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APPENDICES

Appendix 3.1. Description of soil samples and sampling sites

Region	Soil type	Cropping history	Property Name
Gwydir Valley	Red Clay	Reference 5 years 14 years	Norwood
	Brown Clay	Reference 5 years 14 years	
	Grey Clay	Reference 5 years !8 years	
Emerald	Black Earth	Reference 15 years	Tyson Downs
	Grey Clay	Reference 21 years 22 years	
	Alluvial Soil	Reference 10 years 12 years	
MacIntyre Valley	Red Clay	Reference 20 years	Koarlo
	Black Earth	Reference 6 years	Warendi South
	Grey Clay	Reference 8 years	Mundine
	Grey Clay	Reference 1 year 15 years	Mundine
Bourke	Red Clay	Reference 25 years	Not recorded
	Grey Clay	Reference 5 years	Not recorded
	Grey Clay	Reference 1 year 16 years	Not recorded
	Grey Clay	Reference 27 years	Fort Bourke

Appendix 3.1 continued

Region	Soil type	Cropping history	Property Name
Macquarie Valley	Red Brown Earth	Reference 50 years	Allambie
	Red Brown Earth	Reference 10 years	Elengerah
	Grey Clay	Reference 4 years 12 years	New Tereweena
	Alluvial Soil	Reference 2 years 8 years 10 years	Killoween
Darling Downs	Grey Clay	Reference 40 years	Kupunn
	Grey Clay	Reference 50 years	Daandine
	Black Earth	Reference 60 years	Dalby Agricultural College
	Grey Clay	Reference 50 years	Dalby Agricultural College
	Black Earth	Reference 50 years	Waco
Namoi Valley	Grey Clay	Reference 30 years	Kangaloo
	Grey Clay	Reference 40 years	Kilmarnock
	Grey Clay	Reference 1 year	Myola
	Grey Clay	Reference 10 years 30 years	Oakville Togo

Appendix 3.2. Preparation of nutrient solutions for double-pot trial

		Nutrient solution					
		+All	-P	-S	-K	-Mg	-Trace
Macronutrients	Concentration (M)	Volume required (mL/L)					
$Ca(NO_3)_2.4H_2O$	1.00	3	3	3	3	3	3
KNO_3	1.00	2	2	-	-	0.5	2
$NH_4H_2PO_4$	1.00	2	-	-	2	2	2
$MgSO_4.7H_2O$	0.75	1	1	-	1	-	1
KCl	2.00	1	1	1	-	1	1
KH_2PO_4	1.00	-	-	2	-	-	-
K_2SO_4	0.50	-	-	-	-	1.5	-
$CaCl_2.6H_2O$	0.50	-	-	-	-	-	-
NH_4NO_3	0.50	-	2	2.5	-	1.5	-
$Mg(NO_3)_2.6H_2O$	0.50	-	-	1.5	-	-	-
$MgCl_2.6H_2O$	0.50	-	-	-	-	-	-
NH_4Cl	2.00	-	-	-	1	-	-
$Ca(CH_3COO)_2$	1.00	-	-	-	-	-	-
$K(CH_3COO)$	1.00	-	-	-	-	-	-
$(NH_4)_2SO_4$	1.00	-	-	-	-	-	-
Micronutrients	mM						
FeNaEDTA	150.00	1	1	1	1	1	
$MnCl_2.4H_2O$	15.00	1	1	1	1	1	
$ZnCl_2$	1.50	1	1	1	1	1	
$CuCl_2$	1.00	1	1	1	1	1	
H_3BO_3	0.50	1	1	1	1	1	
$(NH_4)_6Mo_7O_{24}.4H_2O$	0.01	1	1	1	1	1	

Appendix 3.3. Chemical properties of soils of Gwydir Valley

Cropping history	pH	O.C.	Total N	NO_3-N	SO_4-S	P	Exchangeable cations					CEC	E.C.	Trace elements					Ca/Mg ratio	Na % of CEC
							K	Ca	Mg	Al	Na			Cu	Zn	Mn	Fe	B		
		.....mg/g.....		.....mg/kg.....			.....cmol (+)/kg.....						dS/m	.....mg/kg.....						
Red clay																				
Reference	7.5	8.8	1.17	7.4	10	35	0.79	9.74	5.63	0.01	2.76	18.93	0.16	1.0	0.6	11	10	1.2	1.73	14.58
5 years	8.3	7.5	0.97	6.4	56	36	1.20	19.77	6.62	0.01	0.37	27.97	0.20	0.7	0.1	8	4	1.1	2.99	1.32
14 years	6.9	6.9	0.93	13.9	14	31	0.64	10.82	4.68	0.01	0.44	16.59	0.10	1.1	0.4	49	15	0.9	2.31	2.65
Brown clay																				
Reference	6.8	20.5	2.46	21.3	18	67	1.52	16.22	8.71	0.01	2.76	26.72	0.12	2.2	1.0	26	20	1.6	1.86	0.97
5 years	7.5	8.9	1.16	7.8	16	35	1.05	20.16	9.86	0.01	0.37	31.76	0.12	1.5	0.3	15	9	1.3	2.04	2.14
14 years	8.3	8.4	1.08	19.3	15	36	1.33	25.49	11.61	0.01	0.44	39.57	0.13	1.3	0.6	6	6	1.5	2.20	2.86
Grey clay																				
Reference	7.1	20.6	2.29	29.8	10	58	1.40	14.77	8.70	0.01	0.79	25.67	0.14	1.0	0.5	9	12	1.7	1.70	3.08
5 years	7.3	8.2	1.00	11.8	21	58	1.20	9.27	4.00	0.01	0.27	14.75	0.13	0.9	0.3	23	16	1.1	2.32	1.83
18 years	8.0	8.3	1.06	7.2	12	24	0.92	21.35	9.41	0.01	0.76	32.45	0.10	1.2	0.4	9	6	1.4	2.27	2.34

Appendix 3.4. Chemical properties of soils of Emerald Valley

Cropping history	pH	O.C.	Total N	NO_3-N	SO_4-S	P	Exchangeable cations					CEC	E.C.	Trace elements					Ca/Mg ratio	Na % of CEC
							K	Ca	Mg	Al	Na			Cu	Zn	Mn	Fe	B		
		mg/g		mg/kg			cmol (+)/kg						dS/m	mg/kg						
Black earth																				
Reference	7.1	11.2	0.95	3.3	7	7	0.33	32.06	10.17	0.01	0.27	42.84	0.04	1.0	0.2	4	7	1.0	3.15	0.63
15 years	7.5	9.3	0.87	13.1	10	33	0.60	38.56	15.25	0.01	0.48	54.90	0.10	0.6	0.4	5	4	1.0	2.53	0.87
Grey clay																				
Reference	7.7	29.1	2.72	9.4	10	11	0.68	40.61	20.27	0.01	0.55	62.12	0.09	0.8	0.3	1	4	2.4	2.00	0.89
21 years	7.8	7 0	0.73	5.6	16	37	0.39	25.40	13.09	0.01	0.32	39.21	0.10	0.9	1.0	9	4	0.9	1.94	0.82
22 years	8.5	8.7	1.03	10	9	24	0.73	31.28	15.74	0.01	0.36	48.12	0.11	0.8	0.2	5	5	1.4	1.99	0.75
Alluvial soil																				
Reference	6.8	9.4	1.08	4.2	7	49	0.43	14.05	6.84	0.01	1.54	22.87	0.08	1.0	0.4	18	19	1.1	2.05	6.73
10 years	8.3	9.3	0.97	18.5	14	37	0.76	22.94	7.84	0.01	0.62	32.17	0.13	0.8	0.3	2	3	1.2	2.93	1.93
12 years	8.6	7.1	0.73	8.1	6	20	0.73	27.74	11.02	0.01	0.90	40.40	0.10	0.7	0.3	1	2	0.9	2.52	2.23

Appendix 3.5 Chemical properties of soils of Macintyre Valley

Cropping history	pH	O.C.	Total N	NO_3-N	SO_4-S	P	Exchangeable cations					CEC	E.C.	Trace elements					Ca/Mg ratio	Na % of CEC
							K	Ca	Mg	Al	Na			Cu	Zn	Mn	Fe	B		
		mg/g		mg/kg			cmol (+)/kg						dS/m	mg/kg						
Red clay																				
Reference	8.5	8.6	0.98	4.6	9	15	0.74	17.85	6.65	0.01	1.40	26.65	0.14	0.6	1.6	2	3	1.2	2.7	5.25
20 years	8	7.2	1.01	60	11	15	0.80	12.75	5.52	0.01	1.20	20.28	0.26	0.4	1.8	3	4	1.2	2.3	5.92
Black earth																				
Reference	7.4	11.8	1.31	9.1	6	50	0.89	16.99	11.97	0.01	0.94	30.80	0.06	1.2	3.7	6	13	1.2	1.4	3.05
6 years	8.2	8.8	1.12	18.4	15	76	1.32	19.59	10.89	0.01	0.91	32.72	0.12	0.9	0.8	2	5	1.3	1.8	2.78
Grey clay (Field 11)																				
Reference	6.9	13.5	1.37	18.6	8	44	1.09	10.95	8.05	0.01	1.18	21.28	0.09	0.9	1.4	6	11	1.3	1.4	5.55
8 years	7.2	5.2	0.64	22.3	65	26	1.13	14.83	9.87	0.01	1.20	27.04	0.20	0.8	1.1	5	6	1.2	1.5	4.44
Grey clay (Field 15)																				
Reference	8.3	4.9	0.54	13.8	5	31	1.46	24.59	7.24	0.01	0.66	33.96	0.11	0.5	1.3	1	3	1.6	3.4	1.94
1 year	6.9	5.0	0.52	5.9	47	20	0.90	14.50	9.21	0.01	1.18	25.80	0.28	0.6	1.4	9	5	1.1	1.6	4.57
15 years	7.8	5.2	0.52	7.9	9	17	0.91	14.63	8.04	0.01	0.88	24.47	0.07	0.7	1.5	5	6	1.1	1.8	3.60

Appendix 3.6. Chemical properties of soils of Macquarie Valley

Cropping history	pH	O.C.	Total N	NO_3-N	SO_4-S	P	Exchangeable cations					CEC	E.C.	Trace elements					Ca/Mg ratio	Na % of CEC
							K	Ca	Mg	Al	Na			Cu	Zn	Mn	Fe	B		
		mg/g		mg/kg			cmol (+)/kg						dS/m	mg/kg						
Red brown earth (Allambie)																				
Reference	6.3	9.5	1.08	2.2	5	9	0.95	3.96	1.34	0.01	0.08	6.34	0.03	0.4	0.2	26	12	0.7	2.96	1.26
50 years	6.0	6.9	0.80	55.2	10	20	0.74	4.30	1.90	0.01	0.23	7.18	0.14	0.6	0.2	39	15	0.7	2.26	3.20
Red brown earth (Kiloween)																				
Reference	6.2	12.8	1.54	52.2	8	33	2.21	9.62	2.71	0.01	0.04	14.59	0.14	1.2	1.1	31	24	1.1	3.55	0.27
10 years	7.0	9.2	1.28	60.0	14	30	1.34	13.25	4.21	0.01	0.40	19.21	0.20	1.2	0.4	16	10	1.2	3.15	2.08
Grey clay																				
Reference	8.5	8.8	0.91	5.6	3	5	0.77	30.58	6.78	0.01	1.26	39.40	0.10	0.8	0.2	1	5	1.3	4.51	3.20
4 years	8.3	8.8	0.95	14.9	10	20	1.78	27.52	7.70	0.01	0.51	37.52	0.12	0.8	0.1	3	5	1.8	3.57	1.36
12 years	8.2	6.1	0.81	39.5	22	52	0.99	22.18	7.45	0.01	1.32	31.95	0.17	1.0	1.1	2	7	1.7	2.98	4.13
Alluvial soil																				
Reference	6.4	9.9	1.14	13.2	8	58	0.66	14.59	8.46	0.01	0.72	24.44	0.08	2.5	1.0	25	40	1.0	1.72	2.95
2 years	8.1	5.0	0.67	7.8	17	48	0.93	14.00	3.65	0.01	0.27	18.86	0.10	0.8	0.2	7	8	1.0	3.84	1.43
8 years	6.9	12.1	1.63	29.1	23	36	1.16	16.50	8.92	0.01	0.86	27.45	0.16	1.8	0.8	18	22	1.1	1.85	3.13
10 years	7.0	9.1	1.12	41.8	13	62	0.53	14.18	8.23	0.01	0.97	23.92	0.12	1.6	0.7	24	19	0.7	1.72	4.06

Appendix 3.7. Chemical properties of soils of Darling Downs

Cropping history	pH	O.C.	Total N	NO_3-N	SO_4-S	P	Exchangeable cations					CEC	E.C.	Trace elements					Ca/Mg ratio	Na % of CEC
							K	Ca	Mg	Al	Na			Cu	Zn	Mn	Fe	B		
		mg/g		mg/kg			cmol (+)/kg						dS/m	mg/kg						
Grey clay (Kupunn)																				
Reference	8.1	11.4	1.21	3.0	9	9	0.82	22.81	12.93	0.01	1.09	37.66	0.10	0.8	0.2	3	7	2.1	1.76	2.89
40 years	8.3	7.5	0.71	7.0	4	11	0.85	25.23	8.29	0.01	0.60	34.98	0.08	0.5	0.1	2	5	1.5	3.04	1.72
Grey clay (Daandine)																				
Reference	5.8	8.1	0.71	1.4	5	8	0.28	14.14	11.67	0.01	0.86	26.96	0.03	0.8	0.3	29	28	0.8	1.21	3.19
50 years	7.6	6.3	0.54	1.7	2	8	0.18	20.27	12.17	0.01	0.42	33.05	0.05	0.5	0.2	2	5	1.0	1.67	1.27
Black earth (Dalby Agricultural College)																				
Reference	8.5	11.0	0.92	2.5	5	9	0.43	26.04	17.24	0.01	1.89	45.61	0.10	0.7	0.4	1	6	1.6	1.51	4.14
60 years	7.4	7.0	0.70	3.6	8	21	0.39	18.83	14.57	0.01	1.69	35.49	0.06	0.8	0.4	7	8	1.5	1.29	4.76
Grey clay (Dalby Agricultural College)																				
Reference	7.0	16.1	1.60	2.9	4	40	0.57	19.13	12.41	0.01	2.25	34.37	0.09	0.8	0.3	9	20	1.4	1.54	6.55
50 years	7.1	9.2	0.94	16.9	6	22	1.08	21.84	19.13	0.01	1.37	43.43	0.07	0.6	0.2	4	9	1.8	1.14	3.15
Black earth (Pirrinuan)																				
Reference	7.7	11.9	1.22	2.3	3	24	1.47	29.15	21.11	0.01	3.43	55.17	0.08	1.0	0.4	6	11	1.8	1.38	6.22
50 years	8.4	8.7	0.77	18.2	3	27	1.69	31.28	21.57	0.01	3.49	58.04	0.15	0.7	0.2	3	7	2.2	1.45	6.01

Appendix 3.8. Chemical properties of soils of Namoi Valley

Cropping history	pH	O.C.	Total N	NO_3-N	SO_4-S	P	Exchangeable cations					CEC	E.C.	Trace elements					Ca/Mg ratio	Na % of CEC
							K	Ca	Mg	Al	Na			Cu	Zn	Mn	Fe	B		
		mg/g		mg/kg			cmol (+)/kg						dS/m	mg/kg						
Grey clay (Kangaloo)																				
Reference	6.8	12.8	1.47	9.5	10	78	1.39	20.94	15.53	0.01	1.04	38.91	0.08	2.2	0.8	12	30	1.5	1.35	2.67
30 years	7.8	7.1	0.90	4.4	4	47	0.95	21.28	13.97	0.01	0.84	37.05	0.05	1.5	0.3	11	11	1.3	1.52	2.27
Grey clay (Kilmarnock)																				
Reference	5.9	23.6	2.24	19.2	14	40	1.80	14.34	8.71	0.01	0.27	25.13	0.12	2.5	1.6	46	92	1.7	1.65	1.07
40 years	6.9	13.5	1.56	53.4	17	77	1.14	16.03	9.68	0.01	0.58	27.44	0 16	1.8	2.7	25	17	1.6	1.66	2 11
Grey clay (Myola)																				
Reference	7.6	10.3	1.52	5.7	22	20	0.98	18.86	15.05	0.01	1.88	36.78	0.13	1.2	0.3	17	7	1.8	1.25	5.11
1 year	7.2	5.8	0.88	13	16	42	1.96	17.56	12.28	0.01	0.74	32.55	0.13	1.4	0.5	15	12	1.4	1.43	2.27
Grey clay (Oakville)																				
Reference	8.3	10.1	1.36	12.2	11	30	1.28	24.66	11.89	0.01	2.41	40.25	0.14	1.1	0.4	4	9	1.6	2.07	5.99
10 years	8.8	7.0	0.91	8.6	13	27	1.35	29.43	11.42	0.01	5.16	47.37	0.20	1.2	1.4	8	10	2.0	2.58	10.89
30 years	8.3	5.5	0.82	24.8	5	19	1.54	23.50	14.29	0.01	1.48	40.82	0.11	1.1	0.3	4	6	2.0	1.64	3.63

Appendix 3.9. Chemical properties of soils of Bourke

Cropping history	pH	O.C.	Total N	NO_3-N	SO_4-S	P	Exchangeable cations					CEC	E.C.	Trace elements					Ca/Mg ratio	Na % of CEC
							K	Ca	Mg	Al	Na			Cu	Zn	Mn	Fe	B		
		mg/g		mg/kg			cmol(+)/kg						dS/m	mg/kg						
Red clay																				
Reference	7.0	4.9	0.81	10.6	2	18	1.09	5.73	2.22	0.01	0.11	9.16	0.04	0.6	0.4	4	7	0.6	2.58	1.20
25 years	7.5	3.4	0.52	30.9	10	16	1.67	9.38	5.22	0.01	0.55	16.83	0.10	0.8	0.4	2	8	1.3	1.80	3.27
Grey clay (Site 1)																				
Reference	8.1	2.6	0.58	32.7	4	34	1.64	14.45	8.63	0.01	4.37	29.1	0.21	0.8	0.4	1	3	3.0	1.67	15.02
5 years	8.2	2.5	0.53	7.7	21	33	2.17	20.61	9.79	0.01	1.62	34.2	0.11	0.7	0.3	1	4	2.6	2.11	4.74
Grey clay (Site 2)																				
Reference	8.0	2.2	0.47	7.8	3	13	0.86	12.17	5.52	0.01	2.30	20.86	0.08	0.8	0.1	3	6	1.3	2.20	11.03
1 year	8.5	1.8	0.41	3.6	25	8	0.99	15.74	7.90	0.01	3.01	27.65	0.14	0.7	0.3	2	4	3.0	1.99	10.89
16 years	8.0	1.9	0.42	29	9	33	1.49	15.95	9.62	0.01	1.95	29.02	0.13	0.6	0.4	2	4	2.8	1.66	6.72
Grey clay (Site 3)																				
Reference	8.4	1.5	0.37	3.3	9	10	1.05	17.65	7.47	0.01	1.27	27.45	0.08	0.7	0.1	1	3	2.1	2.36	4.63
27 years	8.6	3.3	0.56	26.7	24	8	1.17	23.59	7.54	0.01	1.61	33.92	0.20	0.7	0.4	1	4	1.7	3.13	4.75

Appendix 3.10. Cotton seedling dry matter yield at six weeks in soils from Darling Downs

Cropping history	Cotton seedlings dry matter yield (g/pot)						
	+ All	-All	- P	- S	- K	- Mg	- Trace
			Grey clay (Kupunn)				
Reference	2.39a	0.40f	0.65ef	0.86def	1.42bc	2.01ab	1.46bcd
40 years	1.45bcd	0.41f	0.62ef	1.11cde	1.53bc	1.16cde	1.17cde
			Black earth (Dalby Agricultural College)				
Reference	2.18a	0.37d	0.72cd	0.94bcd	2.24a	1.54ab	2.26a
60 years	1.50ab	0.32d	0.60cd	0.69cd	1.01bcd	1.57ab	1.22bc
			Black earth (Waco)				
Reference	2.93a	0.26e	0.72e	0.48e	2.37ab	2.11bc	2.26abc
50 years	1.43d	0.35e	0.74e	0.60e	1.60cd	1.72bcd	2.14bc
			Grey clay (Daandine)				
Reference	2.33bc	0.29f	0.47ef	0.78ef	2.20bcd	3.13a	2.79ab
50 years	1.88cd	0.25f	0.53ef	0.70ef	0.96e	1.64d	1.65d
			Grey clay (Dalby Agricultural College)				
Reference	1.68abcd	0.36f	0.59ef	0.89def	1.20cde	1.70abc	1.86abc
50 years	2.49a	0.29f	0.73ef	0.60ef	1.65bcd	1.99abc	2.35ab

Means within a site followed by the same letter are not significantly different ($P < 0.05$ DMRT)

Appendix 3.11. Cotton seedling dry matter yield at six weeks in soils from Gwydir Valley

Cropping history	Cotton seedlings dry matter yield (g/pot)						
	+ All	- All	- P	- S	- K	- Mg	- Trace
				Red clay			
Reference	1.49bcd	0.55e	1.09cd	1.81bcd	2.07ab	2.76a	2.82a
5 years	1.77bcd	0.52e	0.86d	0.90de	1.33bcde	1.54bcd	1.13cde
14 years	1.45bcd	0.55e	0.89d	1.10cde	1.25cde	1.87abc	0.83cde
				Grey clay			
Reference	3.37bc	0.98ghi	2.22def	1.92efg	4.13ab	4.49a	2.98cd
5 years	1.83efgh	0.67i	0.96hi	1.15ghi	2.17def	1.47fghi	1.36fghi
10 years	4.47a	2.06defg	2.93cd	2.46cde	4.48a	1.45fghi	4.13ab
				Brown clay			
Reference	4.00a	0.83gh	2.89b	2.37bcd	4.09a	4.82a	4.64a
5 years	1.93cdef	0.70gh	1.39fg	1.67def	2.08bcde	2.72bc	1.84def
18 years	1.45efg	0.30h	0.77g	1.50efg	2.25bcde	1.44efg	1.35fg

Means within a site followed by the same letter are not significantly different ($P < 0.05$ DMRT)

Appendix 3.12. Cotton seedling dry matter yield at six weeks in soils from Namoi Valley

Cropping history	Cotton seedlings dry matter yield (g/pot)						
	+ All	- All	- P	- S	- K	- Mg	- Trace
			Grey clay (Oakville)				
Reference	1.61bcd	0.35e	1.26bcd	1.10c	1.73ab	1.55bcd	1.20bcd
10 years	1.70ab	0.36e	1.53bcd	1.05d	2.27a	2.28a	1.67bc
			Grey clay (Kilmarnock)				
Reference	4.93ab	0.64e	4.49abc	2.88cd	4.15abc	4.03bc	5.85a
40 years	3.81bc	0.56e	2.72cde	1.85de	3.14bce	3.93bc	3.88bc
			Grey clay (Myola)				
Reference	2.75abc	0.62fg	1.82cde	1.74de	3.30a	3.31a	2.44abc
1 year	2.55abc	0.35g	1.23ef	1.31ef	2.88ab	2.45abc	2.18bcd
			Grey clay (Kangaloo)				
Reference	3.68ab	0.77f	2.01cde	1.44def	4.05a	1.78cde	2.99abc
30 years	1.72cde	0.25f	2.56bcd	1.13ef	2.19cde	2.71abc	2.80abc
			Grey clay (Togo Station)				
30 years	0.89a	0.27c	0.43bc	0.41bc	0.50bc	0.66ab	0.53bc

Means within a site followed by the same letter are not significantly different ($P < 0.05$ DMRT)

Appendix 3.13. Cotton seedling dry matter yield at six weeks in soils from Emerald

Cropping history	Cotton seedlings dry matter yield (g/pot)						
	+ All	- All	- P	- S	- K	- Mg	- Trace
				Black earth			
Reference	1.93d	0.51f	0.76ef	1.69de	2.51cd	2.52cd	1.88d
15 years	3.93ab	0.51f	2.24d	1.80d	4.71a	3.40bc	3.29bc
				Grey clay			
Reference	4.11a	0.60g	0.84fg	2.05de	4.07a	3.73ab	3.01bc
21 years	2.89c	0.41g	2.57cd	2.49cd	2.60cd	4.08a	4.46a
22 years	1.47ef	0.49g	0.98fg	1.41ef	2.47cd	0.96fg	1.49ef
				Alluvial soil			
Reference	4.39a	0.58fg	1.43def	3.06b	2.86bc	4.75a	4.82a
10 years	1.82bcde	0.47fg	2.14bcd	2.59bcd	1.68cde	1.99bcde	1.65cde
12 years	1.48def	0.38g	1.32def	1.55def	1.91bcd	1.10efg	2.24bcd

Means within a site followed by the same letter are not significantly different ($P < 0.05$ DMRT)

Appendix 3.14. Cotton seedling dry matter yield at six weeks in soils from Macquarie Valley

Cropping history	Cotton seedlings dry matter yield (g/pot)						
	+ All	- All	- P	- S	- K	- Mg	- Trace
			Red brown earth (Allambie)				
Reference	1.17ab	0.45e	0.49de	0.69cde	1.05abc	1.14abc	1.23ab
50 years	1.01abc	0.73bcde	0.38e	0.99abcd	1.09abc	1.32a	1.34a
			Red brown earth (Elengerah)				
Reference	1.69abc	1.02cde	0.82cde	1.15cde	1.96ab	1.37bcd	2.16a
10 years	1.44bcd	0.62e	0.68e	0.98de	1.15cde	1.30bcde	1.01cde
			Grey clay				
Reference	0.64cde	0.30f	0.44ef	0.36ef	0.99b	0.48ef	0.77bcd
4 years	0.66cde	0.38ef	0.41ef	0.54d	1.57a	0.80bcd	0.49ef
12 years	1.55a	0.65cde	0.73bcd	1.02b	1.77a	1.02b	0.92bc
			Alluvial soil				
Reference	1.77ab	0.37g	0.53fg	0.76ef	1.00cd	1.61ab	1.71ab
2 years	1.00cdef	0.29g	0.90def	0.81ef	0.78ef	0.99cd	1.06cde
8 years	0.72ef	0.34g	0.50fg	0.57fg	0.88cdef	0.60f	0.59f
10 years	1.98a	0.52fg	0.72efg	1.29bcd	1.37bc	1.28bcd	1.84a

Means within a site followed by the same letter are not significantly different ($P < 0.05$ DMRT)

Appendix 3.15. Cotton seedling dry matter yield at six weeks in soils from Macintyre Valley

Cropping history	Cotton seedlings dry matter yield (g/pot)						
	+ All	- All	- P	- S	- K	- Mg	- Trace
				Red clay			
Reference	3.55a	0.22h	0.87fg	0.70fgh	3.40ab	2.89bc	1.90de
20 years	2.68c	0.30h	0.42gh	1.09f	1.72e	2.41cd	1.77e
				Black earth			
Reference	2.14bc	0.36e	1.51d	0.39e	1.29d	1.47d	1.40d
6 years	2.28b	0.23e	1.78cd	0.39e	2.86a	1.91bc	1.50d
				Grey clay (Field 11)			
Reference	2.27b	0.14f	0.97cdef	0.83def	4.11a	4.57a	1.19cde
8 years	1.74bc	0.17f	0.38f	0.43ef	1.54bcd	1.17cde	0.87def
				Grey clay (Field 15)			
Reference	4.23a	0.38i	1.44efg	1.01gh	4.28a	2.98b	1.44efg
1 year	1.92cde	0.21i	1.03gh	0.79hi	1.61def	2.12cd	1.31fgh
15 years	2.34c	0.24i	1.39efg	1.45efg	1.77cdef	2.10cd	1.62def

Means within a site followed by the same letter are not significantly different ($P < 0.05$ DMRT)

Appendix 3.16. Cotton seedling dry matter yield at six weeks in soils from Bourke

Cropping history	Cotton seedlings dry matter yield (g/pot)						
	+ All	- All	- P	- S	- K	- Mg	- Trace
				Red clay			
Reference	3.50a	0.21f	0.91e	0.87e	3.40ab	2.95b	1.89cd
25 years	2.28c	0.23f	1.78cd	0.39ef	2.86b	1.91cd	1.50d
				Grey clay (Site 1)			
Reference	2.54bc	0.32l	0.49hi	0.82gh	2.30cd	3.21a	2.81ab
5 years	1.92de	0.29i	0.56hi	0.69hi	1.20fg	1.89de	1.65ef
				Grey clay (Site 2)			
Reference	1.55a	0.49de	0.82bcd	1.05b	1.77a	1.02b	0.95bc
1 year	0.69bcde	0.38de	0.41de	0.54cde	0.57cde	0.80bcd	0.41de
16 years	0.64bcde	0.30e	0.49de	0.65bcde	0.95bc	1.02b	1.01b
				Grey clay (Site 3)			
Reference	2.95a	0.26g	0.89f	1.25ef	2.37b	2.56ab	2.26bc
27 years	1.72de	0.35g	0.72fg	1.11f	2.20bcd	1.70de	1.86cd

Means within a site followed by the same letter are not significantly different ($P < 0.05$ DMRT)