

Appendix 34 Soil analytical data from the Bundaberg, Burdekin and Herbert sites and their interpretation for nutrient management.

The following tables report analytical data for selected soil properties in samples obtained from the Bundaberg and Burdekin study sites and interpretative information for their use in nutrient management decision making. The samples were collected in conjunction with high resolution (EM38) soil survey undertaken at the project study sites and were sampled at locations chosen to cover the full range of variation in EM38 sensor data. As such, the data provide a means of assessing the nature and range of variation in soil properties separate from consideration of any spatial structure in this variation.

Table 34.1 Selected chemical and physical properties - Bundaberg study site

	pH	Org C (%)	BSES P (mg/kg)	PBI	Exch. K (me%)	Exch. Ca (me%)	ECEC (me%)	Clay (%)	Silt (%)	Fine sand (%)	Coarse sand (%)
Mean	5.04	0.98	38	76	0.08	0.92	2.35	13	15	40	32
SD	0.28	0.21	13	16	0.01	0.43	0.38	3.1	3.6	7.6	10.3
CV	5.62	21.4	33	21	17.8	46.7	16.1	23.5	24.6	18.9	32.2
Minimum	4.50	0.62	11	50	0.05	0.30	1.65	8	8	29	10
Median	5.00	0.94	38	76	0.07	0.78	2.35	14	15	39.5	31.5
Maximum	5.60	1.50	63	110	0.10	2.00	3.08	21	23	66	52

Table 34.2 Nutrient requirement based on soil test data from the Bundaberg study site

Site No.	Plant crop nutrient requirement				
	N rate (kg/ha)	P rate (kg/ha)	K rate (kg/ha)	S rate (kg/ha)	Lime requirement (t/ha) using a combination of soil pH and exch Ca (tonnes/ha)
1	140	0	120	0	2.5
2	140	20	120	0	2.5
3	140	20	120	0	2.5
4	140	20	120	5	2.5
5	140	20	120	10	2.5
6	140	30	120	0	2.5
7	140	30	120	0	2.5
8	140	20	120	0	2.5
9	140	0	120	10	2.5
10	140	0	120	5	2.5
11	140	0	120	5	2.5
12	140	20	120	10	2.5
13	140	20	120	5	2.5
14	150	20	120	10	2.5
15	140	20	120	5	2.5
16	140	20	120	10	2.5
17	140	20	120	5	2.5
18	150	20	120	15	2.5
19	140	20	120	10	2.0
20	150	20	120	15	2.5
21	140	20	120	5	1.5
22	150	20	120	15	1.5
23	140	20	120	10	2.0
24	140	20	120	10	0.0
25	140	0	120	10	2.5
26	140	20	120	10	2.5
27	140	0	120	20	2.5
28	130	20	120	5	0.5
29	130	20	120	5	2.5
30	130	20	120	5	2.5

Table 34.3 Selected chemical and physical properties - Burdekin study site

	pH	Org C: WB (%)	BSES P (ppm)	PBI	Exch K (me%)	Exch Ca (me%)	ECEC (me%)	ESP (%)	Clay (%)	Silt (%)	Fine sand (%)	Coarse sand (%)
Mean	7.90	0.96	82	73	0.30	12.5	20.18	4.1	31.1	23.8	44.7	0.9
SD	0.53	0.19	30	17	0.06	2.62	4.35	3.1	7.3	5.6	8.3	0.6
CV	6.8	19.7	36	24	19.6	21.0	21.6	75.2	23.4	23.7	18.7	66.0
Min	6.70	0.56	29	45	0.19	8.0	14.40	0.8	13.0	16.0	30.0	0.0
Median	7.70	1.00	795	69	0.30	12.0	19.20	2.8	31.0	23.0	45.5	1.0
Max	8.90	1.20	160	120	0.40	17.0	30.00	10.8	45.0	43.0	59.0	3.0

Table 34.4 Nutrient requirement based on soil test data from the Burdekin study site

Site No.	Plant crop nutrient requirement				
	N rate (kg/ha)	P rate (kg/ha)	K rate (kg/ha)	S rate (kg/ha)	Gypsum requirement determined from ESP values (tonnes/ha)
1	160	0	0	0	0
2	160	0	50	5	0
3	160	0	50	0	0
4	160	20	0	0	0
5	160	0	50	0	5
6	160	0	50	0	0
7	160	0	0	0	0
8	170	0	0	0	0
9	160	20	0	0	0
10	160	0	50	0	7.5
11	160	0	50	0	5
12	160	0	0	20	0
13	160	0	50	10	5
14	170	0	0	25	0
15	160	0	80	20	0
16	160	0	0	10	5
17	160	0	50	20	0
18	160	0	50	20	0
19	160	0	50	0	5
20	160	0	80	20	0
21	160	0	0	20	0
22	160	0	50	10	0
23	160	0	80	20	5
24	170	0	50	25	0
25	160	0	80	20	5
26	160	0	80	20	0
27	170	0	80	25	0
28	170	0	100	25	5
29	160	20	80	10	0
30	170	20	80	25	0

Table 34.5 Selected chemical and physical properties - Herbert study site

	pH	Org C: WB (%)	BSES P (ppm)	PBI	Exch K (me%)	Exch Ca (me%)	ECEC (me%)	ESP (%)	Clay (%)	Silt (%)	Fine sand (%)	Coarse sand (%)
Mean	5.35	0.81	161	63	0.24	1.68	2.73	2.74	7.5	15.3	27.8	49.8
SD	0.58	0.07	62	15	0.13	0.97	0.97	1.08	2.6	1.9	5.4	8.1
CV	10.9	9.2	39	24	54.1	57.6	35.5	39.5	34.6	12.6	19.6	16.2
Min	4.50	0.64	58	39	0.06	0.40	1.50	1.5	4.0	13.0	17.0	31.0
Median	5.15	0.81	150	62	0.24	1.35	2.29	2.4	6.0	15.0	27.0	51.0
Max	6.10	0.95	280	100	0.58	4.10	4.90	5.8	13.0	19.0	46.0	64.0

Table 34.6 Nutrient requirement based on soil test data from the Herbert study site

Site No.	Plant crop nutrient requirement				
	N rate (kg/ha)	P rate (kg/ha)	K rate (kg/ha)	S rate (kg/ha)	Lime requirement (t/ha) using a combination of soil pH and exch Ca (tonnes/ha)
1	120	0	80	5	0.0
2	130	0	100	0	4.0
3	130	0	80	15	2.5
4	130	0	0	15	2.5
5	130	0	80	10	2.5
6	120	0	80	10	0.0
7	120	0	0	0	0.0
8	130	0	0	15	2.5
9	130	0	80	15	2.5
10	120	0	50	10	4.0
11	130	0	80	15	0.0
12	130	0	80	15	2.5
13	130	0	50	15	0.0
14	130	0	0	15	3.0
15	120	0	50	20	3.5
16	120	0	0	10	2.5
17	130	0	0	25	1.5
18	130	0	80	15	2.5
19	120	0	0	10	4.0
20	120	0	0	10	3.0
21	120	0	80	20	1.5
22	130	0	0	15	0.0
23	120	0	80	20	1.0
24	120	0	80	10	3.0
25	120	0	0	10	2.5
26	130	0	0	15	2.5
27	120	0	80	10	2.5
28	120	0	0	10	0.0
29	130	0	50	15	2.5
30	120	0	100	10	0.0