing Trial - Gilros Pastoral Company

TABLE III. Pasture Measurements - 1969

Cultivar		Density Plants/10 sq.dm 30.4.69	Yield of top dry matter - kg/hd - grazed			
			17.6.69	16.7.69	14.8.69	29.9.69
Geraldton	3 s/ac	518	392	1016	2410	2370
	4 "	454	374	791	1984	1847
	Average	486	383	903	2197	2108
Uniwager	3 s/ac	536	297	609	1334	1802
	4 "	514	196	528	975	1298
	Average	525	242	563	1155	1550
Dwalganup	3 s/ac	632	560	1335	2668	2809
	4 "	573	481	949	2253	2822
	Average	603	520	1142	2460	2816
Daliak	3 s/ac	734	370	682	1524	2136
	4 s/ac	753	359	567	1177	1881
	Average	743	365	624	1351	2009
Seaton Park	3 s/ac	630	538	1193	2242	2661
	4 "	608	319	707	1468	2024
	Average	619	423	950	1855	2343
Dinninup	3 s/ac	613	616	1545	2634	2625
	4 "	627	510	841	1906	2385
	Average	620	563	1193	2270	2505
Woogenellup	3 s/ac	529	600	1114	2847	3629
	4 "	553	549	690	2119	3176
	Average	541	569	902	2483	3402
Mt Barker	3 s/ac	553	560	806	1984	2037
	4 "	576	420	778	1424	1950
	Average	563	490	792	1704	1993
Overall	3 s/ac	593	488	1037	2208	2509
	4 "	580	401	732	1665	2172
	Average	587	444	884	1937	2340

TABLE IV. Chemical Composition of Pasture - 22/7/69.

Samples taken from Grazed Pasture.  
(Prior to Cobalt Applications)

	N %	P %	SO <sub>4</sub> S %	Tot.S %	P.P.M.						
					Co	Se	Cu	Mo	Fe	Mn	Zn
Geraldton	4.89	0.34	0.04	0.23	0.03	0.02	6.4	0.65	129	44	39
Uniwager	4.83	0.35	0.06	0.24	0.05	0.03	6.3	0.59	368	37	30
Dwalganup	4.15	0.28	0.08	0.23	0.04	0.02	6.1	0.35	135	41	35
Daliak	4.66	0.34	0.04	0.21	0.04	0.04	7.8	0.38	235	42	41
Seaton Park	4.56	0.33	0.06	0.23	0.05	0.04	5.6	0.62	163	39	23
Dinninup	4.57	0.32	0.06	0.24	0.02	0.02	4.5	0.51	159	30	27
Woogenellup	4.64	0.33	0.05	0.21	0.05	0.04	4.9	1.00	125	35	28
Mt Barker	4.54	0.35	0.05	0.22	0.07	0.02	6.6	0.72	118	28	31

Clover Cultivar Grazing Trial, Gilros Pastoral Co.,  
North Bannister.

The aim of the trial is to investigate the production of eight subterranean clover cultivars under continuous grazing. The cultivars differ in their growth characteristics and content of oestrogenic compounds. After establishing the trial in May, 1968, grazing was commenced in November, 1968. Following shearing in April, 1969, the stocking rate was increased from 2.2 and 3.0 sheep/acre to 3.0 and 4.0 sheep/ac respectively.

At the first shearing, which took place after the sheep had been on the plots for less than five months, sheep grazing Mt Barker and Dinninup produced more greasy wool than those on Geraldton (Table I). However no cultivar differed significantly from any other in its clean wool production.

Woogenellup has been the most productive cultivar to date - see Tables II & III. Although sheep body weights are only slightly higher on Woogenellup compared with Mt Barker there is obviously much more dry feed available on the Woogenellup plots for the remainder of the summer period. Sheep bodyweights on all other cultivars have been considerably lower (3 to 11 kg/head) than those on Woogenellup or Mt Barker.

Throughout the year the performance of sheep grazing Dwalganup and Seaton Park has been similar, although Dwalganup has produced a greater quantity of feed. Although more feed was produced on the Dinninup than on Seaton Park the sheep did not do as well during the green feed period. However in both summer periods when only dry feed has been available the sheep have done better on the Dinninup than either Dwalganup or Seaton Park.

Least dry matter has been produced by Daliak and Uniwager and their animal performance has been correspondingly poor. In contrast the other early maturing cultivar Geraldton, which in animal performance has been similar to that of Daliak produced 50% more dry matter than Daliak in July and August. Either the intake of the Geraldton cultivar was below average or the quality was inferior.

Only two deaths were recorded out of the 256 sheep on the trial in 1969. One was from a plot of Dwalganup, the other from Dinninup. Both deaths resulted from ruptured bladders caused by the blocking of the urethra with an unidentified substance.

Chemical analysis of the pasture samples (Table IV) have shown that in winter the levels of cobalt and selenium are low i.e. less than 0.07 and 0.04 parts per million respectively. Because of the low cobalt levels and the loss of sheep body weight in June, even though there appeared to be sufficient pasture to maintain body weight, cobalt sulphate was sprayed onto the pasture. By the time the cobalt had been applied (July 24th) the weight had begun to rise. It will be of interest to see whether the same body weight pattern is repeated in 1970 when there will be adequate cobalt in the pasture from the beginning of the season.

68BR27/2564EX. Low Oestrogen Clover Cultivar Grazing Trial, Moberup.  
Sheep body weights - kg/head - 1969

Cultivar	15/5	5/6	24/6	10/7	10/8	*9/10	10/11
Daliak	28.3	34.2	35.6	35.8	36.6	4.22	44.5
Woogenellup	28.3	29.2	27.9	28.8	27.1	3.72	41.1
Dinninup	28.3	29.0	28.2	29.0	27.7	3.28	41.6
Seaton Park	28.4	30.6	30.2	31.0	30.2	3.36	42.6

\* Greasy wool weight.

Plant Density - Number/10 sq. dm.

Cultivar	Clover	Grass	Flatweed
Daliak	299	37	7
Woogenellup	67	19	2
Dinninup	51	30	1
Seaton Park	158	22	7

Herbage Production - kg/hd.

Cultivar	26.6.69		8.1.70		
	Top*	Total	Top	Burr	Seed only
Daliak	500	3354	998	2356	753
Woogenellup	130	2864	2000	864	292
Dinninup	70	4141	2439	1702	523
Seaton Park	230	4670	2243	2427	904

\* Estimate only.

Comment:

Following germination in 1969 the experimental ewes were placed on the plots on 15/5/69. Plant density on all plots except the Daliak was very low and as by early August the situation had not improved the sheep were removed from all plots except the Daliak. By mid November it was judged that the amount of dry feed available was sufficient to carry the experimental sheep through most of summer.

The body weights and wool weights reflect the differences in feed supplied by the four cultivars.

68KA25/2564EX. Low Oestrogen Grazing Trial - J. Lynch, Gairdner River  
Dry Matter Yield - kg/hd - 4/12/69

Cultivar	Top	Burr	Total	Seed only
Daliak	974	571	1545	215
Dinninup	1007	183	1190	48
Seaton Park	1015	353	1368	92
Woogenellup	470	156	626	38

A satisfactory germination occurred on all plots by June. However due to adverse seasonal conditions little growth was made by any of the cultivars. Due to lack of rain there was insufficient water available to supply the trial area. As a consequence stocking with experimental sheep has not taken place. Grazing will take place over summer to reduce the top material present - some had taken place on the Woogenellup prior to sampling. Prior to grazing there were similar amounts of top material on all cultivars.



67M016/2320EX. Legume Species Grazing Demonstration - Lancelin.

Sheep body weights 1969-70.

Legume	16/4	2/5	21/5	30/5	10/6	12/8	10/9	*16/10	13/11	15/12	16/1	10/2	19/3
Geraldton	41.9	41.4	38.3	40.7	43.4	47.0	51.4	49.6	48.0	49.0	47.8	43.7	40.5
Woogenellup	48.9	49.1	47.4	47.9	50.7	48.5	53.7	52.9	53.1	53.2	52.8	47.5	42.4
Yellow Serradella	50.9	50.0	47.8	49.9	52.5	45.1	49.7	47.7	47.9	48.1	46.6	41.6	40.7
Daliak	46.7	47.3	46.0	47.6	50.6	53.0	56.9	57.6	56.4	57.1	56.5	52.1	48.4
Harbinger medic	48.2	48.3	46.5	47.9	51.1	48.9	55.3	55.1	54.2	54.9	55.1	49.1	46.7
Kondinin rose	50.6	49.4	47.2	46.6	47.5	42.3	46.9	47.9	46.6	43.6	41.4	33.5	
Lucerne				41.8	47.0	53.6	59.8	55.8	53.8	53.5	52.7	49.1	50.9

\* Shearing took place on 19/9/69.

Wool data - Shorn 19.9.69.

Previous shearing

Legume	Greasy kg.	Clean kg.	Staple length cm.	Fibre diam. microns
Geraldton	3.59	2.47	9.17	25.91
Woogenellup	3.73	2.67	9.37	26.66
Yellow Serradella	4.00	2.84	9.37	26.78
Daliak	3.83	2.77	9.20	27.48
Harbinger medic	3.78	2.72	8.26	26.75
Kondinin rose	3.97	2.74	8.96	26.68
Hunter River Lucerne	4.20	2.99	10.24	27.66

Lambing Data - 25 ewes per plot - at marking

Legume	Live lambs	Dead lambs	Total lambs *
Geraldton	13	5	18
Woogenellup	16	1	17
Yellow Serradella	16	1	17
Daliak	13	6	19
Harbinger medic	14	2	16
Kondinin rose	21	2	23
Hunter River Lucerne	14	4	18

\* As at marking on 12/8/69.

Germination Count - 23/6/69 - plants/10 sq.dm.

	Sub clover	Serradella	Grass	Weed
Geraldton	238	1	55	71
Woogenellup	256	2	76	24
Yellow Serradella	1	312	89	151
Daliak	330	-	101	108
Harbinger medic	260	+	97	59
Kondinin rose	225	-	28	4

Serradella and rose clover which in April 1969 carried the heaviest sheep performed very poorly during the year and by February 1970 carried the lightest sheep. In fact the sheep had to be removed from the rose clover on 11/2/70 due to lack of feed and the real danger of the paddock suffering wind erosion.

The rose clover produced poorly in its third year whilst the serradella in the grazing serradella plot suffered from attack by brown pasture loopers (Cianpa arietaria) and climbing cutworm.

The sheep grazing Woogenellup are still heavier than those on Geraldton despite there being less feed (top and/or burr) available on the Woogenellup.

Daliak sub clover and Harbinger medic are now showing out as the best legumes both on bodyweight and feed availability.

Hunter River lucerns established in 1968 and grazed at 2½ ewes/ac from mid May 1969 onwards has shown promise as a useful legume. Sheep grazing the lucerne are now the heaviest on the trial. However the sheep are damaging the stand by digging up plants.

The four months grazing of lucerne probably contributed to the high wool production of its sheep. The amount of wool produced on Serradella was also high reflecting the good feed supply of the previous year 1968. Wool production on Geraldton was again relatively poor.

Excluding the lucerne group lambs marked were only 62%, and deaths were 11%. The rose clover group gave the best lambing performance but this could not be related to any measured factor.

68ES40/2409Ex. Perennial Grass Introduction Trial - R.Stead, Dalyup.

Dry Matter Assessments.

4.9.69 - Pasture meter reading (6 weeks growth)  
3.12.69 - Total dry matter by cutting (kg/ha)

Species	Cultivar	4/9/69	3/12/69
Cocksfoot	Currie	6.72	1950
"	G.L. 34	8.95	1610
"	14676	6.37	1850
"	15211	8.15	1110
"	30282	7.22	1630
Phalaris	Aust. Comm.	7.85	1670
"	Seedmaster	8.80	1720
"	Special Seln.	13.52	1820
"	Scrocio	12.87	1480
"	19305	14.15	1470
"	14697	11.42	1610
"	15220	10.62	1520
Phalaris hybrid	Siro 1146	11.45	1580
Ryegrass	K.V.R.	14.07	2250
"	Medea	9.45	2060
"	15914	9.12	1690
Fescue	Demeter	9.70	1890
"	18949	11.50	1840
"	18952	10.20	1730
Annual		10.60	2400

Density of all cultivars is satisfactory.

Two cultivars, Kangaroo Valley Ryegrass and Special Selection phalaris gave good production at both samplings as well as early in the season. Three other cultivars - Sirocco, 19305 and 15211 (the best cocksfoot in September) - gave promising early production but below average spring production. The three cultivars are early maturing.

Best spring production was given by the annual plots which consisted mainly of capeweed.

Plant density of all cultivars listed is still adequate.

9.6.70  
DAN:EH.