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1974 Potassium soil test calibration trials 1. Soil analysis

W.J. Cox

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Cox, W.J. (1974), *1974 Potassium soil test calibration trials 1. Soil analysis*. Department of Agriculture and Food, Western Australia, Perth. Article.

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SUMMARY OF RESULTS

1974

W. J. COX

PART A. POTASSIUM SOIL TEST CALIBRATION TRIALS

I. SOIL ANALYSIS

SITE DETAILS

Site	Name	Location	Soil [†]	Vegetation	K Applied kg KCl/ha.				Farmer*	Adviser**
					1973	1971-1973	Since 1964	Total		
74AL1	J. Dencen	Kalgan		Heath	45	135	135	135	45	100
74AL2	R. Hoffman	Many Peaks		Scrub Plain	Nil	Nil	Nil	Nil	Nil	Nil
74DE1	H.W. Therne	Kent Dale		Stunted Jarrah Sheoak Tea Tree	50	220	220	220	45	65
74DE2	H. Tilbreek	Denmark		Karri	Nil	Nil	Nil	Nil	Nil	200
73DE3	C.A. Campbell	Youngs Siding		Heath	40	120	270	270	100	100
73DE4	C.A. Campbell	Youngs Siding		Heath	40	120	270	270	45	45
73DE5	C.A. Campbell	Youngs Siding		Heath	80	240	390	390	100	100
73DE6	C.A. Campbell	Youngs Siding		Heath	80	240	390	390	45	45
74MA1	F. Landgraft	Tone Bridge		Redgum	Nil	Nil	Nil	Nil	Nil	100
74MA2	J. Edwards	Manjimup		Redgum	Nil	Nil	Nil	100	Nil	100
74MA3	A. Angel	Middlesex		Karri	Nil	Nil	Nil	Nil	Nil	100
74BU1	H. Harrison	Witchcliffe		Redgum	45	135	270	270	45	45
74BU2	H. Crane	Karridale		Redgum	145	205	400	400	150	100
74BU3	B. Cuthbert	Acton Park		Redgum	45	135	450	450	45	45
74BU4	H. Scett	Ludlew		Redgum	45	135	270	270	45	45
74BY1	B. Gelmi	Dardanup		Banksia	120	186	318	318	120	120
74BY2	G. Rideout	Boyup Brook		Whitegum; Jarrah	Nil	Nil	Nil	Nil	Nil	60
74BY3	A. Mountford	Cardiff		Jarrah; Redgum	Nil	Nil	Nil	Nil	Nil	120
74HA1	J. Hedgsen	Harvey		Heath and Paper Bark	100	260	420	420	100	100
74HA2	A. Black	Ceelup		Redgum	33	146	377	450	30	80
74HA3	H. Christensen	Ceelup		Redgum	Nil	133	364	400	Nil	122
74AR1	G.E. & C. Wilson	Nth Dandalup		Redgum & whitegum	66	132	200	200	66	80
74AR2	D. Clark	Serpentine		Redgum Hedged Gum	33	99	264	264	80	80
74MO1	G. McDermott	Reagans Ford		Heath	Nil	Nil	Nil	Nil	Nil	120
74MO2	T. Emery	W. Dandaragan		Banksia	Nil	Nil	Nil	Nil	Nil	Nil
74MO3	C. Mahl	Badgingarra		Scrub	Nil	Nil	Nil	Nil	Nil	Nil
74NA1	N.L. & E. Marnham	S. Papaninning		Whitegum Sheoak Blackbey	Nil	Nil	Nil	Nil	165	143
74NA2	H. Watts	Papaninning		Sheoak	Nil	Nil	Nil	Nil	Nil	55

1974 SOIL ANALYSES

I. % GRAVEL, BULK DENSITY AND pH MEASUREMENTS

Trial No.	Depth cm	B.D.	% Gravel	pH		△ pH
				1:2.5 .01M CaCl ₂	1:2.5 Soil:Water	
74AL1	0-10	1.14	0	3.7	4.6	0.9
	10-20	-	0	3.4	4.4	1.0
	20-30	-	0	3.2	4.2	1.0
	30-40	-	0	3.4	4.0	.6
74AL2	0-10	1.30	1	4.5	5.3	.80
	10-20	-	12	4.45	5.35	.90
	20-30	-	22	4.40	5.85	1.55
	30-40	-	25	4.75	6.10	1.35
74DE1	0-10	1.22	0	4.0	5.0	1.0
	10-20	-	0	3.6	4.6	1.0
	20-30	-	0	3.4	4.4	1.0
	30-40	-	0	3.4	4.7	1.3
74DE2	0-10	1.19	24	4.7	5.7	1.0
	10-20	-	41	4.6	5.9	1.3
	20-30	-	48	4.8	6.0	1.2
	30-40	-	38	5.0	6.1	1.1
74DE3	0-10	1.17	0	4.5	5.4	.9
	10-20	-	0	3.9	4.9	1.0
	20-30	-	0	4.0	5.1	1.1
	30-40	-	2	4.2	5.1	.9
74DE4	0-10	1.39	0	4.4	5.0	.6
	10-20	-	0	4.2	5.1	.9
	20-30	-	2	4.4	5.2	.8
	30-40	-	2	4.7	5.3	.6
74DE5	0-10	1.17	0	4.5	5.0	.5
	10-20	-	1	4.2	4.9	.7
	20-30	-	2	4.5	5.1	.6
	30-40	-	3	4.7	5.3	.6
74DE6	0-10	1.20	0	4.9	5.3	.4
	10-20	-	0	4.2	5.0	.8
	20-30	-	1	4.2	5.0	.8
	30-40	-	3	4.4	5.1	.7
74MA1	0-10	1.41	0	4.6	5.9	1.3
	10-20	-	0	4.2	5.8	1.6
	20-30	-	0	3.9	5.5	1.6
	30-40	-	0	3.8	5.7	1.9

Trial No.	Depth cm	B.D.	% Gravel	pH		△ pH
				1:2.5 .01M CaCl ₂	1:2.5 Soil:Water	
74MA2	0-10	1.44	0	4.15	4.95	0.80
	10-20	-	0	4.15	5.15	1.0
	20-30	-	-	5.00	5.8	0.80
	30-40	-	2	4.90	5.65	0.75
74MA3	0-10	1.23	16	5.10	5.80	0.70
	10-20	-	20	5.25	6.10	0.85
	20-30	-	18	5.25	6.10	0.85
	30-40	-	19	5.20	6.10	0.90
74BU1	0-10	1.34	4	4.3	5.3	1.0
	10-20	-	5	4.4	5.5	1.1
	20-30	-	6	4.4	5.6	1.2
	30-40	-	8	4.4	5.7	1.3
74BU2	0-10	1.39	0	4.20	5.05	.85
	10-20	-	0	3.90	4.70	.80
	20-30	-	0	3.70	4.65	0.95
	30-40	-	0	3.65	4.70	1.05
74BU3	0-10	1.26	0	4.30	5.20	.90
	10-20	-	0	4.10	5.00	.90
	20-30	-	0	3.95	4.90	.95
	30-40	-	0	3.85	4.90	1.05
74BU4	0-10	1.52	0	5.05	5.75	.70
	10-20	-	0	5.00	5.90	.90
	20-30	-	0	5.10	6.10	1.00
	30-40	-	0	5.15	6.20	1.05
74BY1	0-10	1.36	0	4.4	5.2	.8
	10-20	-	0	4.5	5.6	1.1
	20-30	-	0	4.6	5.8	1.2
	30-40	-	0	4.7	5.9	1.2
74BY2	0-10	1.27	43	5.0	5.9	.9
	10-20	-	46	5.1	6.0	.9
	20-30	-	43	5.40	6.25	.85
	30-40	-	29	5.10	6.05	.95
74BY3	0-10	1.44	0	4.40	5.15	.75
	10-20	-	0	4.35	5.30	.95
	20-30	-	0	4.25	5.35	1.10
	30-40	-	0	4.10	5.30	1.20
74HA1	0-10	1.27	0	3.9	4.9	1.0
	10-20	-	0	3.95	5.10	1.15
	20-30	-	0	3.65	4.70	1.05
	30-40	-	0	3.70	4.90	1.20

Trial No	Depth cm	B.D.	% Gravel	pH		Δ pH
				1:2.5 .01M CaCl ₂	1:2.5 Soil:Water	
74HA2	0-10	1.55	0	3.65	4.65	1.0
	10-20	-	0	3.65	4.65	1.0
	20-30	-	0	3.75	4.60	.85
	30-40	-	0	3.80	4.70	.90
74HA3	0-10	1.36	0	4.15	4.95	.80
	10-20	-	0	4.00	4.70	.70
	20-30	-	0	3.90	4.60	.70
	30-40	-	0	3.90	4.70	.80
74AR1	0-10	1.43	0	3.90	4.85	.95
	10-20	-	0	3.95	4.95	1.00
	20-30	-	0	3.85	4.85	1.00
	30-40	-	0	4.00	5.10	1.10
74AR2	0-10	1.29	4	4.35	5.35	1.00
	10-20	-	7	4.45	5.55	1.10
	20-30	-	3	4.30	5.50	1.20
	30-40	-	10	4.35	5.70	1.35
74M01	0-10	1.54	0	4.5	5.7	1.2
	10-20	-	0	4.5	5.7	1.2
	20-30	-	0	4.4	5.65	1.25
	30-40	-	0	4.5	5.65	1.15
74M02	0-10	1.55	0	5.5	6.3	.8
	10-20	-	0	5.5	6.5	1.0
	20-30	-	0	5.5	6.4	.9
	30-40	-	0	5.6	6.5	.9
74M03	0-10	1.47	0	4.5	5.4	.9
	10-20	-	0	4.5	5.4	.9
	20-30	-	0	4.4	5.4	1.0
	30-40	-	0	4.35	5.65	1.3
74NA1	0-10	1.51	9	4.60	5.40	.8
	10-20	-	22	4.60	5.50	.9
	20-30	-	28	5.1	5.8	.7
	30-40	-	17	5.1	5.9	.8
74NA2	0-10	1.39	46	4.7	5.4	.7
	10-20	-	41	4.5	5.5	1.0
	20-30	-	44	4.4	5.4	1.0
	30-40	-	49	4.4	5.4	1.0

I (a) MOISTURE CHARACTERISTICS

Site	Depth cm	% Moisture		
		$\frac{1}{3}$ atm	15 atm	Δ
74AL1	0-10	20.2	17.3	2.9
	10-20	8.8	7.9	0.9
74AL2	0-10	5.7	5.2	0.5
	10-20	3.3	2.9	0.4
74DE1	0-10	14.3	13.5	0.8
	10-20	8.4	7.6	0.8
74DE2	0-10	22.1	11.3	10.8
	10-20	16.9	9.1	7.8
74DE3	0-10	12.2	7.8	4.4
	10-20	6.8	3.8	3.0
74DE4	0-10	19.9	11.6	8.3
	10-20	11.9	6.4	5.5
74DE5	0-10	19.6	11.4	8.2
	10-20	10.6	5.8	4.8
74DE6	0-10	15.9	9.0	6.9
	10-20	8.8	4.7	4.1
74MA1	0-10	4.2	3.6	.6
	10-20	2.6	2.0	.6
74MA2	0-10	16.1	8.1	8.0
	10-20	12.6	5.7	6.9
74MA3	0-10	35.6	16.6	19.0
	10-20	26.8	14.1	12.7
74BU1	0-10	11.2	5.8	5.4
	10-20	8.8	4.8	4.0
74BU2	0-10	19.1	16.5	2.6
	10-20	13.5	10.7	2.8
74BU3	0-10	9.6	6.9	2.7
	10-20	5.1	4.0	1.1
74BU4	0-10	6.1	4.0	2.1
	10-20	3.9	2.1	1.8
74BY1	0-10	6.6	6.1	0.5
	10-20	4.1	2.2	1.9
74BY2	0-10	17.9	8.3	9.6
	10-20	15.0	7.3	7.7

Site	Depth om	% Moisture		
		$\frac{1}{3}$ atm	15 atm	Δ
74BY3	0-10	6.4	4.3	2.1
	10-20	4.4	2.4	2.0
74HA1	0-10	6.4	5.4	1.0
	10-20	5.0	3.6	1.4
74HA2	0-10	7.8	3.5	4.3
	10-20	4.9	1.7	3.2
74HA3	0-10	5.0	3.5	1.5
	10-20	3.4	1.8	1.6
74AR1	0-10	5.7	3.4	2.3
	10-20	3.9	1.9	2.0
74AR2	0-10	23.6	8.9	14.7
	10-20	15.9	6.9	9.0
74M01	0-10	3.7	2.2	1.5
	10-20	2.6	1.5	1.1
74M02	0-10	4.9	2.6	2.3
	10-20	1.5	1.3	0.2
74M03	0-10	2.1	1.7	0.4
	10-20	1.6	1.1	0.5
74NA1	0-10	6.7	2.3	4.4
	10-20	6.5	2.9	3.6
74NA2	0-10	6.8	3.0	3.8
	10-20	5.9	2.1	3.8

1974 SOIL ANALYSES

II. MEASURES OF AVAILABLE POTASSIUM

Trial No.	Depth	1 N NH ₄ OAC	0.1 N HCl	0.05M NaHCO ₃	.01M CaCl ₂	H ₂ O
	cm			ppm		
74AL1	0-10	70	61	58	58	28
	10-20	43	38	38	34	21
	20-30	22	22	22	22	15
	30-40	10	13	11	10	8
74AL2	0-10	64	67	62	51	38
	10-20	21	21	24	19	14
	20-30	14	16	19	13	10
	30-40	32	27	34	22	14
74DE1	0-10	96	94	86	77	42
	10-20	24	26	27	24	16
	20-30	16	10	19	16	10
	30-40	6	6	11	10	8
74DE2	0-10	62	70	59	40	24
	10-20	19	24	22	16	9
	20-30	14	16	16	10	9
	30-40	13	14	13	11	4
74DE3	0-10	38	34	35	27	5
	10-20	16	18	16	14	10
	20-30	5	3	6	6	20
	30-40	3	3	6	6	6
74DE4	0-10	96	90	70	70	52
	10-20	37	32	30	29	3
	20-30	10	6	8	10	4
	30-40	6	5	6	11	18
74DE5	0-10	106	96	53	78	48
	10-20	22	18	26	19	10
	20-30	19	26	26	13	10
	30-40	10	8	16	19	6
74DE6	0-10	96	93	86	74	52
	10-20	27	32	32	29	19
	20-30	14	10	16	13	7
	30-40	13	8	14	11	6
74MA1	0-10	40	35	42	38	26
	10-20	10	5	13	11	8
	20-30	6	0	6	6	5
	30-40	5	0	6	3	3

Trial No.	Depth	1 N NH ₄ OAC	0.1 N HCl	0.05M NaHCO ₃	.01M CaCl ₂	H ₂ O
	om			ppm		
74MA2	0-10	80	72	66	58	30
	10-20	18	11	16	13	7
	20-30	10	6	10	6	4
	30-40	8	3	8	5	4
74MA3	0-10	133	144	112	91	38
	10-20	64	61	53	43	18
	20-30	53	48	46	37	17
	30-40	50	42	45	32	16
74BU1	0-10	77	67	66	59	36
	10-20	27	14	24	19	12
	20-30	16	6	14	13	8
	30-40	14	6	13	11	8
74BU2	0-10	118	101	99	91	31
	10-20	38	30	35	30	10
	20-30	38	13	22	16	7
	30-40	14	6	19	10	10
74BU3	0-10	82	70	69	66	52
	10-20	42	32	40	35	26
	20-30	16	8	19	11	9
	30-40	13	3	16	6	7
74BU4	0-10	50	51	51	45	26
	10-20	21	14	22	19	10
	20-30	11	6	14	10	4
	30-40	10	3	14	6	3
74BY1	0-10	78	91	70	64	43
	10-20	38	34	35	32	19
	20-30	35	32	37	29	16
	30-40	26	22	26	21	12
74BY2	0-10	118	133	112	90	56
	10-20	78	77	67	45	26
	20-30	32	42	42	26	12
	30-40	38	35	35	24	10
74BY3	0-10	21	21	26	19	14
	10-20	8	3	11	6	6
	20-30	3	0	8	2	3
	30-40	2	0	8	0	4

Trial No	Depth	1 N NH ₄ OAC	0.1 N HCl	0.5M NaHCO ₃	.01M CaCl ₂	H ₂ O
	cm			ppm		
74HA1	0-10	54	54	48	51	33
	10-20	16	16	19	18	12
	20-30	6	6	13	10	5
	30-40	13	6	14	14	11
74HA2	0-10	32	26	37	29	22
	10-20	16	10	19	16	11
	20-30	6	2	13	10	6
	30-40	8	2	22	11	9
74HA3	0-10	35	32	38	35	27
	10-20	16	18	24	19	15
	20-30	8	5	27	10	5
	30-40	6	3	10	8	6
74AR1	0-10	14	19	22	19	14
	10-20	10	3	11	10	7
	20-30	8	2	8	6	6
	30-40	6	0	6	6	5
74AR2	0-10	59	50	48	29	7
	10-20	21	16	21	11	4
	20-30	30	21	24	13	6
	30-40	27	16	24	10	4
74M01	0-10	24	22	29	26	18
	10-20	13	6	10	11	9
	20-30	8	2	6	8	6
	30-40	6	0	10	6	5
74M02	0-10	22	19	27	18	11
	10-20	16	8	16	13	10
	20-30	13	6	14	6	8
	30-40	13	0	16	6	8
74M03	0-10	13	3	10	10	12
	10-20	5	0	3	3	4
	20-30	5	0	0	0	3
	30-40	3	0	6	0	4
74NA1	0-10	59	53	53	46	30
	10-20	45	35	45	32	26
	20-30	72	56	58	45	25
	30-40	102	80	74	58	23
74NA2	0-10	93	90	72	72	38
	10-20	34	21	29	19	12
	20-30	37	26	32	22	18
	30-40	51	35	62	29	34

III CSBP RESULTS

Trial No	Depth cm		pH 1:5 H ₂ O	Cl ppm	P ppm	K ppm	Nitrate ppm		
							Initial	Potential	Total
74AL1	0-10		4.8	390	38	177	6	1	7
74AL2	0-10		5.6	145	36	70	16	7	23
74DE1	0-10		5.3	128	13	100	19	1	20
74DE2	0-10		5.6	155	47	69	16	42	58
74DE3	0-10		5.6	250	58	43	20	5	25
74DE4	0-10		5.3	648	52	82	26	6	32
74DE5	0-10		5.3	640	54	106	36	15	51
74DE6	0-10		6.0	317	59	97	25	14	39
74MA1	0-10		6.0	84	13	40	7	3	10
74MA2	0-10		5.5	143	25	75	23	11	34
74MA3	0-10		6.1	112	34	144	18	39	57
74BU1	0-10		5.6	120	64	79	38	12	50
74BU2	0-10		5.2	140	22	105	19	3	22
74BU3	0-10		5.0	180	16	76	32	6	38
74BU4	0-10		6.3	117	25	62	15	6	21
74BY1	0-10		5.5	200	37	72	34	30	64
74BY2	0-10		6.0	90	37	150	5	28	33
74BY3	0-10		5.3	120	20	30	10	3	13
74HA1	0-10		4.8	133	7	50	10	4	14
74HA2	0-10		5.5	67	27	32	12	4	16
74HA3	0-10		5.8	62	24	35	22	4	26
74AR1	0-10		5.1	128	26	19	11	8	19
74AR2	0-10		4.9	128	14	65	6	18	24
74MO1	0-10		4.9	170	1	26	6	3	9
74MO2	0-10		-	-	-	-	-	-	-
74MO3	0-10		5.6	107	7	13	7	5	12
74NA1	0-10		5.4	82	8	66	12	14	26
74NA2	0-10		5.7	93	29	105	4	13	17