Department of Agriculture and Food
GOVERNMENT OF WESTERN AUSTRALIA

Research Library

Experimental Summaries - Plant Research

1976

1976 Potash trials

W. J. Cox

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

Cox, W J. (1976), *1976 Potash trials*. 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 It may be out of date, inaccurate or misleading or conflict with current laws, polices or practices.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.

SUMMARY OF 1976 EXPERIMENTAL RESULTS
- POTASH TRIALS

W.J. Cox
Plant Research Division

76M01/1616EX Comparative potassium requirements of L. Cosentinii and L. Angustifolius

Location : P. Beer, Mogumber Pastoral Co., Red Gully

Soil Type : 40-60 cm grey sand overlying yellow sand and gravel.

Seeding : Seeded 24 & 25 May, 1976. CB49 @ 60 kg/ha; Unicrop 104 kg/ha; Uniharvest 104 kg/ha. Fertiliser potash treatments hand topdressed 4 weeks after germination.

Harvest : December 7, 1976

Results :

Grain Yield hg/ha

Species	0	30	60	90	120	180	240	360	720
Uniharvest	630A*	1011B	1089B	1048B	1082B	1089B	1104B	1118B	1100B
		B	BC	B-E	DE	E	CDF	CDE	BCD
CB 49	400A	674	708	870	978	1022	889	908	800
Unicrop	778A	1211B	1248B	1333B	1314B	1256B	1308B	1318B	1337B

* For each species numbers followed by the same letter are not significantly different at the 5% level using Duncan's multiple range test.

Comment: Significant economic response to small additions of kcl. Species comparison is confounded by variable plant populations/unit area.

Soil Properties

40 cores/site. Data as for 76M03

76M02/1616EX Rates and Times of Potassium Application on Lupins

Location : E. Ivey, Badgingarra

Soil Type : grey sand over gravel at 60-100 cm.

Seeding : Unicrop at 94 kg/ha on May 20, 1976. Basal 200 kg/ha. Super CuZnMo no. 1 prior to seeding and sown with 198 kg/ha Super-Mn. Potash treatments hand topdressed at seeding and 4 and 8 weeks after seeding.

Weeds : Heavy uniform infestation of Bromus mollis.

Harvest : November 21, 1976

Results :

Grain Yield kg/ha

Time of Application	0	25	50	75	100	150	200	300
At seeding	950A	912A	886A	967A	943A	981A	976A	1005A
At 4 weeks	833A	950B	1033B	1010B	991B	1067B	1043B	1076B
At 8 weeks	905A	948AB	1031BC	1038BC	1017ABC	1038BC	1072BC	1129C

Rates xxx Times xx Rate x Time N.S.

Comments: Small response with application at 4 or 8 weeks resulting in higher yields than the at seeding treatments.

Soil Properties

Depth cm	pH	Mechanical Analysis				C	N	Total K	Exchangeable						Extractable	
		CS	FS	Silt	Clay				K	Ca	Mg	Na	H	CEC	HNO_3	$NaHCO_3$
Bulk																
0-10	6.0	83	16	1	< 1	1.15	.06	.018	.05	2.5	.4	<.05	1.1	4.1	36	30
Profile																
0-10	6.2	81	17	1	"	1.11	.05	.028	.10	2.6	.4	"	.9	4.0	57	50
10-30	5.8	77	22	1	"	.41	.017	.024	<.05	.6	.2	"	.7	1.5	8	10
30-60	6.0	67	29	2	2	-	-	.019	<.05	.3	.2	"	.6	1.1	13	10
60-100	5.8	65	34	1	< 1	-	-	.022	"	.1	<.1	"	.2	.3	4	10

76M03/1616EX Sources of Potassium - Muriate vs Langbeinite

Location : P. Beer, Mogumber Pastoral Co., Red Gully via Gingin

Soil Type : 40-60 cm grey sand over yellow sand and gravel.

Seeding : Sown 24 & 25 May, 1976 using 104 kg/ha Unicrop. Basal 198 kg/ha Super CuZn Mo nol topdressed before seeding and 146 kg/ha Mn super at seeding. Potash treatments topdressed 4 weeks after seeding. High rates of langbeinite applied late.

Harvest : December 7, 1976

Results :

Mean Grain Yields kg/ha (Reps 1 & 2 only)

Source	0	125	25.0	375	500	75	100	150
kcl	518A	837	1007	944	1040	1100	1085	860
Langbeinite	560	600	711	637	770	783	689*	659*

* treatments applied late

Comment: Economic response to 50 kg/ha kcl. Langbeinite does not appear to be an effective source of k. Reasons will be determined from chemical analysis.

Soil Properties

20 cores collected February, 1976.

Depth cm	pH	Mechanical Analysis				C	N	Total K	Exchangeable						Extractable	
		CB %	FS %	Silt %	Clay %				K	Ca	Mg	Na	H	CEC	HNO_3	$NaHCO_3$
Bulk																
0-10	5.8	70	28	< 1	1	.62	.028	.017	<.05	1.6	.2	<.05	.7	2.5	17	20
Profile																
0-10	5.8	72	26	1	< 1	.42	.02	.018	<.05	.6	.1	<.05	.5	1.2	18	20
10-30	5.8	68	31	1	< 1	.29	.008	.021	"	.1	<.1	"	.3	.4	3	<10
30-60	5.6	64	35	1	< 1	-	-	.018	"	<.1	<.1	"	.4	.4	2	<10
60-100	5.8	59	39	1	1	-	-	.015	"	.1	<.1	"	.5	.6	4	<10

76TSI/1616EX **Comparative Potassium Requirements of L. Cosentinii and L. Angustifolius**

Location : K. McQueen, Eneabba.

Soil Type : 0-15cm greysand, 15-80 cm pale yellow sand, 80-100 cm mottled yellow sandy clay.

Seeding : Unicrop, Uniharvest and CB 49 sown at 102 kg/ha on May 12, 1976. Potash treatment topdressed June 9, 1976. Basal 205 kg/ha. Super CuZnMoNo 1 topdressed on May 11, 1976 and 140 kg/ha. Super Mn mix drilled with seed.

Harvest : 4/11/76 CB 49 and Unicrop, Uniharvest 24/11/76

Results :

Grain Yield Kg/ha

kcl kg/ha

Species	0	30	60	90	120	180	240	360	720
Uniharvest	582	664	701	783	637	728	764	710	692
CB 49	983	1128	1174	1119	1147	1001	1128	1156	1083
Unicrop	701	937	965	901	992	926	883	746	655

Comments: Economic response to low rates of applied kcl (30 kg/ha) with CB 49 yielding much higher than uniharvest and unicrop.

Soil Properties:

Depth cm	pH	Mechanical analysis				C	N	Total K	Exchangeable						Extractable	
		CS	FS	Silt	Clay				K	Ca	Mg	Na	H	CEC	HNO_3	$SMNaHCO_3$
Bulk																
0-10	6.2	79	19	< 1	1	.34	.024	.141	<.05	1.2	.2	<.05	.6	2.0	19	20
Profile																
0-10	6.4	79	18	1	1	.25	.019	.133	"	1.0	.2	"	.4	1.6	20	20
10-30	6.3	74	24	2	<1	.19	.010	.275	"	.4	.1	"	.4	.9	22	10
30-60	6.2	68	29	1	1	-	-	.298	"	.1	<.1	"	.3	.4	22	20
60-100	6.4	60	30	2	7	-	-	.322	"	.3	.2	"	.4	.9	42	30

76TS2/1616EX **Rates and Times of Potassium Application on Lupins**

Location : G. Soullier, North Eneabba

Soil Type : 0-15 cm grey sand, 15-30 light grey sand, 30-60 cm white sand, 60-100 white sand.

Seeding : May 10, 1976 90 kg/ha Unicrop. Basal etc. same as 76M02.

Harvest : December 6, 1976

Results :

Grain Yield kg/ha
kcl kg/ha

Time of Application	0	25	50	75	100	150	200	300
At seeding	754	669	844	605	743	865	722	823
At 4 weeks	849	801	775	839	817	794	944	685
At 8 weeks	833	701	812	902	871	812	839	833

Comments: Yields severely affected by drought and weeds. NOT possible to make meaningful conclusions on the basis of these results. Observations in the vegetative stage suggested some response with 4 weeks as the best time of application.

Soil Properties:

Depth cm	pH	Mechanical analysis				C	N	Total K	Exchangeable						Extractable	
		CS	FS	Silt	Clay				K	Ca	Mg	Na	H	CEC	HNO_3	$NaHCO_3$
						%			meg %						ppm	
Bulk 0-10	6.2	82	15	2	< 1	.69	.04	.206	.05	1.1	.2	<.05	.4	1.8	36	40
Profile 0-10	6.2	83	15	2	"	.43	.033	.091	<.05	1.3	.2	"	.2	1.7	26	20
10-30	5.8	73	25	3	"	.27	.011	.144	"	.5	.1	"	<.1	.6	14	20
30-60	5.9	75	23	3	"	-	-	.248	"	.1	<.1	"	.3	.4	13	10
60-100	5.8	73	25	3	"	-	-	.312	"	.1	<.1	"	.1	.2	12	10

76TS3/1616EX **Sources of Potassium on Lupins - Muriate vs Langbeinite**

Location : S. Conley, Coorow

Soil Type : pale yellow sand over mottled yellow sand at 60-100 cm.

Results : Trial not harvested due to severe drought effects on establshment and subsequent growth. Visual observations indicated response to 100 kg/ha with muriate better than langbeinite.

Soil Properties :

Depth cm	pH	Mineral Analysis			Total	Exchangeable						Extractable	
		clay %	N %	C %	K %	K	Ca	Mg	Na	H	CEC	HNO_3	.5M$NaHCO_3$
						meq%						ppm	
Bulk													
0-10	6.3	1	.018	.42	.033	<.05	.9	.1	.05	<.1	1.0	14	10
Profile													
0-15	6.2	2	.018	.46	.025	"	.9	.1	"	<.1	1.0	14	10
15-30	6.2	2	.008	.05	.025	"	.4	.1	"	.1	.6	11	10
30-60	5.9	1	-	-	.025	"	.2	<.1	"	.2	.4	9	<10
60-100	6.0	1	-	-	.035	"	.3	<.1	"	.1	.4	7	<10

76TS9/1616EX Rates of P hand K on wheat

Location : S. Conley, Coorow

Soil Type : 0-15 dark grey sand, 15-30 cm pale grey sand, 30-60 cm pale yellow sand 60cm Red gravel.

Results : Trial not harvested due to severe drought effects on establshment and subsequent growth. Visual observation indicated vegetative response to 30 kg P/ha with some response to K.

Soil Properties:

Depth cm	pH	Mechanical Analysis				C	N	Total K	Exchangeable						Extractable	
		CS	FS	Silt	Clay				K	Ca	Mg	Na	H	CEC	HNO_3	$NaHCO_3$
		%							meq%						ppm	
Bulk																
0-10	6.2	75	24	1	<1	.33	.018	.085	<.05	.7	.1	<.05	.2	1.0	9	<10
Profile																
0-10	6.2	73	26	1	"	.30	.018	.028	"	.7	.1	"	.3	1.1	8	<10
10-30	6.0	71	27	<1	"	.16	.010	.029	"	.1	<.1	"	.5	.6	4	<10
30-60	5.8	66	32	1	"	-	-	.034	"	.1	.1	"	.3	.5	13	10

76BA5/1616EX Method of kcl application on Lupins

Location : Badgingarra Research Station

Soil type : 0-15 cm dark grey sand over gravel.

Depth cm	pH	Mechanical Analysis				C	N	Total K	Exchangeable						Extractable	
		CS	FS	Silt	Clay				K	Ca	Mg	Na	H	CEC	HNO_3	$NaHCO_3$
Bulk																
0-10	6.4	38	58	1	2	.48	.06	.076	.25	1.8	.3	<.05	.9	3.3	140	130
Profile																
0-10	6.0	28	69	2	<1	1.39	.100	.123	.20	2.2	.4	<.05	1.3	4.1	180	150
10-30	6.2	24	71	2	<1	1.12	.059	.118	.15	1.6	.2	<.05	.9	2.9	79	90

Seeding : As for 76BA6

Harvest : December 8, 1976

Results :

Grain Yield kg/ha

kcl kg/ha

Method	0	25	50	75	100	150	200	300
Drilled	1977	1914	1919	2036	1963	1944	1816	1539
Topdressed	1952	1929	1839	1891	1847	1876	1910	1903

Comment: No response to applied kcl. Some depression in yield at 200 and 300 kg/ha kcl drilled.

76BA6/1616EX Method of kcl application on Lupins

Location : Badgingarra Research Station

Soil Type : deep grey sand

Depth	pH	Mechanical Analysis				C	N	Total K	Exchangeable						Extractable	
		CS	FS	Silt	Clay				K	Ca	Mg	Na	H	CEC	HNO_3	$NaHCO_3$
Bulk																
0-10	6.0	64	34	1	1	.69	.04	.045	.05	1.5	.2	<.05	.6	2.4	42	40
Profile																
0-10	6.6	66	32	1	1	.72	.044	.051	.10	1.6	.3	<.05	.1	2.1	92	90
10-30	6.0	64	34	1	1	.25	.015	.038	<.05	.4	<.1	<.05	.4	.8	24	20
30-60	5.8	58	41	1	1	-	-	.037	<.05	.1	<.1	"	.4	.5	13	10
60-100	6.0	58	39	2	2	-	-	.042	.05	.2	.1	"	.6	1.0	22	20

Seeding : Sown to unicrop at 100 kg/ha on May 28, 1976 Basal 200 kg/ha super CuZn. A mix topdressed 26/5/76. 150 kg/ha Mn super applied at seeding. Potash hand topdressed May 28, 1976. Simazine 2 l/ha applied as pre-emergence herbicide.

Harvest : December 9, 1976

Results :

Grain Yield kg/ha

kg kcl/ha

Method	0	25	50	75	100	150	200	300
Drilled	1845	1712	1622	1757	1681	1828	1828	1768
Topdressed	1858	1675	1835	1749	1888	1813	1940	1870

Comment: No response. It is interesting to note that the high drilled rates have not affected yield. Caution is required in extrapolating these results as seasonal conditions may markedly affect the placement effect.