

Appendix 1

Abbreviations and Short Forms

AACM	AACM International Pty Limited
AIAS	Australian Institute of Agricultural Science
ASA	Acid Soil Action
ASPAC	Australian Soil and Plant Analysis Council
ASRIS	Australian Soils Resources Information System
ATA	The Agricultural Technologists of Australasia
BoM	Bureau of Meteorology
CSIRO	Commonwealth Scientific and Investigative Research Organisation
DEC	NSW Department of Environment and Conservation
DIPNR	NSW Department of Infrastructure, Planning and Natural Resources (now DNR)
DLWC	NSW Department of Land and Water Conservation (now DNR)
DNR	NSW Department of Natural Resources
DPI	NSW Department of Primary Industries
EPA	NSW Environment Protection Authority (now DEC)
FAO	Food and Agricultural Organization of the United Nations
GIS	Geographic Information System
GSG	Great Soil Group
NLWRA	National Land and Water Resources Audit
NSB	National Soils Database
NSW	New South Wales
NSW Agriculture	NSW Department of Agriculture (now DPI)
pH _{BC}	pH (buffer capacity)
pH _w	pH (1:5 soil:water suspension)
pH _{Ca}	pH (1:5 soil:0.01 M CaCl ₂ suspension)
QDPI	Queensland Department of Primary Industries
QDNR	Queensland Department of Natural Resources
REML	Restricted or Residual Maximum Likelihood
SALIS	Soil and Landscape Information System
UMA	Unique Mapping Attribute
UNE	The University of New England

Appendix 2

What size sample? Time, operating costs and paddock variability as factors in the design of a sampling strategy

Introduction

Soil sampling strategies are generally governed by the soil property to be assessed, time constraints, and the available budget. A preliminary exercise identified sampling strategies for a paired-site survey (Chapter 4) on the impact of agricultural management on soil acidity in the Northern Tablelands and a field-based study at *Newholme* (Chapter 5). Components of the exercise included a soil sampling trial to test equipment, field techniques and obtain an estimate of sampling time.

The objective of the exercise was to determine a suitable sample size and sampling protocol to account for soil variability, within optimum sampling time and operating costs.

Materials and Methods

Field Work

Two adjacent paddocks on Kirby, a research farm owned and operated by The University of New England, were systematically sampled. One paddock was intensively managed: regularly fertilized, sown with exotic pasture species, and grazed with sheep. The second paddock was a less intensively managed, native pasture. A narrow farm road separated the paddocks. Each paddock sloped gently away from the boundary between them. The soil was a moderately-buffered Chromosol/Ferrosol with a clay loamy A horizon (0-20 cm) and clayey B horizon (Australian Soil Classification, Isbell 1996). The paddocks were selected as representative of a pair of paddocks for the paired-site survey as well as paddocks for the field study.

Forty-nine soil cores were systematically sampled from each paddock. A 30 m x 30 m grid, seven points by seven points, each point 5 m apart was imposed as the sampling pattern for each paddock. One side of the grid was parallel to and 2.5 m from the roadway boundary between the paddocks. A soil core to a depth of 30 cm was taken from each point on the grid. The cores were subdivided into 0-5, 5-10, 10-20 and 20-30 cm depth increments. Each of the sub samples was separately analysed for pH_{Ca} .

Data Analysis

Sets and subsets of pH_{Ca} data were assessed. Data from each transect parallel to the roadside were tested for spatial variation to determine the extent of the boundary affect. Data from each transect perpendicular to, and across the boundary, were examined for obvious differences in pH. Any apparent differences of pH instead of gradual change over the boundary could suggest that the variability in pH was a function of agricultural management of the paddocks and not inherent soil variability (Moody and Aitken 1997).

Contour maps (Figure 1) were generated to visually assess the spatial variation across the paddocks at the surface and for each depth interval.

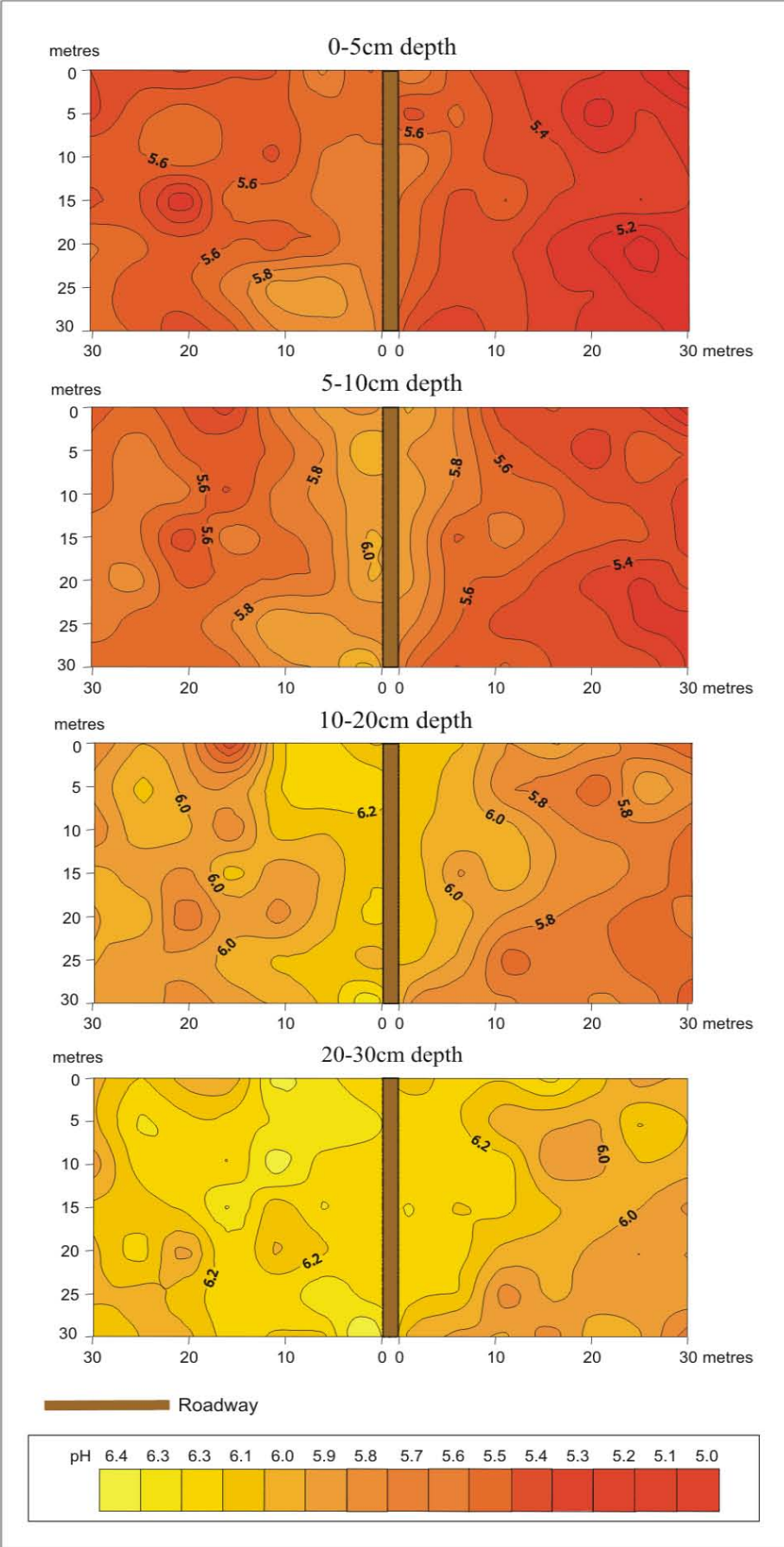


Figure 1 Contour Plots

Results and Discussion

Trends in horizontal and vertical variability were assessed. Differences in the surface pH between the paddocks were significant in four of seven transects. This showed that management was a factor in the variation between the paddocks. Spatial variation in the surface pH along transects parallel to the roadside was negligible and confined to the first transect nearest the boundary for each paddock. No boundary effect was apparent along the second transect 7.5 m away from the boundary.

For the transects perpendicular to the boundary, surface pH decreased gradually away from the boundary. This was probably a slope effect on pH, with pH decreasing downslope. The contour maps confirmed the decrease in surface, as well as subsurface, pH downslope from the boundary. These maps also showed that pH increased with increasing depth, and that the variability decreased with as the depth increased. The maximum coefficient of variation (CV), across all series of seven data values, was low at 5%. Sample size was calculated for a CV of 5%. Ten observations would be needed to detect a 0.5 pH unit change. Six observations would detect a 1.0 pH unit change, significant at 10%.

Conclusions

Information on the variability of pH both along the boundary and perpendicular to it, that surface pH decreased away from the boundary, and pH increased with depth was incorporated into the final sampling plan for the paired-site study. The final protocol ensured the main findings were taken into account, and at the same time ensured that any discrete or even atypical spatial variation would be detected. A subset of the sampling grid from this exercise was selected. The protocol would use two parallel transects, 10 m apart, perpendicular to the boundary between the paddocks with six sample cores on each transect. For each paddock the cores will be 7.5 m from the boundary, then at 5 m intervals.

For the *Newholme* field study, the final sampling design was a plot 30 m x 30 m that was divided into 3 x 4 sampling units. One core was randomly taken from each unit. Three sections were across the slope, with four blocks downslope to counter any decrease in pH downslope.

While it would be ideal to employ rigorous statistical techniques to determine the ideal sample size within an operational budget, data from this survey could not be used to produce a completely robust sampling design. More field trials on different soil types would be necessary to obtain an estimate of the soil population variance and minimum sample size for a reasonable error factor. Project logistics and limited operating funds precluded such additional surveys.

File No.	Longitude	Latitude	Derived pH _{Ca}	<4	4.1-4.5	4.6-5.0	5.1-5.5	5.6-6.0	6.1-6.5	6.6-7.0	>7.0
526	-30.3673	152.4974	4.7	0	0	1	0	0	0	0	0
551	-30.1597	152.5005	5.7	0	0	0	0	1	0	0	0
552	-30.1283	152.5541	4.3	0	1	0	0	0	0	0	0
1732	-31.4662	151.2201	5.2	0	0	0	1	0	0	0	0
1733	-31.4659	151.2199	4.3	0	1	0	0	0	0	0	0
1734	-31.4657	151.2196	5.7	0	0	0	0	1	0	0	0
1735	-31.4679	151.2464	4.7	0	0	1	0	0	0	0	0
1736	-31.4846	151.2179	4.7	0	0	1	0	0	0	0	0
1737	-31.4846	151.2181	4.7	0	0	1	0	0	0	0	0
1738	-31.4814	151.2641	5.7	0	0	0	0	1	0	0	0
1739	-31.4814	151.2644	4.3	0	1	0	0	0	0	0	0
1797	-29.5567	151.5167	6.6	0	0	0	0	0	0	1	0
1798	-29.5559	151.5188	3.8	1	0	0	0	0	0	0	0
1799	-29.5514	151.5189	4.3	0	1	0	0	0	0	0	0
1800	-29.5729	151.5877	8.0	0	0	0	0	0	0	0	1
1801	-29.5133	151.6757	8.0	0	0	0	0	0	0	0	1
1802	-29.4683	151.8810	5.5	0	0	0	1	0	0	0	0
1803	-29.3757	151.8259	5.6	0	0	0	0	1	0	0	0
1805	-29.1115	151.6506	5.2	0	0	0	1	0	0	0	0
1806	-29.4523	151.6703	5.2	0	0	0	1	0	0	0	0
1807	-29.4572	151.6635	8.5	0	0	0	0	0	0	0	1
1808	-29.4551	151.6759	5.7	0	0	0	0	1	0	0	0
1809	-29.4555	151.6739	5.2	0	0	0	1	0	0	0	0
1811	-29.7722	151.8083	6.1	0	0	0	0	0	1	0	0
2866	-29.9689	152.3263	5.2	0	0	0	1	0	0	0	0
2867	-29.9855	152.3276	5.2	0	0	0	1	0	0	0	0
6884	-30.9355	151.9962	6.6	0	0	0	0	0	0	1	0
6885	-30.9355	151.9920	5.7	0	0	0	0	1	0	0	0
6886	-30.9454	151.9845	5.2	0	0	0	1	0	0	0	0
6887	-30.9615	151.9749	5.2	0	0	0	1	0	0	0	0
6888	-30.8450	152.0755	5.7	0	0	0	0	1	0	0	0
6889	-31.1077	152.2303	5.7	0	0	0	0	1	0	0	0
6890	-31.1123	152.2575	4.3	0	1	0	0	0	0	0	0
6891	-31.1390	152.3486	4.7	0	0	1	0	0	0	0	0
6892	-31.0734	152.2410	5.7	0	0	0	0	1	0	0	0
6893	-31.0469	152.1857	5.2	0	0	0	1	0	0	0	0
6894	-31.0668	152.1950	4.7	0	0	1	0	0	0	0	0
10137	-30.1888	152.5492	4.3	0	1	0	0	0	0	0	0
10182	-30.2100	152.5522	6.1	0	0	0	0	0	1	0	0

10183	-30.2203	152.5386	5.2	0	0	0	1	0	0	0	0
10184	-30.2077	152.5423	5.2	0	0	0	1	0	0	0	0
10186	-30.3646	152.4989	4.7	0	0	1	0	0	0	0	0
10187	-30.3614	152.5062	4.5	0	0	0	0	0	0	0	1
10188	-30.3624	152.5208	5.7	0	0	0	0	1	0	0	0
10189	-30.3633	152.5130	5.2	0	0	0	1	0	0	0	0
10190	-30.3688	152.5369	5.2	0	0	0	1	0	0	0	0
10191	-30.3701	152.5909	5.2	0	0	0	1	0	0	0	0
10192	-30.3676	152.5921	5.2	0	0	0	1	0	0	0	0
10193	-30.3658	152.5889	4.7	0	0	1	0	0	0	0	0
10194	-30.3667	152.5884	4.7	0	0	1	0	0	0	0	0
10195	-30.3573	152.5887	4.7	0	0	1	0	0	0	0	0
10196	-30.3529	152.5245	5.2	0	0	0	1	0	0	0	0
10197	-30.3579	152.5208	4.7	0	0	1	0	0	0	0	0
10198	-30.3651	152.5203	5.7	0	0	0	0	1	0	0	0
10199	-30.3669	152.5213	5.2	0	0	0	1	0	0	0	0
10200	-30.3358	152.5422	5.2	0	0	0	1	0	0	0	0
10201	-30.3555	152.5465	4.7	0	0	1	0	0	0	0	0
10202	-30.3296	152.5620	5.2	0	0	0	1	0	0	0	0
10203	-30.3327	152.5641	5.2	0	0	0	1	0	0	0	0
10291	-30.1573	152.5810	4.7	0	0	1	0	0	0	0	0
10292	-30.1573	152.5805	4.7	0	0	1	0	0	0	0	0
10293	-30.1582	152.5823	4.5	0	0	0	0	0	0	0	1
10294	-30.1523	152.5826	4.7	0	0	1	0	0	0	0	0
10338	-30.1371	152.5243	5.2	0	0	0	1	0	0	0	0
10339	-30.1300	152.5188	4.9	0	0	0	0	0	0	0	1
10340	-30.1309	152.5152	5.2	0	0	0	1	0	0	0	0
10341	-30.1431	152.5204	5.7	0	0	0	0	1	0	0	0
10342	-30.1388	152.5318	4.4	0	0	0	0	0	0	0	1
10342	-30.1388	152.5318	4.6	0	0	0	0	0	0	0	1
10368	-30.0751	152.5569	4.7	0	0	1	0	0	0	0	0
14069	-28.9338	152.0999	5.2	0	0	0	1	0	0	0	0
14070	-28.9341	152.0999	5.2	0	0	0	1	0	0	0	0
14073	-28.9345	152.1015	4.7	0	0	1	0	0	0	0	0
14074	-28.9341	152.1012	4.3	0	1	0	0	0	0	0	0
14983	-29.6530	152.0982	3.3	1	0	0	0	0	0	0	0
14984	-29.6601	152.0702	3.8	1	0	0	0	0	0	0	0
14985	-29.9203	151.2209	5.2	0	0	0	1	0	0	0	0
14986	-29.9214	151.2419	5.2	0	0	0	1	0	0	0	0
14987	-29.6458	152.1496	4.7	0	0	1	0	0	0	0	0
14988	-29.6398	152.1618	5.2	0	0	0	1	0	0	0	0

14989	-31.4649	151.1758	5.2	0	0	0	1	0	0	0	0
14990	-31.4561	151.1775	5.2	0	0	0	1	0	0	0	0
14991	-31.4471	151.2004	5.2	0	0	0	1	0	0	0	0
14992	-31.4446	151.2251	5.2	0	0	0	1	0	0	0	0
14993	-31.4647	151.2170	5.2	0	0	0	1	0	0	0	0
14994	-31.4508	151.2478	5.2	0	0	0	1	0	0	0	0
14995	-31.4178	151.2645	5.2	0	0	0	1	0	0	0	0
14996	-31.4724	151.3058	5.2	0	0	0	1	0	0	0	0
14997	-31.3501	151.6808	5.2	0	0	0	1	0	0	0	0
14998	-31.3174	151.6703	5.2	0	0	0	1	0	0	0	0
14999	-31.3422	151.7118	5.2	0	0	0	1	0	0	0	0
15000	-31.4022	151.5803	5.7	0	0	0	0	1	0	0	0
15001	-31.4353	151.5888	5.2	0	0	0	1	0	0	0	0
18236	-30.2020	151.6489	5.2	0	0	0	1	0	0	0	0
18237	-30.2020	151.6515	5.2	0	0	0	1	0	0	0	0
18238	-30.1875	151.6442	5.2	0	0	0	1	0	0	0	0
18239	-30.1799	151.6477	5.2	0	0	0	1	0	0	0	0
18279	-31.4724	152.1313	3.3	1	0	0	0	0	0	0	0
18280	-31.2046	152.3314	4.7	0	0	1	0	0	0	0	0
18281	-30.6297	152.2800	3.8	1	0	0	0	0	0	0	0
18597	-31.0441	151.6191	5.2	0	0	0	1	0	0	0	0
18598	-31.0421	151.6215	4.7	0	0	1	0	0	0	0	0
18599	-31.0435	151.6212	4.7	0	0	1	0	0	0	0	0
18600	-31.0423	151.6191	3.3	1	0	0	0	0	0	0	0
18601	-31.0447	151.6275	4.7	0	0	1	0	0	0	0	0
18627	-31.4299	151.2429	5.2	0	0	0	1	0	0	0	0
18628	-31.4325	151.2473	4.7	0	0	1	0	0	0	0	0
18629	-31.4521	151.2472	4.7	0	0	1	0	0	0	0	0
18630	-31.4604	151.2447	4.7	0	0	1	0	0	0	0	0
18631	-31.4586	151.2429	5.2	0	0	0	1	0	0	0	0
18632	-31.4575	151.2397	4.7	0	0	1	0	0	0	0	0
18633	-31.4633	151.2409	4.7	0	0	1	0	0	0	0	0
18634	-31.4612	151.2381	4.7	0	0	1	0	0	0	0	0
18635	-31.4605	151.2350	4.7	0	0	1	0	0	0	0	0
18636	-31.4546	151.2348	5.2	0	0	0	1	0	0	0	0
18637	-31.4527	151.2411	4.7	0	0	1	0	0	0	0	0
18638	-31.4503	151.2467	5.2	0	0	0	1	0	0	0	0
18639	-31.4484	151.2391	5.2	0	0	0	1	0	0	0	0
18640	-31.4455	151.2400	5.2	0	0	0	1	0	0	0	0
18641	-31.4424	151.2500	5.2	0	0	0	1	0	0	0	0
18642	-31.4386	151.2482	4.7	0	0	1	0	0	0	0	0

18643	-31.4347	151.2446	4.7	0	0	1	0	0	0	0	0
18789	-31.4602	151.7448	4.7	0	0	1	0	0	0	0	0
18790	-31.4533	151.7734	4.7	0	0	1	0	0	0	0	0
18791	-31.4533	151.7734	4.3	0	1	0	0	0	0	0	0
18985	-29.5252	152.0313	2.4	1	0	0	0	0	0	0	0
18986	-29.5312	152.0263	1.5	1	0	0	0	0	0	0	0
18987	-29.5547	152.0207	1.5	1	0	0	0	0	0	0	0
18988	-29.5598	152.0170	2.4	1	0	0	0	0	0	0	0
18989	-31.3533	151.6175	2.4	1	0	0	0	0	0	0	0
18990	-31.3549	151.6127	2.4	1	0	0	0	0	0	0	0
18991	-31.3643	151.6286	3.3	1	0	0	0	0	0	0	0
18992	-31.3722	151.6269	2.4	1	0	0	0	0	0	0	0
20841	-30.2263	151.6437	5.2	0	0	0	1	0	0	0	0
20842	-30.2234	151.6442	5.2	0	0	0	1	0	0	0	0
20843	-30.2250	151.6494	5.7	0	0	0	0	1	0	0	0
20844	-30.2192	151.6549	5.7	0	0	0	0	1	0	0	0
20845	-30.2183	151.6531	5.7	0	0	0	0	1	0	0	0
20846	-30.2175	151.6469	4.7	0	0	1	0	0	0	0	0
20847	-30.2170	151.6440	5.2	0	0	0	1	0	0	0	0
20848	-30.2207	151.6443	5.2	0	0	0	1	0	0	0	0
20849	-30.2097	151.6530	5.2	0	0	0	1	0	0	0	0
20850	-30.2072	151.6496	5.2	0	0	0	1	0	0	0	0
20851	-30.2027	151.6492	5.2	0	0	0	1	0	0	0	0
20852	-30.2047	151.6510	5.2	0	0	0	1	0	0	0	0
20854	-30.1974	151.6461	5.2	0	0	0	1	0	0	0	0
20855	-30.1961	151.6487	5.2	0	0	0	1	0	0	0	0
20856	-30.1993	151.6492	5.7	0	0	0	0	1	0	0	0
20857	-30.2078	151.6475	4.7	0	0	1	0	0	0	0	0
20858	-30.2060	151.6424	5.7	0	0	0	0	1	0	0	0
20859	-30.2091	151.6418	5.2	0	0	0	1	0	0	0	0
20860	-30.1950	151.6319	5.7	0	0	0	0	1	0	0	0
20861	-30.1991	151.6326	7.1	0	0	0	0	0	0	0	1
20862	-30.1966	151.6345	5.2	0	0	0	1	0	0	0	0
20863	-30.1999	151.6391	5.2	0	0	0	1	0	0	0	0
20864	-30.2012	151.6401	5.2	0	0	0	1	0	0	0	0
21982	-29.1803	151.1441	8.9	0	0	0	0	0	0	0	1
21983	-29.1800	151.1459	6.1	0	0	0	0	0	1	0	0
21984	-29.1805	151.1465	7.5	0	0	0	0	0	0	0	1
21985	-29.1805	151.1478	5.7	0	0	0	0	1	0	0	0
21986	-29.1748	151.1575	4.7	0	0	1	0	0	0	0	0
21987	-29.1854	151.1456	5.2	0	0	0	1	0	0	0	0

27307	-31.0585	151.1093	6.6	0	0	0	0	0	0	1	0
27308	-31.0593	151.1414	5.2	0	0	0	1	0	0	0	0
27309	-31.0483	151.1779	5.7	0	0	0	0	1	0	0	0
27310	-31.0489	151.1780	6.1	0	0	0	0	0	1	0	0
27311	-31.0570	151.1980	6.1	0	0	0	0	0	1	0	0
27312	-31.0767	151.2416	6.1	0	0	0	0	0	1	0	0
27313	-31.0948	151.2673	6.1	0	0	0	0	0	1	0	0
27314	-31.0964	151.2699	5.2	0	0	0	1	0	0	0	0
27315	-31.1213	151.2729	6.1	0	0	0	0	0	1	0	0
27316	-31.1503	151.2953	5.2	0	0	0	1	0	0	0	0
27317	-31.2498	151.3188	5.2	0	0	0	1	0	0	0	0
27318	-31.4776	151.1873	6.1	0	0	0	0	0	1	0	0
27319	-31.4809	151.3043	4.7	0	0	1	0	0	0	0	0
27320	-31.4819	151.3256	5.7	0	0	0	0	1	0	0	0
27321	-31.3947	151.4449	5.2	0	0	0	1	0	0	0	0
27322	-31.1783	151.4461	6.1	0	0	0	0	0	1	0	0
27324	-31.2121	151.3592	5.2	0	0	0	1	0	0	0	0
27325	-31.2153	151.3522	5.2	0	0	0	1	0	0	0	0
27326	-31.2188	151.3502	6.1	0	0	0	0	0	1	0	0
27327	-31.3698	151.1384	6.1	0	0	0	0	0	1	0	0
27328	-31.4465	151.1329	6.1	0	0	0	0	0	1	0	0
27854	-30.3929	151.9352	5.2	0	0	0	1	0	0	0	0
27855	-30.3961	151.6889	5.2	0	0	0	1	0	0	0	0
27868	-30.3761	151.7976	5.7	0	0	0	0	1	0	0	0
27872	-30.3265	151.8318	4.7	0	0	1	0	0	0	0	0
27882	-30.4423	151.7374	5.7	0	0	0	0	1	0	0	0
27973	-31.3314	151.8680	5.2	0	0	0	1	0	0	0	0
28155	-30.8757	152.2201	4.7	0	0	1	0	0	0	0	0
28158	-30.5138	152.0129	4.7	0	0	1	0	0	0	0	0
28163	-30.8031	152.4756	4.7	0	0	1	0	0	0	0	0
28164	-30.7791	152.4038	5.2	0	0	0	1	0	0	0	0
28165	-30.7575	152.3873	4.7	0	0	1	0	0	0	0	0
28170	-30.6857	152.4642	4.7	0	0	1	0	0	0	0	0
28173	-30.8248	152.4981	5.2	0	0	0	1	0	0	0	0
28175	-30.8999	152.4790	5.2	0	0	0	1	0	0	0	0
28178	-30.9468	152.4100	5.7	0	0	0	0	1	0	0	0
28180	-30.9769	152.2882	4.7	0	0	1	0	0	0	0	0
28181	-30.9058	152.2820	4.7	0	0	1	0	0	0	0	0
28186	-30.7733	152.3307	4.7	0	0	1	0	0	0	0	0
28189	-30.6802	152.2540	4.7	0	0	1	0	0	0	0	0
28190	-30.6592	152.2575	4.3	0	1	0	0	0	0	0	0

28192	-30.6138	152.2862	5.2	0	0	0	1	0	0	0	0
28196	-30.5408	152.3512	4.7	0	0	1	0	0	0	0	0
28197	-30.5162	152.0505	4.7	0	0	1	0	0	0	0	0
28199	-30.5096	152.1081	4.7	0	0	1	0	0	0	0	0
28201	-30.7702	152.0377	4.7	0	0	1	0	0	0	0	0
28202	-30.7196	152.0785	4.7	0	0	1	0	0	0	0	0
28203	-30.7349	152.1256	4.3	0	1	0	0	0	0	0	0
28204	-30.6956	152.1200	4.7	0	0	1	0	0	0	0	0
28216	-30.5747	152.2035	5.7	0	0	0	0	1	0	0	0
28220	-30.5898	152.1119	5.2	0	0	0	1	0	0	0	0
28222	-30.6050	152.0612	5.2	0	0	0	1	0	0	0	0
28225	-30.7852	152.4766	4.7	0	0	1	0	0	0	0	0
28295	-30.5799	151.8150	5.7	0	0	0	0	1	0	0	0
28297	-30.5444	151.8368	5.2	0	0	0	1	0	0	0	0
28298	-30.6252	151.8318	5.2	0	0	0	1	0	0	0	0
28299	-30.7166	151.9910	5.2	0	0	0	1	0	0	0	0
28300	-30.6872	151.9747	5.7	0	0	0	0	1	0	0	0
28302	-30.5402	151.6997	5.2	0	0	0	1	0	0	0	0
28305	-30.5945	151.7368	5.7	0	0	0	0	1	0	0	0
28306	-30.6348	151.7545	4.7	0	0	1	0	0	0	0	0
28307	-30.5819	151.7009	5.2	0	0	0	1	0	0	0	0
28329	-30.8059	151.8613	4.7	0	0	1	0	0	0	0	0
28332	-30.9453	151.6883	5.2	0	0	0	1	0	0	0	0
28335	-30.9903	151.9631	5.2	0	0	0	1	0	0	0	0
C228	-30.8000	151.4667	5.3	0	0	0	1	0	0	0	0
C226	-30.6667	151.5833	5.4	0	0	0	1	0	0	0	0
C225	-30.6000	151.4667	5.5	0	0	0	1	0	0	0	0
C425	-30.5300	152.4000	5.2	0	0	0	1	0	0	0	0
C426	-30.5175	152.3117	5.6	0	0	0	0	1	0	0	0
C222	-30.5167	151.7000	5.6	0	0	0	0	1	0	0	0
C223	-30.5167	151.7167	5.6	0	0	0	0	1	0	0	0
A1008	-30.4833	151.3000	4.8	0	0	1	0	0	0	0	0
C428	-30.4283	152.3756	4.4	0	1	0	0	0	0	0	0
C230	-30.4167	151.8333	5.8	0	0	0	0	1	0	0	0
C421	-30.4000	152.5333	5.5	0	0	0	1	0	0	0	0
C429	-30.3839	152.4581	5.5	0	0	0	1	0	0	0	0
C434	-30.3678	152.4436	5.6	0	0	0	0	1	0	0	0
C435	-30.3519	152.4542	5.8	0	0	0	0	1	0	0	0
C424	-30.3267	152.5994	5.4	0	0	0	1	0	0	0	0
C423	-30.3264	152.6058	5.8	0	0	0	0	1	0	0	0
C221	-30.2972	151.1667	6.2	0	0	0	0	0	1	0	0

A1009	-30.2722	151.6847	5.2	0	0	0	1	0	0	0	0
C229	-30.2667	151.6667	6.0	0	0	0	0	1	0	0	0
C433	-30.2400	152.6186	5.9	0	0	0	0	1	0	0	0
A1011	-29.7167	151.1833	6.1	0	0	0	0	0	1	0	0
A1010	-29.6419	152.4753	6.0	0	0	0	0	1	0	0	0
C224	-29.6333	151.5667	4.9	0	0	1	0	0	0	0	0
B904	-29.6139	152.2292	6.5	0	0	0	0	0	1	0	0
B544	-29.0000	152.0000	6.0	0	0	0	0	1	0	0	0
B545	-29.0000	152.0000	5.5	0	0	0	1	0	0	0	0
			4.9	0	0	1	0	0	0	0	0
			5.4	0	0	0	1	0	0	0	0
			5.1	0	0	0	1	0	0	0	0
			4.8	0	0	1	0	0	0	0	0
			4.8	0	0	1	0	0	0	0	0
			4.8	0	0	1	0	0	0	0	0
			5.4	0	0	0	1	0	0	0	0
			6.1	0	0	0	0	0	1	0	0
			5.2	0	0	0	1	0	0	0	0
			6.3	0	0	0	0	0	1	0	0
			5.3	0	0	0	1	0	0	0	0
			5.0	0	0	1	0	0	0	0	0
			5.3	0	0	0	1	0	0	0	0
			4.5	0	1	0	0	0	0	0	0
			4.4	0	1	0	0	0	0	0	0
			4.6	0	0	1	0	0	0	0	0
			4.7	0	0	1	0	0	0	0	0
			5.2	0	0	0	1	0	0	0	0
			4.6	0	0	1	0	0	0	0	0
			4.6	0	0	1	0	0	0	0	0
			4.9	0	0	1	0	0	0	0	0
			5.1	0	0	0	1	0	0	0	0
			5.3	0	0	0	1	0	0	0	0
			4.4	0	1	0	0	0	0	0	0
			4.7	0	0	1	0	0	0	0	0
			4.5	0	1	0	0	0	0	0	0
			4.5	0	1	0	0	0	0	0	0
			4.4	0	1	0	0	0	0	0	0
			4.9	0	0	1	0	0	0	0	0
			4.8	0	0	1	0	0	0	0	0
			4.6	0	0	1	0	0	0	0	0
			4.7	0	0	1	0	0	0	0	0

			4.5	0	1	0	0	0	0	0	0
			4.9	0	0	1	0	0	0	0	0
			4.9	0	0	1	0	0	0	0	0
			5.1	0	0	0	1	0	0	0	0
			5.1	0	0	0	1	0	0	0	0
			4.9	0	0	1	0	0	0	0	0
			4.6	0	0	1	0	0	0	0	0
			5.0	0	0	1	0	0	0	0	0
			4.2	0	1	0	0	0	0	0	0
KA	-30.4353	151.6326	0.0	1	0	0	0	0	0	0	0
KB	-30.4330	151.6108	0.0	1	0	0	0	0	0	0	0
N1			4.8	0	0	1	0	0	0	0	0
N2			4.9	0	0	1	0	0	0	0	0
N3			4.9	0	0	1	0	0	0	0	0
N4			5.0	0	0	1	0	0	0	0	0
N5			5.6	0	0	0	0	1	0	0	0
			Count	17	19	91	118	55	21	5	16
			Percentage	5	6	27	35	16	6	1	5
			Total Percentage		11	37	72				

342
100.0

Appendix 4.1

Contact Letter

Agronomy and Soil Science

30 April 2002

Tina Dalby
Telephone: 02 6773 3075 Facsimile: 02 6773 3238
E-mail: tdalby@metz.une.edu.au

FIELD(Title) FIELD(Name_1) FIELD(Name_2)
FIELD(Property)
FIELD(Address_1)
FIELD(Address_2)

Dear FIELD(Name_3)

Investigation of Acid Soils under Pastures in the Northern Tablelands

Soil Sampling - Paired Paddock Survey

I'm a PhD student in Soil Science at the University of New England. My project has been funded by Acid Soil Action through NSW Agriculture.

For part of this project I need to investigate whether management has any impact on acid soils by comparing soils of relatively natural areas with soils of managed pasture over the Northern Tablelands. To do this I would like to conduct a "paired paddock" or "across the fence line" survey. At each site, soil samples need to be taken from a pastured paddock and an adjacent travelling stock route or roadside reserve.

During an initial survey of the Northern Tablelands area I noted that your property could be suitable. You have a paddock, FIELD(Paddock), adjacent to FIELD(Site Details). Would you be willing to let me sample this paddock?

A hand-held soil corer will be used to take the samples. Ten cores, 5 cm in diameter to a depth of 30 cm would be taken from a small section of the paddock about 10 to 15 m from the fence. Each hole will be backfilled and all care will be taken to minimize disturbance to the site. Access to the paddock will be by a ladder to avoid damage from vehicle tracks. The soil samples will be initially tested for pH. Results of the tests will be given to you

Could I please phone you in about a week to discuss this proposal? I will be visiting your area early April to finalize sites for this exercise. Should you wish to meet me to discuss the project, this can be arranged. A sheet giving more information about the project is attached.

Yours sincerely

Tina Dalby

Investigation of Acid soils under Pastures in the Northern Tablelands

Project Aims

The overall objective of the project is to achieve a better understanding of soil acidity and acidification in the Northern Tablelands area. Specific objectives have been set and it is the second objective that is the subject of the paired-site survey.

1. To estimate the extent of acid soils under pasture on the Northern Tablelands and produce a soil pH map.
2. To assess any management impact on acid soils by comparing soils of relatively natural areas with those of managed pasture across the Northern Tablelands.
3. To examine the causes of soil acidification in the Northern Tablelands.
4. To identify conditions and management practices that could be associated with the risk of soil acidification.

Criteria for Paired-Site Survey

- Managed grazing land adjacent to natural area such as a roadside reserve
- Paddock must be at least 30 m x 30 m
- Reserve area must have few trees (very sparse crown separation) or less
- Terrain (slope and aspect) must be similar either side of the fence
- Permission from landholder to sample paddock
- Management practices must include regular fertilizer treatment and establishment of exotic pasture species
- Management practices must not include liming
- History of site management is available

Project Supervisors

Project Manager and
Principal Supervisor Dr Peter Lockwood
Senior Lecturer in Soil Science
Agronomy and Soil Science
University of New England

Supervisors Dr Heiko Daniel Senior
Lecturer in Soil Science
Agronomy and Soil Science
University of New England

Dr Brian Wilson
Department of Land and Water Conservation
Trevenna Road

Appendix 4.1

Follow-up Contact

3 June 2002

Agronomy and Soil Science

Tina Dalby
Telephone: 02 6773 3075 Facsimile: 02 6773 3238
E-mail: tdalby@metz.une.edu.au

FIELD(Title) FIELD(Name_1) FIELD(Name_2)
FIELD(Property)
FIELD(Address_1)
FIELD(Address_2)

Dear FIELD(Title) FIELD(Name_2)

Investigation of Acid Soils under Pastures in the Northern Tablelands

Soil Sampling - Paired Paddock Survey

This letter is to confirm our meeting at <insert time> on <insert date>. Should you need to contact me about this, please phone my office number (02) 6773 3075 and leave a message if I am not there. I will regularly check for messages whilst travelling around Tenterfield.

I look forward to meeting you and talking about the project, as well as your paddock.

Yours sincerely

Tina Dalby

Appendix 4.1

Sampling Letter

Agronomy and Soil Science

21 October 2002

Tina Dalby
Telephone: 02 6773 3075 Facsimile: 02 6773 3238
E-mail: tdalby@metz.une.edu.au

FIELD(Title) FIELD(Name_1) FIELD(Name_2)
FIELD(Property)
FIELD(Address_1)
FIELD(Address_2)

Dear FIELD(Name_1)

Investigation of Acid Soils under Pastures in the Northern Tablelands

Soil Sampling - Proposed Schedule

Thank you for your interest and support with the paired site survey. Further to our meeting, this letter is to confirm that we will be taking soil samples from your paddock at approximately <time> on Thursday, 24 October 2002. The time is tentative as we could be ahead of schedule or experiencing delays. You are welcome to watch our progress. We will be on and off your property fairly quickly. With an area to cover from north of Tenterfield to south of Walcha within a four week period, we will be efficiently sampling.

At each site, soil samples will be taken from your paddock and the adjacent travelling stock route or roadside reserve. A hand-held soil corer will be used to take the samples. Nine cores, 5 cm in diameter to depths of 10 or 50 cm will be taken from a small section of the paddock between 5 and 15 m from the fence. Each hole will be backfilled and all care will be taken to minimize disturbance to the site. Unless I have arranged gate or ramp access with you, entry to the paddock will be by ladder to avoid damage from vehicle tracks.

The soil samples will be analysed for a range of soil tests. Results of the analyses for your paddock and adjacent reserve will be sent to you when they become available. Results from the whole survey will also be provided. Sites other than your own will only be identified by general soil type.

Should you have any questions please contact me. Please also let me know if you have any concerns regarding our timing or anticipated problems with stock.

Thank you once again for your support with this project.

Yours sincerely

Tina Dalby

Appendix 4.1

Landcare Letter

<UNE Letterhead>

26 May 2006

Agronomy and Soil Science

Telephone: 02 6773 3075 Facsimile: 02 67733238
E-mail: tdalby@metz.une.edu.au

FIELD(Name_1) FIELD(Name_2)
FIELD(Association)
FIELD(Address)

Dear FIELD(Name_1)

**Investigation of Acid Soils under Pastures
in the Northern Tablelands
Paired Paddock Survey**

I refer to my phone call of FIELD(date). Thank you for your help in contacting land holders for suitable survey sites for this project. I have enclosed copies of a notice for circulation to your group members.

The overall objective of the project is to achieve a better understanding of soil acidity and acidification in the Northern Tablelands area. Specific objectives have been set and it is the second objective that is the subject of this survey.

1. To assess the extent of acid soils under pasture in the Northern Tablelands and produce a soil pH map.
2. To determine any impact of management on acid soils by comparing soils of relatively natural areas with soils of managed pasture across a range of soils in the Northern Tablelands.
3. To ascertain the causes of soil acidification in the Northern Tablelands.
4. To investigate the underlying mechanisms in the processes of soil acidification in the Northern Tablelands.
5. To assess the rate of acidification.

This project has been funded by Acid Soil Action and is the first full-scale project to assess acidity and acidification in northern NSW. The project is expected to run for three years. Supervisors for the project are Dr Peter Lockwood and Dr Heiko Daniel from Agronomy and Soil Science at UNE, and Dr Brian Wilson, Department of Land and Water Conservation in Armidale.

Yours sincerely

Tina Dalby
PhD Candidate

Encl.

**Investigation of Acid soils under Pastures
in the Northern Tablelands**

Soil Sampling - Paired Paddock Survey

Do you have a paddock I can sample?

My name is Tina Dalby and I'm a PhD student in Soil Science at the University of New England. I am working on a project that has been funded by Acid Soil Action. This is the first full-scale project to assess soil acidity and acidification in northern New South Wales.

Part of this project is to investigate whether management has an impact on acid soils by comparing soils of relatively natural areas with soils of managed pasture across a range of soils in the Northern Tablelands. To do this I would like to conduct a "paired paddock" or "across the fence line" survey.

For each site, soil samples need to be taken from both a pastured area and an adjacent, relatively natural area, such as a travelling stock route or roadside reserve. A trailer-mounted soil corer will be used to take the samples. Approximately 20 cores, 7 cm in diameter to a depth of about 1 m will be taken from each area. Every hole will be backfilled with suitable soil. All care will be taken to minimize disturbance to the site.

Is your paddock suitable?

Here is a checklist of what I am looking for in a paddock.

- ✓ pastured area adjacent to stock route or reserve
- ✓ history of fertilizer applications
- ✓ similar terrain (slope and aspect) either side of fence
- ✓ accessible for a 4WD and trailer
- ✓ available for sampling in November 2001

If you can help, could you please either contact me directly, or leave a message with FIELD(Name_1) FIELD(Name_2)? Your collaboration with this project is greatly appreciated.

Tina Dalby
Agronomy and Soil Science
University of New England

Telephone: (02) 6773 3075
Facsimile: (02) 6773 3238
E-mail: tdalby@pobox.une.edu.au

Appendix 4.2

Sampling Field Notes

Vegetation and Pasture

Site No.		
Date		
Transect Location		
Elevation		
Photos		

Quadrat	Species	Details
<i>Fence</i> 3A	1	
	2	
	3	
	Clover	
	% Bare	

Quadrat	Species	Details
<i>Fence</i> 3B	1	
	2	
	3	
	Clover	
	% Bare	

2A	1	
	2	
	3	
	Clover	
	% Bare	

2B	1	
	2	
	3	
	Clover	
	% Bare	

1A	1	
	2	
	3	
	Clover	
	% Bare	

1B	1	
	2	
	3	
	Clover	
	% Bare	

Vegetation and Pasture

Quadrat	Species	Details
9A	1	
	2	
	3	
	Clover	
	% Bare	

Quadrat	Species	Details
9B	1	
	2	
	3	
	Clover	
	% Bare	

8A	1	
	2	
	3	
	Clover	
	% Bare	

8B	1	
	2	
	3	
	Clover	
	% Bare	

7A <i>Fence</i>	1	
	2	
	3	
	Clover	
	% Bare	

7B <i>Fence</i>	1	
	2	
	3	
	Clover	
	% Bare	

Notes

Reserve Pasture

Site	Not Identified	Native Mix Not Identified	Forbes	Kangaroo Grass	Dry Matter (Kangaroo Grass)	Litter (Kangaroo Grass)	Odour Grass	Tussocky Poa	Dry Matter (Tussocky Poa)	Litter (Tussocky Poa)	Wallaby Grass	Grevillia (Pros.)	Sweet Vernal Grass	Dry Matter (Sweet Vernal Grass)	Native Sorghum	Yorkshire Fog	Lomandra	Dry Matter (Lomandra)
Sub Total Ranking	16	36	180	448	6	242	4	1	0	0	0	6	36	1	0	0	31	4
Sub Total Ranking	3	200	73	267	0	318	0	0	16	1	2	0	0	0	11	25	28	0
Total % Composition	0	6	6	17	0	14	0	0	0	0	0	0	1	0	0	1	1	0

Site	Arisditus	Dry Matter (Arisditus)	Phalaris	Cocksfoot	Red Grass	Fescue	Dry Matter (Fescue)	Soft Brome	Sporobolus	Paddock Lovegrass	Dry Matter (Paddock Lovegrass)	Paspalum	African Lovegrass	Litter (African Lovegrass)	DryMatter (Not Identified)	Litter/Dry Matter (Not Identified)	Litter (Not Identified)	Litter/Bare (Not Identified)	Bare	Cattle Dung	Total Ranking and 100% Check
40	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
41	0	0	0	0	7	0	0	0	0	0	0	0	0	52	0	0	0	0	3	0	72
61	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	100
63	0	0	0	0	12	0	0	32	0	0	0	0	0	0	0	0	0	0	8	6	69
201	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	2	100
205	0	0	0	0	0	0	0	8	0	0	0	0	0	1	0	0	0	0	0	0	66
205	0	0	0	0	0	0	0	8	0	0	0	0	0	2	0	0	0	0	0	0	100
205	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	68
205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100
205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69
205	0	0	0	0	0	0	0	0	0	0	0	0	0	18	10	0	0	0	2	1	69
205	0	0	0	0	0	0	0	0	0	0	0	0	0	27	15	0	0	0	3	1	100
205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
205	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	
205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	69

Site	Arisditus	Dry Matter (Arisditus)	Phalaris	Cocksfoot	Red Grass	Fescue	Dry Matter (Fescue)	Soft Brome	Sporobolus	Paddock Lovegrass	Dry Matter (Paddock Lovegrass)	Paspalum	African Lovegrass	Litter (African Lovegrass)	DryMatter (Not Identified)	Litter/Dry Matter (Not Identified)	Litter (Not Identified)	Litter/Bare (Not Identified)	Bare	Cattle Dung	Total Ranking and 100% Check
0	0	0	8	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	7	0	100
	0	0	8	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	
	0	0	8	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	8	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	
3	0	0	32	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	11	0	69
	0	0	47	0	0	0	0	0	0	0	0	0	0	23	0	0	0	0	17	0	100
	0	0	0	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	
5	0	0	0	0	16	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	72
	0	0	0	0	22	0	0	44	0	0	0	0	0	0	0	0	0	0	0	0	100
	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	
10	0	0	0	0	0	16	0	24	0	0	0	8	0	0	0	0	0	0	0	0	74
	0	0	0	0	0	22	0	33	0	0	0	11	0	0	0	0	0	0	0	0	100
	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	2	0	
12	0	0	0	0	0	0	0	0	0	0	0	0	0	48	0	0	0	0	2	0	66
	0	0	0	0	0	0	0	0	0	0	0	0	0	73	0	0	0	0	4	0	100
	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14	0	0	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62
	0	0	0	0	0	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100
	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	

Site	Ariditus		Dry Matter (Ariditus)		Phlaris		Cocksfoot		Red Grass		Fescue		Dry Matter (Fescue)		Soft Brome		Sporobolus		Paddock Lovegrass		Dry Matter (Paddock Lovegrass)		Paspalum		African Lovegrass		Litter (African Lovegrass)		Dry Matter (Not Identified)		Litter/Dry Matter (Not Identified)		Litter (Not Identified)		Litter/Bare (Not Identified)		Bare		Cattle Dung	
Sub	4	27	50	13	53	188	32	249	0	4	41	11	36	456	28	103	0	0	80	15	2400																			
Sub	4	0	22	0	50	31	48	62	11	0	0	14	0	223	91	60	0	15	121	3	1700																			
Tota	0	1	2	0	2	5	2	8	0	0	1	1	1	17	3	4	0	0	5	0	100																			
Total Ranking and 100% Check																																								

Site	% Clover	% Bare
40	0	2
	0	2
	0	2
	0	2
	0	0
	0	10
41	1	1
	0	2
	0	50
	0	2
	0	0
	1	5
61	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
63	0	0
	0	0
	0	2
	1	3
	0	3
201	0	0
	0	1
		1
	0	10
	0	10
	0	5
205	0	2
	0	5
	0	10
	0	5
	0	2
	1	1

Paddock Pasture												
Site	Quadrat	Exotic Mix	Not Identified	Mix Not Identified	Forbes	Cocksfoot	Dry Matter (Cocksfoot)	Phalaris	Ryegrass	Dry Matter (Ryegrass)	Fescue	Dry Matter (Fescue)
40	9A	0	0	8	1	0	0	0	0	0	0	0
	9B	0	0	0	8	0	0	0	0	0	0	0
	8A	0	0	8	1	0	0	0	0	0	0	0
	8B	0	0	0	8	0	0	0	0	0	0	0
	7A	0	0	8	1	0	0	0	0	0	0	0
	7B	0	0	1	8	0	0	0	0	0	0	0
	Total Ranking	0	0	25	27	0	0	0	0	0	0	0
	% Composition	0	0	37	39	0	0	0	0	0	0	0
41	9A	0	0	0	0	8	0	0	0	0	0	0
	9B	0	0	0	0	8	0	0	0	0	0	0
	8A	0	0	0	0	8	0	2	0	0	0	0
	8B	0	8	0	0	2	0	1	0	0	0	0
	7A	0	0	0	1	8	0	0	0	0	0	0
	7B	0	0	0	0	1	0	8	0	0	0	0
	Total Ranking	0	8	0	1	36	0	11	0	0	0	0
	% Composition	0	12	0	1	53	0	17	0	0	0	0
61a	9A	0	0	1	0	0	0	0	0	0	0	0
	9B	0	0	2	0	0	0	0	0	0	0	0
	8A	0	0	0	0	0	0	0	0	0	0	0
	8B	0	0	0	0	0	0	0	0	0	0	0
	7A	0	8	0	0	0	0	0	0	0	0	0
	7B	0	0	0	0	0	0	0	0	0	0	0
	Total Ranking	0	8	3	0	0	0	0	0	0	0	0
	% Composition	0	11	5	0	0	0	0	0	0	0	0
63	9A	0	0	0	1	0	0	0	2	0	0	0
	9B	0	2	0	1	0	0	0	0	0	0	0
	8A	0	0	0	0	0	0	0	0	0	0	0
	8B	0	0	0	1	0	0	0	0	0	0	0
	7A	8	0	0	1	0	0	0	0	0	0	0
	7B	0	1	0	0	0	0	0	0	0	0	0
	Total Ranking	8	3	0	4	0	0	0	2	0	0	0
	% Composition	12	5	0	6	0	0	0	4	0	0	0
201	9A	0	0	0	1	0	0	2	0	0	0	0
	9B	0	0	0	1	0	0	2	0	0	0	0
	8A	0	0	0	1	0	0	2	0	0	0	0
	8B	2	0	0	0	0	0	0	0	0	0	0
	7A	8	0	0	0	0	0	0	0	0	0	0
	7B	0	0	0	0	0	0	0	2	0	0	0
	Total Ranking	10	0	0	3	0	0	7	2	0	0	0
	% Composition	15	0	0	4	0	0	11	4	0	0	0
205	9A	0	0	0	0	0	0	2	0	0	0	0
	9B	0	0	0	0	0	0	8	0	0	0	0
	8A	0	0	0	0	0	0	0	0	0	0	0
	8B	0	0	0	0	0	0	8	0	0	0	0
	7A	0	0	0	0	0	0	0	0	0	0	0
	7B	0	0	0	0	0	0	0	0	0	0	0
	Total Ranking	0	0	0	0	0	0	18	0	0	0	0

Site	% Clover	% Bare
19		50
23		
24		
25		
27		
29	0	0
	0	0
	0	0
	0	0
	0	0

Paddock Pasture		Exotic	Mix	Not	Forbes	Cocksfoot	Dry Matter (Cocksfoot)	Phalaris	Ryegrass	Dry Matter (Ryegrass)	Fescue	Dry Matter (Fescue)
Site	Quadrat											
	Total Ranking	0	10	0	2	0	0	0	0	0	0	0
	% Composition	0	15	0	3	0	0	0	0	0	0	0
19	9A	0	0	0	0	0	0	0	0	0	0	0
	9B	0	0	0	0	0	0	0	0	0	0	0
	8A	0	0	0	0	0	0	0	0	0	0	0
	8B	0	0	0	0	0	0	0	0	0	0	0
	7A	0	0	0	0	0	0	0	0	0	0	0
	7B	0	0	0	0	0	0	0	0	0	0	0
	Total Ranking	0	0	0	0	0	0	0	0	0	0	0
	% Composition	0	0	0	0	0	0	0	0	0	0	0
23	9A	0	0	0	0	0	0	0	2	1	0	0
	9B	0	0	0	0	0	0	0	2	0	1	0
	8A	0	0	0	0	0	0	0	2	0	0	0
	8B	0	0	0	1	0	0	0	0	0	2	0
	7A	0	0	0	2	0	0	0	1	0	0	0
	7B	0	0	0	0	0	0	0	0	0	2	0
	Total Ranking	0	0	0	3	0	0	0	6	2	7	0
	% Composition	0	0	0	5	0	0	0	9	4	10	0
24	9A	0	0	0	0	0	0	0	0	0	0	0
	9B	0	0	0	0	0	0	0	0	0	0	0
	8A	0	0	0	0	0	0	0	0	0	0	0
	8B	0	0	0	0	0	0	0	0	0	0	0
	7A	0	0	0	0	0	0	0	0	0	0	0
	7B	0	0	0	0	0	0	0	0	0	0	0
	Total Ranking	0	0	0	0	0	0	0	0	0	0	0
	% Composition	0	0	0	0	0	0	0	0	0	0	0
25	9A	0	0	0	0	0	0	0	0	0	0	0
	9B	0	0	0	0	0	0	0	0	0	0	0
	8A	0	0	0	0	0	0	0	0	0	0	0
	8B	0	0	0	0	0	0	0	0	0	0	0
	7A	0	0	0	1	0	0	0	0	0	0	0
	7B	0	0	0	0	0	0	0	0	0	0	0
	Total Ranking	0	0	0	1	0	0	0	0	0	0	0
	% Composition	0	0	0	1	0	0	0	0	0	0	0
27	9A	0	0	0	0	0	0	0	0	0	0	0
	9B	0	0	0	0	0	0	0	0	0	0	0
	8A	0	0	0	1	0	0	0	0	0	0	0
	8B	0	0	0	2	0	0	0	0	0	0	0
	7A	0	0	0	1	0	0	0	0	0	0	0
	7B	0	0	2	0	0	0	0	0	0	0	0
	Total Ranking	0	0	2	4	0	0	0	0	0	0	0
	% Composition	0	0	4	7	0	0	0	0	0	0	0
29	9A	0	1	0	0	0	0	0	2	0	0	0
	9B	0	0	0	0	1	0	0	2	0	0	0
	8A	0	0	0	0	0	0	0	2	0	0	0
	8B	0	1	0	0	0	0	0	8	0	0	0
	7A	0	0	0	0	0	0	0	1	2	0	0

Site	% Clover	% Bare
		5
45	0	10
	0	0
	0	0
	0	0
	0	0
	0	0
46	0	0
	0	10
	0	40
	0	40
	0	10
	0	0
47	0	10
	0	5
	0	20
	0	10
	0	0
	0	45
49	0	50
	0	75
	0	0
	0	40
	0	5
	0	50
50	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
51	0	0
	0	0
	0	0

Paddock Pasture												
Site	Quadrat	Exotic Mix	Not Identified	Mix Not Identified	Forbes	Cockfoot	Dry Matter (Cocksfoot)	Phalaris	Ryegrass	Dry Matter (Ryegrass)	Fescue	Dry Matter (Fescue)
	7A	0	0	0	0	0	0	0	0	0	0	0
	7B	0	0	0	0	0	0	0	0	0	0	0
	Total Ranking	0	0	0	1	0	0	0	0	0	0	0
	% Composition	0	0	0	1	0	0	0	0	0	0	0
45	9A	0	0	0	0	0	0	0	0	0	0	0
	9B	0	0	0	0	0	0	0	0	0	0	0
	8A	0	0	0	0	0	0	0	0	0	0	0
	8B	0	0	0	0	0	0	8	0	0	0	0
	7A	2	0	0	0	0	0	0	0	0	0	0
	7B	0	0	0	0	0	0	0	0	0	0	0
	Total Ranking	2	0	0	0	0	0	8	0	0	0	0
	% Composition	4	0	0	0	0	0	15	0	0	0	0
46	9A	0	0	0	0	0	0	0	1	0	0	0
	9B	0	0	0	0	0	0	0	2	0	0	0
	8A	0	0	0	0	0	0	0	2	0	0	0
	8B	0	0	0	0	0	0	0	1	0	0	0
	7A	0	0	0	0	0	0	0	0	0	0	0
	7B	0	0	0	0	0	0	0	0	0	0	0
	Total Ranking	0	0	0	0	0	0	0	7	0	0	0
	% Composition	0	0	0	0	0	0	0	10	0	0	0
47	9A	0	0	0	0	0	2	0	0	0	0	0
	9B	0	0	0	0	1	0	0	0	0	0	0
	8A	0	0	0	0	0	2	0	0	0	0	0
	8B	0	0	0	2	0	1	0	0	0	0	0
	7A	0	0	0	1	0	2	0	0	0	0	0
	7B	0	0	0	0	0	0	0	0	0	0	0
	Total Ranking	0	0	0	3	1	8	0	0	0	0	0
	% Composition	0	0	0	5	1	11	0	0	0	0	0
49	9A	8	0	0	0	0	0	0	0	0	0	0
	9B	8	8	0	1	0	0	0	0	0	0	0
	8A	0	0	0	0	2	1	0	0	0	0	0
	8B	0	0	0	1	0	0	2	0	0	0	0
	7A	0	0	0	0	0	8	0	0	0	0	0
	7B	0	0	0	0	2	0	0	8	0	0	0
	Total Ranking	16	8	0	2	5	9	0	10	0	0	0
	% Composition	21	10	0	3	6	12	0	13	0	0	0
50	9A	0	0	8	2	0	0	0	0	0	0	0
	9B	0	0	0	1	0	0	0	0	0	0	0
	8A	0	0	0	0	0	0	0	0	0	0	0
	8B	0	0	0	8	0	0	0	0	0	0	0
	7A	8	0	0	1	0	0	0	0	0	0	0
	7B	0	0	8	1	0	8	0	0	0	0	0
	Total Ranking	8	0	16	13	0	8	0	0	0	0	0
	% Composition	10	0	21	18	0	10	0	0	0	0	0
51	9A	0	0	0	0	0	0	0	0	0	0	0
	9B	0	0	0	1	0	0	0	0	0	0	0
	8A	0	0	0	1	0	0	0	0	0	0	0

Site	% Clover	% Bare
56	0	0
	0	2
	0	0
60		
62		
64	0	0
	0	25
	0	0
	0	0
	0	0
	0	0
65	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
101	0	0
	0	0

Paddock Pasture		Exotic Mix Not Identified	Not Identified	Mix Not Identified	Forbes	Cocksfoot	Dry Matter (Cocksfoot)	Phlaris	Ryegrass	Dry Matter (Ryegrass)	Fescue	Dry Matter (Fescue)
Site	Quadrat											
56	8B	0	0	0	8	0	0	0	0	0	0	0
	7A	0	0	0	1	0	0	0	0	0	0	0
	7B	0	0	0	1	0	0	0	0	0	0	0
	Total Ranking	0	0	0	12	0	0	0	0	0	0	0
	% Composition	0	0	0	18	0	0	0	0	0	0	0
60	9A	0	8	0	0	0	0	0	0	0	0	0
	9B	0	0	0	1	0	0	0	0	0	0	0
	8A	0	8	0	0	0	0	0	0	0	0	0
	8B	0	8	0	1	0	0	0	2	0	0	0
	7A	0	8	0	1	0	0	0	0	0	0	0
	7B	0	8	0	0	0	0	0	0	0	0	0
	Total Ranking	0	40	0	3	0	0	0	2	0	0	0
	% Composition	0	59	0	4	0	0	0	4	0	0	0
62	9A	2	0	0	0	0	0	0	8	0	0	0
	9B	8	0	0	0	0	0	0	2	0	0	0
	8A	2	0	0	0	0	0	0	8	0	0	0
	8B	2	0	0	0	0	0	0	8	0	0	0
	7A	8	0	0	0	0	0	0	2	0	0	0
	7B	2	0	0	0	0	0	0	8	0	0	0
	Total Ranking	26	0	0	0	0	0	0	37	0	0	0
	% Composition	41	0	0	0	0	0	0	59	0	0	0
64	9A	0	0	0	0	0	0	0	0	0	0	0
	9B	0	0	0	0	0	0	0	0	0	0	0
	8A	0	0	0	0	0	0	0	0	0	0	0
	8B	0	0	0	0	0	0	0	0	0	0	0
	7A	0	0	0	0	0	0	0	0	0	0	0
	7B	0	0	0	0	0	0	0	0	0	0	0
	Total Ranking	0	0	0	0	0	0	0	0	0	0	0
	% Composition	0	0	0	0	0	0	0	0	0	0	0
65	9A	0	0	0	8	0	0	0	2	0	0	0
	9B	0	0	0	1	0	0	0	8	0	0	0
	8A	0	0	0	0	0	0	0	2	0	0	0
	8B	0	0	0	0	0	0	0	8	0	0	0
	7A	0	0	0	0	0	0	0	2	0	0	0
	7B	0	0	0	0	2	0	0	1	0	0	0
	Total Ranking	0	0	0	9	2	0	0	24	0	0	0
	% Composition	0	0	0	13	3	0	0	35	0	0	0
101	9A	0	0	0	0	0	0	0	8	0	0	0
	9B	0	0	0	0	0	0	0	8	0	0	0

Site	% Clover	% Bare
Sub		
Sub		
Total		

Paddock Pasture												
Site	Quadrat	Exotic Mix Not Identified	Not Identified	Mix Not Identified	Forbes	Cocksfoot	Dry Matter (Cocksfoot)	Phlaris	Ryegrass	Dry Matter (Ryegrass)	Fescue	Dry Matter (Fescue)
Sub Total Ranking		46	152	92	137	65	13	63	95	7	15	11
Sub Total Ranking		104	71	124	81	16	33	95	279	0	0	0
Total % Composition		4	5	5	5	2	1	4	9	0	0	0

Site	0	2	3	5	10	12	14
Lucerne	0	0	0	0	0	0	0
Oats	0	0	0	0	0	0	0
Foxtail	0	0	0	0	0	0	0
Dry Matter (Foxtail)	0	0	0	0	0	0	0
Ratstail Fescue	47	0	0	0	0	0	0
Dry Matter (Ratstail Fescue)	0	8	35	0	3	0	0
Sheep's Fescue	0	8	23	0	11	0	0
Odour Grass	0	0	0	0	0	0	0
Paddock Lovegrass	0	0	0	0	0	0	0
Pungent Odour Grass	0	0	0	0	0	0	0
Soft Brome	0	0	0	0	0	0	0
Dry Matter (Soft Brome)	0	0	0	0	0	0	0
Litter (Soft Brome)	0	0	0	0	0	0	0
Paspalum	0	0	0	0	0	0	0
Dry Matter (Paspalum)	0	0	0	0	0	0	0
Tussock Grass	0	0	0	0	0	0	0
Sporobolus	0	0	0	0	0	0	0
Litter (Sporobolus)	0	0	0	0	0	0	0
Crab Grass	0	0	0	0	0	0	0
Couch	0	0	0	8	0	0	43
Juncus/Rush	0	0	0	11	0	0	66
Tussocky Poa	0	0	0	0	0	0	0

Site	Lucerne	Oats	Foxtail	Dry Matter (Foxtail)	Rattail Fescue	Dry Matter (Rattail Fescue)	Sheep's Fescue	Odour Grass	Paddock Lovegrass	Pungent Odour Grass	Soft Brome	Dry Matter (Soft Brome)	Litter (Soft Brome)	Paspalum	Dry Matter (Paspalum)	Tussock Grass	Sporobolus	Litter (Sporobolus)	Crab Grass	Couch	Juncus/Rush	Tussocky Poa
56	0	0	0	0	0	18	0	0	11	10	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	27	0	0	17	15	0	0	0	0	0	0	0	0	0	0	0	0
62	0	0	0	0	0	0	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0
64	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
65	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
101	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	29	0	0

Site	Lucerne	Oats	Foxtail	Dry Matter (Foxtail)	Ratstail Fescue	Dry Matter (Ratstail Fescue)	Sheep's Fescue	Odour Grass	Paddock Lovegrass	Pungent Odour Grass	Soft Brome	Dry Matter (Soft Brome)	Litter (Soft Brome)	Paspalum	Dry Matter (Paspalum)	Tussock Grass	Sporobolus	Litter (Sporobolus)	Crab Grass	Couch	Juncus/Rush	Tussocky Poa
Sub	15	4	15	0	47	62	128	0	66	4	12	0	27	37	0	0	0	46	83	134	11	0
Sub	6	0	4	24	0	42	43	10	29	42	17	2	5	0	4	12	47	44	0	53	0	0
Tota	1	0	0	1	1	3	4	0	2	1	1	0	1	1	0	0	1	2	2	5	0	0

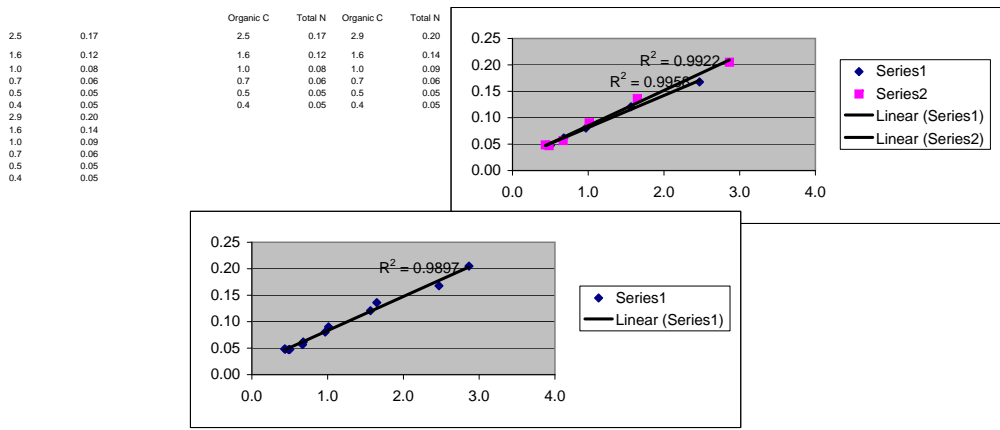
Site	Dry Matter (Tussocky Poa)	Wild Sorghum	Dry Matter (Wild Sorghum)	Dichondra	Windmill Grass	Red Grass	Kangaroo Grass	Dry Matter (Kangaroo Grass)	Red Pinrush	African Lovegrass	DryMatter (Not Identified)	Litter/Dry Matter (Not Identified)	Litter (Not Identified)	Litter/Bare (Not Identified)	Clover	Bare	Sheep Dung	Cattle Dung	Total Ranking and 100% Check	% Clover	% Bare	
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69	2	5
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	15
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	15
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	10
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	10
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	69			
41	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	13	0	0	100			
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
61	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	68			
	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	100			
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	25
	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	2	0	1	0	0	0	20
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	1	0	0	0	2
	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	8	0	0	0	0	0	55
	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	20
	0	0	0	0	0	0	0	0	0	8	14	0	0	0	0	14	0	2	76			
63	0	0	0	0	0	0	0	0	0	11	18	0	0	0	0	18	0	3	100			
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	25
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	30
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	40
	0	18	0	0	0	0	0	0	0	2	0	0	0	0	0	13	0	0	68			
201	0	27	0	0	0	0	0	0	0	4	0	0	0	0	0	19	0	0	100			
	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	10	50	5
	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	5	10	5
	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	5	10	2
	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1	0	0	0	0	2	55	5
	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	5	10	0
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	1	0	0	0	0	0	5	0
205	0	0	0	0	0	0	0	0	0	0	10	0	0	32	2	1	0	0	69			
	0	0	0	0	0	0	0	0	0	0	15	0	0	47	3	1	0	0	100			
	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	2
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	25	2
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	5	2	2
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	2	30	2
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	10	5	5
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	50	0
	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5	15	0	0	73			

Site	Dry Matter (Tussocky Poa)	Wild Sorghum	Dry Matter (Wild Sorghum)	Dichondra	Windmill Grass	Red Grass	Kangaroo Grass	Dry Matter (Kangaroo Grass)	Red Pinrush	African Lovegrass	DryMatter (Not Identified)	Litter/Dry Matter (Not Identified)	Litter (Not Identified)	Litter/Bare (Not Identified)	Clover	Bare	Sheep Dung	Cattle Dung	Total Ranking and 100% Check	% Clover	% Bare
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	7	20	0	0	100	3	0
	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0		4	0
	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0		2	0
	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0		2	0
	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0		2	0
	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0		2	0
3	0	0	0	0	0	0	0	0	0	0	8	2	0	0	5	0	0	0	69		
	0	0	0	0	0	0	0	0	0	0	12	4	0	0	7	0	0	0	100	20	0
	2	0	8	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0		5	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0		4	5
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
5	2	0	16	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	74	0	0
	3	0	22	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	100	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		0	0
	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0		0	5
	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0		0	2
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1		0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
10	0	0	0	2	2	8	0	0	0	0	2	0	0	0	0	0	0	2	69	2	0
	0	0	0	4	4	12	0	0	0	0	4	0	0	0	0	0	0	3	100	2	0
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	1	0	0	0		2	0
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	1	0	0	0		2	0
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	1	0	0		0	2
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	1		0	0
12	0	0	0	0	0	0	0	0	0	0	43	0	0	0	2	1	0	0	67	0	0
	0	0	0	0	0	0	0	0	0	0	64	0	0	0	3	1	0	0	100	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	65	0	25
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	2	0	0	2	100	1	20
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	2	0	0		0	25
	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	8		0	40
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	0		0	15
	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0		0	10

Site	Dry Matter (Tussocky Poa)	Wild Sorghum	Dry Matter (Wild Sorghum)	Dichondra	Windmill Grass	Red Grass	Kangaroo Grass	Dry Matter (Kangaroo Grass)	Red Pinrush	African Lovegrass	DryMatter (Not Identified)	Litter/Dry Matter (Not Identified)	Litter (Not Identified)	Litter/Bare (Not Identified)	Clover	Bare	Sheep Dung	Cattle Dung	Total Ranking and 100% Check	% Clover	% Bare
102	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	2
	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	15
	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1
105	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	0	0	0	1
202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	1	77	25	5
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	1	100	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
204	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	6	0	0	68	0	0
	0	0	0	0	0	0	0	0	0	0	5	0	0	13	0	9	0	0	100	2	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
261	0	0	0	0	0	0	0	0	0	0	11	0	0	0	2	0	0	1	79	40	0
	0	0	0	0	0	0	0	0	0	0	14	0	0	0	3	0	0	1	100	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0

Site																			
Sub	5	27	22	4	4	12	7	27	0	14	402	15	0	67	34	292	0	80	2397
Sub	22	0	0	0	0	0	37	15	1	0	138	0	0	38	14	201	12	35	1700
Tota	1	1	1	0	0	0	1	1	0	0	13	0	0	3	1	12	0	3	100
	Total Ranking and 100% Check																		
	% Clover																		
	% Bare																		

Sample Number	Adcock Name	Sample Name	Depth To	pH - Water	pH - CaCl	ic Carbon (C) %	ductivity (EC) dS/m	ous - Bray (P) mg/kg	itrogen (NO3) mg/kg	itrogen (NH4) mg/kg	ur - KCl (S) %	itrogen (N) %	change Capacity ECEC meg/100g	Aluminium (Al) mg/100g	pH _{Ca} cmol/kg.pH	pH _{Ca} tCaCO ₃ /ha.pH	pH _{Ca} tCaCO ₃ /ha.pH	pH _{Ca} tCaCO ₃ /ha.pH	Calcium (Ca) meg/100g	Magnesium (Mg) meg/100g	Sodium (Na) meg/100g	Potassium (K) meg/100g	Ca/Mg Ratio <1 favours clay dispersion	K/Mg Ratio	C/N Ratio	NH ₄ ⁺ -N/NO ₃ ⁻ -N Ratio	NO ₃ ⁻ -N/NH ₄ ⁺ -N Ratio	Base Saturation %	ESP % <5 non sodic	Chloride (Cl) mg/kg	Visual Lime	Carbonate %
10149842	1	1.3AB	10	6.4	5.2	0.49	0.02	2.5	1	2.98	2.1	0.036	2.122	0.056	0.9	5.0	3.551	1.105	1.15	0.783	0.065	0.069	1.469	0.088	100	3	450	Control				
10149843	2	2.1AD	30	6.2	5.9	5.2	1.18	185	450	5.3	67	0.399	23.878	0.089	5.0	3.551	1.105	14.5	4.083	0.696	4.513	3.551	1.105	100	3	450	Control					
10149844	2	2.2AD	30	6.9	6.3	3.9	0.22	2.5	24	3.8	17	0.313	18.952	0.078	4.0	3.551	1.105	14	2.917	0.113	1.846	4.801	0.633	100	1	33	Control					
10149845	2	2.3AD	30	6.8	6.2	3.5	0.18	2.5	38	2.28	13	0.202	16.922	0.056	3.6	3.551	1.105	12.25	3.25	0.061	1.308	3.769	0.402	100	0	27	Control					
10147374	69	69.1	5	6.3	5.2	0.45	0.02	3	1	3.47	1.5	0.042	1.923	0.056	0.8	3.551	1.105	1.05	0.7	0.061	0.059	1.5	0.083	97	3	8	Control					
10147375	69	69.1	10	6.4	5.3	0.44	0.02	3	1	3.39	1.4	0.039	2.086	0.056	0.8	3.551	1.105	1.15	0.75	0.065	0.067	1.533	0.088	97	3	10	Control					
10147376	69	69.2	5	6.2	5.1	0.36	0.02	3	1	3.49	1.3	0.045	1.856	0.056	0.8	3.551	1.105	1	0.683	0.061	0.059	1.464	0.085	97	3	10	Control					
10147377	69	69.2	10	6.3	5.3	0.43	0.02	3	1	2.92	1.4	0.041	1.947	0.056	0.8	3.551	1.105	1.05	0.717	0.061	0.067	1.466	0.092	97	3	8	Control					
10149310	37	37.1A	5	6.2	5.4	0.47	0.02	2.5	1	4	1	0.034	2.146	0.1	0.9	3.551	1.105	1.1	0.792	0.074	0.082	1.391	0.104	95	3	6						
10149311	37	37.1B	10	8.3	7.3	0.22	0.1	2.5	18	1	2	0.03	14.183	0.089	1.7	3.551	1.105	3.35	7.667	2.957	0.123	0.437	0.016	99	21	10	No Reaction					
10149312	37	37.2A	5	6.2	5.4	0.42	0.02	2.5	1	3.96	1.1	0.031	2.098	0.089	0.8	3.551	1.105	1.1	0.758	0.074	0.079	1.451	0.104	96	4	6						
10149313	37	37.2B	10	8.3	7.2	0.22	0.11	2.5	20	1.01	2.2	0.03	14.649	0.111	1.7	3.551	1.105	3.45	7.833	3.13	0.126	0.44	0.016	99	21	11	No Reaction					
10149894	57	57.1AB	10	5.4	4.6	2.5	0.09	6	30	2.77	4.2	0.15	4.009	0.133	2.1	3.551	1.105	2.5	1.083	0.087	0.208	2.308	0.191	97	2	19	Control					
10149895	57	57.2AB	10	5.5	4.6	2.2	0.08	28	24	19	5.9	0.154	2.88	0.178	1.8	3.551	1.105	1.7	0.75	0.043	0.21	2.267	0.28	94	1	75	Control					
10149896	57	57.3AB	10	6.3	5.2	0.56	0.02	3	1	3.23	1.2	0.04	2.208	0.056	0.9	3.551	1.105	1.2	0.808	0.07	0.077	1.485	0.094	98	3	5	Control					
10318971	9	9.1A	0	6.9	5.9	0.77	0.05	2.5	6.9	12	4.1	0.057	28.628	0.144	3.1	3.551	1.105	13.5	14.5	0.4	0.085	0.931	0.006	100	1	9	Control					
10318972	9	9.1B	0	6.4	5.1	0.28	0.02	2.5	1.1	2.98	1.2	0.036	1.951	0.1	0.7	3.551	1.105	1	0.725	0.061	0.067	1.379	0.091	95	3	9	Control					
10318973	9	9.2A	0	7	5.9	0.75	0.05	2.5	6.7	12	3.8	0.051	29.244	0.189	3.1	3.551	1.105	13.75	14.833	0.391	0.082	0.927	0.006	99	1	10	No Reaction					
10318974	9	9.2B	0	6.4	5.1	0.45	0.02	2.5	1.1	2.82	1.3	0.037	2.301	0.078	0.9	3.551	1.105	1.2	0.875	0.074	0.077	1.371	0.087	97	3	7	Control					
10149945	21	21.1AB	10	6.1	5.2	4	0.12	10	1	8.77	5	0.213	36.659	0.111	5.4	3.551	1.105	20.5	14.833	0.139	1.077	1.382	0.073	100	0	18	Control					
10149946	21	21.2AB	10	6.1	5.6	2.2	0.15	50	14	6.22	26	0.151	35.156	0.1	4.3	3.551	1.105	20.5	13.833	0.135	0.59	1.482	0.043	100	0	12	Control					
10149947	21	21.3AB	10	6.3	5.7	6.1	0.31	16	7.3	16	11	0.318	44.718	0.111	7.1	3.551	1.105	25	17.917	0.204	1.487	1.395	0.083	100	0	26	Control					



Fixed term	1 pH water	2 pH CaCl2	3 EC	4 Phos	5 S KCl	6 NO3	7 NH4	8 Tot N%	9 Cl	10 OC%	11 pHBC	12 CEC	13 Al	14 Ca	15 Mg	16 Na	17 K
SoilType	0.003	0.004	<0.001	0.611	0.325	0.94	<0.001	<0.001	0.209	<0.001	<0.001	<0.001	0.361	<0.001	<0.001	<0.001	<0.001
MgtType	<0.001	0.574	<0.001	0.328	<0.001	<0.001	0.447	<0.001	0.009	0.3	0.541	0.265	0.514	0.193	0.164	0.506	0.292
SoilType.MgtType	0.528	0.194	0.083	0.053	0.817	0.65	0.06	<0.001	0.746	0.356	0.46	0.244	0.108	0.479	<0.001	0.115	0.84
Depth	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Depth.MgtType	0.992	0.85	0.028	<0.001	0.117	<0.001	0.001	<0.001	0.701	0.28	0.249	0.986	0.621	0.056	0.326	0.904	0.029
Depth.SoilType	0.004	<0.001	<0.001	0.862	0.081	0.993	0.052	<0.001	0.031	0.137	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Depth.SoilType.MgtType	0.913	0.684	0.133	0.494	0.95	0.996	0.024	0.954	0.998	0.791	0.489	0.564	0.949	0.581	0.292	0.949	0.017

Paddocks 2 and 3 were interchanged to facilitate discussion of results and analysis.

* EC (dS m^{-1}) values are to two decimal places to keep same format as Time 0 and Time 13 from Incitec's Gibson Island laboratory. Three decimal places adv

Paddock	Block	Depth (cm)	Soil ID	Sample	Time 0					Time 1					pH _{Ca}
					pH _{Ca}	pH _W	EC (dS m^{-1})	NH ₄ ⁺ -N (mg kg^{-1})	NO ₃ ⁻ -N (mg kg^{-1})	pH _{Ca}	pH _W	EC * (dS m^{-1})	NH ₄ ⁺ -N (mg kg^{-1})	NO ₃ ⁻ -N (mg kg^{-1})	
					Paddock 1					Paddock 1					Paddock
1	1	0-5	11A	1	4.7	5.6	0.06	9.0	1	4.8	5.7	0.30	4.3	0	4.9
		5-10	11B	2	4.6	5.6	0.03	5.0	1	4.7	5.6	0.09	2.9	0	4.7
		10-20	11C	3	4.9	6.0	0.06	4.0	1	4.8	5.9	0.05	2.2	0	4.8
		20-30	11D	4	4.9	6.0	0.02	4.0	1	4.9	6.2	0.01	0.7	0	4.9
		30-40	11E	5	4.8	6.4	0.02	3.0	1	5.0	6.8	0.02	0.4	0	5.0
		40-50	11F	6	4.9	6.5	0.03	4.0	0	5.1	7.0	0.04	0.4	0	5.1
1	2	0-5	12A	7	5.0	5.9	0.04	9.0	1	4.7	5.8	0.05	3.5	1	5.0
		5-10	12B	8	4.7	5.8	0.02	4.0	0	4.6	5.8	0.03	3.5	0	4.8
		10-20	12C	9	4.8	6.0	0.02	3.0	0	4.7	6.0	0.02	1.4	0	4.9
		20-30	12D	10	5.0	6.2	0.01	3.0	0	4.8	6.3	0.01	0.7	0	5.0
		30-40	12E	11	5.1	6.7	0.02	5.0	0	4.8	6.7	0.02	0.5	0	5.0
		40-50	12F	12	5.3	6.8	0.02	5.0	1	4.9	6.8	0.03	0.7	0	5.1
1	3	0-5	13A	13	5.2	6.1	0.03	11.0	1	4.9	5.9	0.04	8.1	1	5.0
		5-10	13B	14	4.9	5.9	0.02	7.0	0	4.8	5.9	0.04	3.3	0	4.8
		10-20	13C	15	4.9	6.2	0.01	5.0	0	4.8	5.8	0.03	1.9	0	4.9
		20-30	13D	16	5.0	6.3	0.01	3.0	1	4.9	6.0	0.02	0.7	0	5.0
		30-40	13E	17	5.1	6.6	0.01	2.0	0	4.9	6.4	0.03	0.8	0	5.0
		40-50	13F	18	5.2	6.7	0.03	4.0	0	4.9	6.7	0.03	1.0	0	5.1
1	4	0-5	14A	19	5.0	6.0	0.05	7.0	0	4.9	6.0	0.04	2.7	1	5.0
		5-10	14B	20	4.6	5.8	0.02	5.0	0	4.8	5.9	0.03	2.8	0	4.8
		10-20	14C	21	4.8	6.0	0.01	5.0	1	4.8	6.2	0.02	1.4	0	4.9
		20-30	14D	22	4.9	6.2	0.01	4.0	1	5.0	6.5	0.01	0.7	0	5.1
		30-40	14E	23	5.0	6.5	0.01	4.0	1	5.1	6.8	0.02	0.7	0	5.1
		40-50	14F	24	5.1	6.7	0.02	7.0	1	4.9	6.7	0.03	0.8	0	5.2
					Paddock 2					Paddock 2					Paddock
2	1	0-5	31A	49	4.9	5.9	0.03	5.0	1	4.9	6.0	0.05	5.0	0	4.9
		5-10	31B	50	4.8	5.9	0.02	5.0	0	4.7	5.7	0.03	1.7	0	4.8
		10-20	31C	51	4.8	5.9	0.01	2.0	0	4.9	6.0	0.02	2.6	0	5.0
		20-30	31D	52	5.1	6.2	0.01	2.0	0	5.1	6.3	0.01	0.4	0	5.1

		30-40	31E	53	5.3	6.4	0.01	2.0	0	5.2	6.5	0.01	0.3	0	5.2
		40-50	31F	54	5.4	6.6	0.01	2.0	0	5.2	6.9	0.01	0.2	0	5.2
2	2	0-5	32A	55	5.0	5.8	0.05	7.0	0	4.7	5.8	0.03	4.6	0	4.9
		5-10	32B	56	4.8	5.6	0.08	5.0	0	4.7	5.9	0.02	1.7	0	4.7
		10-20	32C	57	4.9	6.0	0.01	3.0	0	4.9	6.1	0.01	0.8	0	4.9
		20-30	32D	58	5.2	6.4	0.01	6.0	1	5.2	6.3	0.01	0.4	0	5.1
		30-40	32E	59	5.3	6.4	0.01	2.0	0	5.3	6.5	0.01	0.2	0	5.2
		40-50	32F	60	5.4	6.5	0.01	2.0	0	5.4	6.7	0.01	0.2	0	5.3
2	3	0-5	33A	61	4.8	5.7	0.05	3.0	0	4.9	6.5	0.04	6.0	0	5.0
		5-10	33B	62	4.8	5.8	0.02	3.0	0	4.8	5.9	0.03	2.4	0	4.9
		10-20	33C	63	5.0	6.1	0.01	2.0	0	5.0	6.1	0.02	4.0	0	5.0
		20-30	33D	64	5.1	6.3	0.01	2.0	0	5.2	6.5	0.01	1.0	0	5.2
		30-40	33E	65	5.3	6.5	0.01	2.0	0	5.3	6.6	0.01	0.4	0	5.3
		40-50	33F	66	5.5	6.6	0.01	2.0	0	5.3	6.8	0.01	0.3	0	5.4
2	4	0-5	34A	67	5.0	5.9	0.05	11.0	0	5.0	6.0	0.06	2.8	0	5.0
		5-10	34B	68	5.0	6.0	0.02	2.0	0	4.9	5.9	0.04	1.7	0	4.9
		10-20	34C	69	5.0	6.1	0.01	2.0	0	5.1	6.1	0.02	1.0	0	4.9
		20-30	34D	70	5.2	6.4	0.01	2.0	0	5.2	6.5	0.01	0.5	0	5.1
		30-40	34E	71	5.3	6.5	0.01	2.0	0	5.3	6.6	0.01	0.4	0	5.3
		40-50	34F	72	5.5	6.6	0.01	2.0	0	5.4	6.7	0.01	0.3	0	5.4
					Paddock 3					Paddock 3					Paddock
3	1	0-5	21A	25	5.0	6.1	0.02	7.0	0	4.9	6.1	0.03	4.0	0	5.0
		5-10	21B	26	4.8	5.9	0.01	4.0	0	4.9	6.0	0.02	1.5	0	4.9
		10-20	21C	27	4.9	6.1	0.01	3.0	0	4.9	6.1	0.02	1.3	0	5.0
		20-30	21D	28	5.1	6.3	0.01	2.0	0	5.0	6.3	0.01	0.8	0	5.1
		30-40	21E	29	5.2	6.4	0.01	2.0	0	5.1	6.5	0.01	0.3	0	5.2
		40-50	21F	30	5.2	6.4	0.01	2.0	1	5.1	6.5	0.01	0.3	0	5.3
3	2	0-5	22A	31	4.9	6.1	0.02	9.0	0	5.0	6.1	0.02	3.7	0	5.1
		5-10	22B	32	4.8	5.9	0.02	7.0	0	4.9	6.0	0.02	4.6	0	5.0
		10-20	22C	33	4.9	6.0	0.01	4.0	0	5.0	6.2	0.01	1.1	0	5.1
		20-30	22D	34	5.1	6.3	0.01	4.0	0	5.1	6.4	0.01	0.6	0	5.1
		30-40	22E	35	5.2	6.4	0.01	4.0	0	5.2	6.4	0.01	0.7	0	5.2
		40-50	22F	36	5.3	6.5	0.01	2.0	0	5.2	6.6	0.01	0.4	0	5.3
3	3	0-5	23A	37	5.1	6.3	0.02	4.0	0	4.9	6.0	0.02	2.6	0	5.0
		5-10	23B	38	5.0	6.3	0.01	6.0	0	4.8	6.1	0.02	1.2	0	4.9

3	4	10-20	23C	39	5.2	6.4	0.01	2.0	0	4.9	6.2	0.01	0.9	0	5.0
		20-30	23D	40	5.2	6.4	0.01	2.0	0	4.9	6.3	0.01	0.5	0	5.0
		30-40	23E	41	5.4	6.4	0.01	2.0	0	5.1	6.5	0.01	0.3	0	5.2
		40-50	23F	42	5.4	6.5	0.01	3.0	0	5.2	5.6	0.01	0.2	0	5.2
		0-5	24A	43	5.0	6.0	0.02	4.0	0	4.9	6.1	0.02	2.8	0	4.9
		5-10	24B	44	4.8	6.0	0.01	4.0	0	4.8	6.0	0.02	1.4	0	4.8
		10-20	24C	45	4.9	6.1	0.01	2.0	0	4.8	6.1	0.01	0.8	0	5.0
		20-30	24D	46	5.1	6.2	0.01	2.0	0	5.0	6.3	0.01	0.5	0	5.1
		30-40	24E	47	5.2	6.4	0.01	2.0	0	5.1	6.5	0.01	0.4	0	5.1
		40-50	24F	48	5.3	6.4	0.01	2.0	0	5.1	6.5	0.01	0.3	0	5.2
Paddock 4															
4	1	0-5	41A	73	5.2	6.1	0.02	4.0	1	5.0	6.0	0.04	4.7	0	5.0
		5-10	41B	74	5.0	6.1	0.02	6.0	1	4.9	6.1	0.02	2.6	0	4.9
		10-20	41C	75	5.2	6.3	0.01	2.0	0	4.9	6.2	0.02	1.4	0	4.9
		20-30	41D	76	5.2	6.5	0.02	3.0	0	5.1	6.4	0.02	0.9	0	6.0
		30-40	41E	77	5.3	6.7	0.02	2.0	0	5.3	6.7	0.02	0.5	0	5.1
		40-50	41F	78	5.7	6.9	0.02	2.0	0	5.5	7.0	0.02	0.3	0	5.6
4	2	0-5	42A	79	4.9	5.9	0.03	2.0	1	5.0	6.1	0.04	4.9	0	5.1
		5-10	42B	80	4.8	5.9	0.02	4.0	0	5.0	6.1	0.02	2.2	0	5.0
		10-20	42C	81	5.0	6.2	0.01	3.0	0	5.2	6.3	0.02	1.3	0	5.0
		20-30	42D	82	5.1	6.5	0.02	2.0	0	5.2	6.6	0.02	1.0	0	5.0
		30-40	42E	83	5.3	6.6	0.01	2.0	1	5.3	6.8	0.02	1.0	0	5.1
		40-50	42F	84	5.4	7.0	0.02	2.0	0	5.4	6.9	0.02	0.8	0	5.3
4	3	0-5	43A	85	5.0	6.0	0.03	6.0	1	5.3	6.2	0.04	5.9	1	5.2
		5-10	43B	86	4.9	6.0	0.02	4.0	0	5.2	6.3	0.03	2.9	0	5.1
		10-20	43C	87	5.0	6.2	0.01	2.0	0	5.2	6.4	0.02	1.6	0	5.1
		20-30	43D	88	5.1	6.5	0.01	2.0	0	5.3	6.6	0.01	0.9	0	5.2
		30-40	43E	89	5.3	6.6	0.02	2.0	0	5.4	6.8	0.02	0.8	0	5.2
		40-50	43F	90	5.5	7.0	0.02	2.0	0	5.6	6.9	0.02	0.8	0	5.5
4	4	0-5	44A	91	5.2	6.3	0.02	7.0	1	5.2	6.2	0.04	5.7	0	5.2
		5-10	44B	92	5.0	6.2	0.02	3.0	0	5.1	6.2	0.03	3.3	0	5.0
		10-20	44C	93	5.1	6.3	0.01	2.0	0	5.2	6.4	0.02	1.9	0	5.1
		20-30	44D	94	5.2	6.6	0.01	2.0	0	5.3	6.6	0.01	0.8	0	5.2
		30-40	44E	95	5.2	6.8	0.02	2.0	0	5.3	6.7	0.02	0.9	0	5.1
		40-50	44F	96	5.3	6.8	0.02	3.0	0	5.4	6.9	0.02	0.9	0	5.1

		Paddock 5								Paddock 5					Paddock
5	1	0-5	51A	97	5.9	6.6	0.04	5.0	1	5.8	6.5	0.07	2.8	1	5.6
		5-10	51B	98	5.5	6.4	0.03	2.0	1	6.0	6.7	0.04	2.9	1	5.5
		10-20	51C	99	5.7	6.6	0.02	2.0	1	6.0	6.9	0.03	1.0	1	5.7
		20-30	51D	100	5.9	7.0	0.01	2.0	0	6.1	7.1	0.02	0.6	0	5.9
		30-40	51E	101	6.2	7.2	0.01	2.0	0	5.9	6.9	0.02	0.8	0	5.9
		40-50	51F	102	5.9	7.0	0.03	2.0	0	6.1	7.1	0.02	0.5	0	6.2
5	2	0-5	52A	103	5.7	6.4	0.05	6.0	4	5.8	6.5	0.08	5.4	3	5.7
		5-10	52B	104	5.8	6.6	0.03	5.0	2	5.8	6.7	0.05	3.7	1	5.7
		10-20	52C	105	5.9	6.8	0.02	2.0	1	6.0	6.9	0.03	1.7	1	5.9
		20-30	52D	106	6.1	7.1	0.02	2.0	1	6.1	7.0	0.03	1.2	0	6.0
		30-40	52E	107	6.0	7.0	0.02	2.0	0	6.2	7.1	0.03	0.6	0	6.0
		40-50	52F	108	6.4	7.5	0.02	2.0	0	6.3	7.2	0.03	0.4	0	6.1
5	3	0-5	53A	109	5.4	6.3	0.06	6.0	3	5.8	6.5	0.10	6.1	9	5.7
		5-10	53B	110	5.5	6.4	0.04	6.0	1	6.0	6.7	0.07	3.7	3	5.7
		10-20	53C	111	5.7	6.6	0.02	2.0	1	6.1	7.0	0.05	1.4	0	5.7
		20-30	53D	112	5.9	6.9	0.02	2.0	0	6.4	7.2	0.03	0.7	0	5.8
		30-40	53E	113	6.0	6.9	0.02	2.0	0	6.4	7.3	0.02	0.6	0	5.9
		40-50	53F	114	6.1	7.0	0.04	4.0	1	5.9	7.1	0.04	0.7	0	5.6
5	4	0-5	54A	115	5.6	6.5	0.05	5.0	2	5.8	6.6	0.08	3.8	2	5.4
		5-10	54B	116	5.5	6.5	0.03	2.0	1	5.8	6.7	0.05	2.2	1	5.4
		10-20	54C	117	5.6	6.7	0.02	2.0	1	5.8	6.8	0.04	1.3	0	5.6
		20-30	54D	118	5.8	6.9	0.01	2.0	1	5.9	6.9	0.03	0.7	0	5.8
		30-40	54E	119	5.8	7.0	0.01	2.0	0	6.0	7.1	0.02	0.6	0	5.7
		40-50	54F	120	5.6	6.8	0.02	2.0	0	6.0	7.1	0.02	0.4	0	5.7

ocated by Green Book.

Time 2				Time 3					Time 4						
pH _W	EC *	NH ₄ ⁺ -N	NO ₃ ⁻ -N	pH _{Ca}	pH _W	EC *	NH ₄ ⁺ -N	NO ₃ ⁻ -N	pH _{Ca}	pH _W	EC *	NH ₄ ⁺ -N	NO ₃ ⁻ -N	pH _{Ca}	pH _W
(dS m ⁻¹)	(mg kg ⁻¹)	(mg kg ⁻¹)	(mg kg ⁻¹)			(dS m ⁻¹)	(mg kg ⁻¹)	(mg kg ⁻¹)			(dS m ⁻¹)	(mg kg ⁻¹)	(mg kg ⁻¹)		
1				Paddock 1					Paddock 1					Paddock 1	
5.7	0.07	5.5	0	4.9	5.9	0.06	1.8	4	5.0	5.8	0.10	2.6	3	4.7	5.7
5.7	0.04	5.1	0	4.8	5.8	0.03	2.9	0	4.9	5.6	0.06	4.1	0	4.8	5.9
5.9	0.03	1.5	0	4.9	5.9	0.03	1.4	0	4.9	5.8	0.03	4.4	1	4.9	6.1
6.2	0.02	0.6	0	5.0	6.2	0.02	0.8	0	4.9	6.1	0.02	0.5	1	5.1	6.3
6.7	0.02	0.5	0	5.0	6.6	0.02	0.4	0	5.0	6.7	0.03	0.7	0	5.1	6.8
6.8	0.04	0.9	0	5.2	6.8	0.04	1.7	0	5.2	6.8	0.04	1.3	0	5.2	6.6
5.8	0.11	5.2	1	5.1	5.9	0.07	3.1	3	5.0	5.9	0.05	2.9	1	4.9	5.8
5.8	0.05	2.0	0	4.8	5.8	0.03	1.9	0	4.7	5.8	0.03	2.6	0	4.7	5.9
5.9	0.04	1.3	0	4.9	5.9	0.02	3.5	0	4.8	5.9	0.02	1.8	0	4.9	6.0
6.2	0.03	0.9	0	5.0	5.2	0.02	0.6	0	4.9	6.1	0.02	1.0	0	4.9	6.3
6.6	0.03	0.9	0	5.0	6.7	0.02	0.7	0	5.0	6.8	0.04	0.7	0	5.0	6.7
6.8	0.05	0.9	0	5.2	6.8	0.03	0.6	0	5.2	6.9	0.04	12.1	0	5.2	6.9
5.9	0.05	2.4	0	5.1	5.8	0.09	3.8	3	5.0	6.0	0.04	2.8	2	4.8	5.8
5.9	0.04	1.8	0	4.9	5.9	0.03	4.9	0	4.8	5.9	0.03	3.1	0	4.8	6.0
6.0	0.02	1.2	0	5.0	6.1	0.02	1.4	1	4.9	6.1	0.02	1.4	0	4.9	6.2
6.3	0.02	0.6	0	5.1	6.5	0.01	0.4	0	5.0	6.4	0.02	0.6	0	4.9	6.6
6.7	0.03	0.9	0	5.1	6.7	0.03	1.2	0	5.0	6.7	0.03	0.8	0	4.9	6.7
6.8	0.04	0.9	0	5.3	6.7	0.03	1.8	0	5.1	6.7	0.04	0.9	0	5.1	6.8
5.9	0.07	2.9	0	5.1	5.9	0.05	3.0	4	4.9	5.8	0.06	5.6	1	4.7	5.8
5.8	0.06	2.9	0	4.8	5.9	0.03	3.4	0	4.7	5.8	0.03	2.8	0	4.6	5.9
6.3	0.03	3.1	0	4.9	6.0	0.03	9.5	0	4.9	6.0	0.03	1.2	1	4.9	6.0
6.6	0.02	0.7	0	4.9	6.2	0.02	0.6	0	4.9	6.4	0.02	0.6	0	5.0	6.6
6.7	0.04	3.3	0	4.9	6.6	0.02	0.5	0	5.0	6.5	0.03	1.0	0	5.1	6.7
6.7	0.04	1.1	0	5.0	6.6	0.03	0.9	0	5.0	6.6	0.03	1.6	0	5.1	6.8
2				Paddock 2					Paddock 2					Paddock 2	
5.9	0.05	5.9	0	4.9	6.1	0.05	5.1	0	5.0	5.8	0.11	14.4	0	5.0	6.1
5.8	0.03	2.6	0	4.8	6.0	0.02	2.2	0	4.9	6.0	0.03	3.0	0	4.9	6.1
6.0	0.02	1.3	0	4.9	6.2	0.02	0.9	0	5.0	6.2	0.02	1.9	0	5.1	6.3
6.3	0.02	0.8	0	5.1	6.2	0.01	0.4	0	5.1	6.3	0.01	1.2	0	5.2	6.3

6.3	0.01	1.0	0	5.3	6.4	0.02	0.3	0	5.2	6.4	0.01	0.8	0	5.3	6.4
6.5	0.01	0.5	0	5.3	6.6	0.01	0.2	0	5.2	6.7	0.02	1.2	0	5.4	6.9
5.9	0.05	5.9	0	4.9	6.0	0.04	3.6	0	4.9	6.8	0.07	1.3	0	5.0	6.1
5.8	0.03	2.0	0	4.9	6.0	0.02	2.5	0	4.8	5.8	0.03	2.5	0	5.0	6.1
6.0	0.02	1.0	0	5.0	6.1	0.02	0.9	0	5.0	6.1	0.02	2.0	0	5.1	6.3
6.3	0.02	0.5	0	5.1	6.9	0.01	0.3	0	5.1	6.3	0.01	0.8	0	5.3	6.4
6.5	0.01	0.3	0	5.2	6.3	0.01	0.1	0	5.2	6.2	0.02	0.6	0	5.4	6.4
6.5	0.01	0.3	0	5.3	6.6	0.01	0.1	0	5.2	6.4	0.01	0.4	0	5.4	6.5
6.0	0.07	5.4	0	4.9	6.1	0.05	4.3	0	5.0	5.9	0.03	4.9	0	5.0	6.0
5.9	0.04	5.0	0	4.8	5.9	0.02	1.2	0	4.8	5.9	0.03	2.2	0	5.0	6.1
6.1	0.02	1.3	0	5.0	6.3	0.02	0.7	0	5.0	6.1	0.01	0.9	0	5.1	6.3
6.3	0.02	0.7	0	5.3	6.3	0.01	0.1	0	5.2	6.3	0.01	0.3	0	5.3	6.5
6.5	0.01	0.4	0	5.3	6.5	0.02	0.0	0	5.3	6.4	0.01	0.2	0	5.4	6.6
6.7	0.01	0.2	0	5.4	6.7	0.02	0.0	0	5.3	6.4	0.01	0.2	0	5.5	6.7
5.8	0.06	3.8	0	5.1	5.9	0.05	4.6	0	4.9	5.9	0.04	3.5	0	5.1	5.9
5.9	0.03	2.0	0	5.0	6.0	0.02	4.2	0	4.8	5.9	0.02	3.0	0	5.0	6.0
6.0	0.03	0.9	0	5.2	6.4	0.02	1.2	1	5.0	6.1	0.02	1.4	0	5.1	6.3
6.3	0.01	0.5	0	5.4	6.6	0.01	0.2	0	5.2	6.3	0.01	1.3	0	5.3	6.5
6.5	0.01	0.9	0	5.5	6.4	0.01	0.1	0	5.3	6.6	0.01	2.8	0	5.4	6.5
5.7	0.01	0.8	0	5.5	6.7	0.03	0.6	0	5.4	6.5	0.01	1.0	0	5.5	6.6

3

Paddock 3

Paddock 3

Paddock 3

6.1	0.03	3.3	0	4.9	6.0	0.02	3.7	0	5.0	6.1	0.03	3.0	0	4.9	6.1
6.0	0.03	1.9	0	4.9	6.0	0.02	1.4	0	4.9	6.1	0.02	1.6	0	4.8	6.1
6.1	0.02	1.1	0	4.9	6.0	0.01	1.1	0	5.0	6.2	0.01	1.0	0	4.9	6.2
6.3	0.01	0.6	0	5.0	6.2	0.01	0.4	0	5.1	6.4	0.01	0.5	0	5.0	6.4
6.4	0.01	0.6	0	5.1	6.3	0.01	0.3	0	5.1	6.4	0.01	0.3	0	5.0	6.4
6.5	0.01	0.4	0	5.1	6.4	0.01	0.3	1	5.1	6.4	0.01	0.1	0	5.1	6.5
6.1	0.03	3.8	0	5.0	5.9	0.03	4.1	1	5.0	6.1	0.03	4.8	0	4.9	6.1
6.1	0.02	1.7	0	5.0	6.1	0.02	1.6	0	4.9	6.1	0.02	2.4	0	5.0	6.2
6.2	0.02	4.5	0	5.1	6.2	0.01	0.9	0	5.0	6.2	0.01	6.7	0	5.0	6.2
6.3	0.01	0.6	0	5.1	6.3	0.01	0.4	0	5.1	6.4	0.01	1.8	0	5.1	6.4
6.4	0.01	0.4	0	5.1	6.3	0.01	0.3	0	5.2	6.4	0.01	2.3	0	5.1	6.4
6.5	0.01	0.3	0	5.2	6.4	0.01	0.2	0	5.3	6.5	0.01	0.1	0	5.1	6.5
6.0	0.03	3.1	0	5.1	6.1	0.03	3.0	0	5.1	6.1	0.03	3.2	0	5.1	6.2
6.0	0.03	1.8	0	5.0	6.1	0.02	1.3	0	4.9	6.1	0.02	1.7	0	5.0	6.3

6.1	0.02	1.0	0	5.0	6.1	0.01	0.7	0	5.0	6.3	0.01	1.1	0	5.0	6.4
6.2	0.01	0.6	0	5.0	6.2	0.01	0.4	0	5.2	6.4	0.01	0.6	0	5.2	6.5
6.3	0.01	0.4	0	6.8	6.4	0.01	0.3	0	5.1	6.3	0.01	0.3	0	5.4	6.8
6.6	0.01	0.4	0	6.0	6.5	0.01	0.3	0	5.3	6.4	0.01	0.2	0	5.5	7.1
6.0	0.03	3.5	0	5.2	6.3	0.02	1.8	0	5.0	6.1	0.02	3.0	0	5.1	6.4
6.0	0.02	1.3	0	4.9	6.1	0.02	1.4	0	4.8	6.0	0.02	2.2	0	5.2	6.5
6.1	0.02	6.2	0	5.0	6.1	0.01	0.8	0	4.9	6.2	0.01	1.1	0	5.2	6.6
6.2	0.01	0.5	0	5.2	6.4	0.01	0.4	0	5.1	6.4	0.01	0.6	0	5.3	6.6
6.4	0.01	0.8	0	5.3	6.5	0.01	0.3	0	5.2	6.5	0.01	0.3	0	5.4	6.7
6.5	0.01	0.4	0	5.3	6.7	0.01	0.2	0	5.2	6.5	0.01	0.4	0	5.4	6.7
4				Paddock 4					Paddock 4					Paddock 4	
6.0	0.04	4.6	0	5.0	6.1	0.03	3.8	0	5.1	6.1	0.05	4.8	0	5.2	6.2
6.0	0.03	5.1	0	4.9	5.9	0.03	3.3	0	5.0	6.2	0.03	4.9	0	5.0	6.2
6.1	0.02	1.4	0	4.9	6.2	0.02	2.1	0	5.0	6.3	0.02	2.7	2	5.1	6.4
6.5	0.02	1.0	0	5.1	6.2	0.02	0.6	0	5.1	6.6	0.02	1.3	0	5.2	6.6
6.7	0.03	0.4	0	5.3	5.5	0.02	0.5	0	5.3	6.8	0.02	1.0	0	5.4	6.8
6.9	0.04	0.4	0	5.5	6.8	0.03	0.5	0	5.5	6.9	0.02	0.8	0	5.5	7.0
6.1	0.06	5.7	0	5.0	6.0	0.04	6.3	1	5.2	6.1	0.04	3.9	2	5.2	6.3
6.1	0.04	12.3	0	5.0	6.0	0.03	8.5	0	4.9	6.2	0.02	2.9	1	5.1	6.3
6.1	0.02	1.8	0	5.0	6.1	0.02	3.0	0	5.1	6.3	0.02	1.6	1	5.1	6.5
6.4	0.02	0.7	0	5.0	6.4	0.02	0.7	0	5.1	6.5	0.02	0.9	1	5.2	6.5
6.6	0.02	0.6	0	5.2	6.6	0.02	0.4	0	5.2	6.8	0.02	1.0	0	5.3	6.7
6.7	0.03	0.6	0	5.4	6.8	0.02	0.3	0	5.4	7.0	0.03	0.4	0	5.4	7.1
6.8	0.04	5.5	1	5.1	6.0	0.05	4.3	3	5.0	6.1	0.04	4.0	1	5.2	6.2
6.1	0.03	4.7	0	4.9	5.9	0.03	3.0	0	5.0	6.2	0.02	3.3	1	5.1	6.2
6.1	0.02	2.0	0	5.0	6.1	0.02	1.7	1	5.1	6.4	0.02	1.2	1	5.1	6.3
6.5	0.02	0.9	0	5.1	6.4	0.02	0.5	0	5.2	6.7	0.02	0.7	0	5.3	6.6
6.6	0.02	0.8	0	5.2	6.6	0.02	0.4	0	5.4	6.8	0.02	0.7	0	5.3	6.7
6.8	0.02	1.7	0	5.3	6.9	0.03	0.6	0	5.5	6.9	0.02	1.0	0	5.4	6.8
6.1	0.04	2.7	1	5.2	6.1	0.05	5.6	10	5.1	6.1	0.05	3.8	7	5.2	6.2
6.1	0.03	5.3	1	5.1	6.1	0.03	3.4	1	5.0	6.1	0.03	2.9	2	5.1	6.2
6.2	0.02	1.4	0	5.1	6.2	0.03	2.1	1	5.1	6.3	0.02	1.5	1	5.2	6.4
6.4	0.01	0.8	0	5.2	6.3	0.02	0.9	0	5.1	6.6	0.02	0.5	1	5.3	6.6
6.6	0.02	0.6	0	5.3	6.5	0.02	0.4	0	5.2	6.8	0.00	1.0	0	5.4	6.6
6.6	0.02	0.8	0	5.2	6.6	0.02	0.6	0	5.4	6.9	0.03	0.8	0	5.4	6.7

5				Paddock 5					Paddock 5					Paddock 5	
6.4	0.08	5.8	3	5.8	6.2	0.09	5.9	12	5.9	6.5	0.10	5.3	15	5.6	6.3
6.4	0.04	3.4	1	5.8	6.5	0.06	4.4	2	5.9	6.8	0.05	7.8	7	5.8	6.6
6.6	0.03	1.4	0	5.8	6.6	0.04	2.1	2	5.9	6.9	0.03	1.1	1	5.9	6.8
6.7	0.02	0.8	0	5.9	6.8	0.03	0.9	1	5.7	7.0	0.03	0.8	1	6.1	7.0
6.7	0.02	0.5	0	5.9	6.8	0.03	0.7	1	5.9	6.9	0.02	0.6	0	6.2	7.0
6.8	0.02	0.6	0	5.5	6.5	0.03	0.6	0	5.4	7.0	0.03	0.3	0	6.3	7.1
6.4	0.08	2.5	0	5.8	6.5	0.10	7.2	7	5.6	6.4	0.11	2.5	7	6.0	6.7
6.6	0.05	2.6	1	6.0	6.7	0.07	3.6	6	5.8	6.6	0.06	2.2	3	6.1	6.9
6.7	0.03	1.1	0	6.0	6.8	0.04	1.3	4	6.0	6.8	0.03	1.3	2	6.2	7.1
6.9	0.02	0.7	0	6.1	7.1	0.03	0.7	1	6.0	7.0	0.02	0.8	1	6.2	7.2
7.1	0.02	0.5	0	6.2	7.3	0.02	0.9	1	6.1	7.1	0.02	0.5	1	6.3	7.2
7.1	0.02	0.4	0	6.1	7.3	0.02	0.5	0	6.1	7.2	0.02	0.4	0	6.2	7.2
6.4	0.10	7.4	5	5.7	6.4	0.10	7.7	12	5.6	6.4	0.08	5.1	7	5.5	6.4
6.5	0.07	5.8	4	5.8	6.6	0.05	2.7	4	5.6	6.5	0.05	3.2	4	5.6	6.5
6.6	0.04	2.8	1	5.9	6.8	0.04	1.7	2	5.8	6.7	0.03	1.2	1	5.7	6.8
6.8	0.02	0.8	0	6.1	6.9	0.04	1.6	5	5.9	6.9	0.02	0.9	1	6.0	7.0
6.9	0.02	0.5	0	6.1	7.0	0.03	1.1	2	6.0	7.0	0.02	0.5	0	6.2	7.1
6.7	0.04	0.5	0	6.0	6.9	0.05	0.8	0	6.0	7.0	0.04	0.7	0	6.0	7.0
6.3	0.06	5.8	1	5.6	6.4	0.08	1.1	2	5.6	6.5	0.08	4.0	11	5.5	6.5
6.4	0.04	3.1	1	5.5	6.4	0.06	0.5	0	5.5	6.4	0.05	2.4	6	5.5	6.5
6.7	0.03	1.1	0	5.6	6.6	0.03	1.4	1	5.4	6.5	0.03	1.2	2	5.6	6.7
6.8	0.03	0.8	0	5.7	6.7	0.02	0.8	1	5.7	6.6	0.05	9.5	7	5.7	6.9
6.7	0.02	0.5	0	5.8	6.8	0.02	0.7	1	5.9	6.9	0.03	0.6	2	5.9	6.9
6.6	0.02	0.3	0	5.9	6.9	0.02	0.5	0	5.9	7.0	0.02	0.5	1	5.7	6.7

Time 5			Time 6					Time 7					Time 8		
EC *	NH ₄ ⁺ -N	NO ₃ ⁻ -N	pH _{Ca}	pH _W	EC *	NH ₄ ⁺ -N	NO ₃ ⁻ -N	pH _{Ca}	pH _W	EC *	NH ₄ ⁺ -N	NO ₃ ⁻ -N	pH _{Ca}	pH _W	EC *
(dS m ⁻¹)	(mg kg ⁻¹)	(mg kg ⁻¹)			(dS m ⁻¹)	(mg kg ⁻¹)	(mg kg ⁻¹)			(dS m ⁻¹)	(mg kg ⁻¹)	(mg kg ⁻¹)			(dS m ⁻¹)
			Paddock 1					Paddock 1					Paddock 1		
0.06	4.6	3	4.7	5.6	0.08	3.9	9	4.6	5.4	0.09	6.5	12	4.7	5.7	0.04
0.03	5.8	2	4.7	5.6	0.06	6.0	1	4.6	5.4	0.04	4.0	5	4.7	5.7	0.04
0.01	1.4	1	4.8	5.9	0.03	3.2	2	4.7	5.7	0.03	3.6	3	4.7	5.8	0.02
0.02	3.3	1	4.9	6.3	0.02	1.3	2	4.8	6.0	0.02	1.5	2	4.8	6.0	0.02
0.03	0.5	0	5.0	6.8	0.02	0.7	1	4.9	6.8	0.03	2.1	1	4.8	6.7	0.02
0.04	0.8	0	4.9	6.8	0.03	1.2	0	5.1	6.8	0.04	1.6	0	5.0	6.7	0.04
0.05	7.1	1	4.8	5.8	0.06	2.5	8	4.9	5.8	0.06	6.0	7	4.7	5.7	0.04
0.03	2.2	0	4.8	5.8	0.03	3.7	0	4.8	5.9	0.03	12.5	0	4.6	5.6	0.04
0.03	8.6	0	4.8	6.1	0.03	1.9	0	4.8	5.9	0.03	2.2	0	4.8	5.7	0.03
0.02	0.8	0	4.9	6.3	0.02	1.3	0	4.9	6.1	0.03	1.4	0	4.9	6.4	0.02
0.02	0.9	0	5.0	6.9	0.03	0.6	0	4.9	6.5	0.02	1.0	0	4.9	6.6	0.03
0.04	0.7	0	5.3	7.0	0.04	3.2	0	5.1	6.7	0.04	1.0	0	5.0	6.8	0.03
0.06	3.9	0	4.9	6.0	0.04	2.8	5	5.0	5.9	0.05	2.5	4	4.8	5.9	0.04
0.03	2.3	0	4.7	6.1	0.03	3.6	0	4.8	5.9	0.03	2.7	1	4.7	5.8	0.03
0.02	0.7	0	4.8	6.1	0.02	2.3	0	4.9	6.0	0.03	2.0	0	4.9	5.9	0.03
0.02	0.4	1	4.9	6.4	0.02	0.9	0	5.1	6.3	0.02	1.1	1	4.9	6.3	0.02
0.03	1.0	0	4.9	6.8	0.02	0.8	0	5.1	6.7	0.03	2.1	0	4.9	6.6	0.03
0.03	1.3	0	5.0	6.8	0.04	1.3	0	5.2	6.7	0.04	1.0	0	5.1	6.7	0.03
0.06	7.7	6	4.9	5.8	0.07	3.3	8	5.8	5.6	0.12	14.0	5	4.8	5.8	0.04
0.03	1.3	0	4.9	5.9	0.05	19.3	1	4.6	5.7	0.04	3.1	0	4.7	5.7	0.04
0.03	6.2	1	4.9	6.1	0.02	1.8	0	4.7	5.8	0.04	1.8	0	4.9	6.0	0.03
0.02	0.9	0	4.9	6.9	0.02	0.9	0	4.9	6.2	0.02	0.9	0	4.9	6.5	0.02
0.04	1.5	0	5.0	6.9	0.03	1.1	0	4.9	6.6	0.03	1.0	0	5.0	6.6	0.03
0.04	1.4	0	5.2	6.9	0.04	1.5	0	4.9	6.7	0.03	1.2	0	4.9	6.6	0.04
			Paddock 2					Paddock 2					Paddock 2		
0.04	3.4	1	4.8	5.8	0.06	6.4	0	4.8	5.7	0.05	4.1	0	4.8	5.9	0.03
0.02	2.0	0	4.7	6.0	0.02	3.2	1	4.7	5.9	0.02	2.4	0	4.7	5.9	0.02
0.01	0.8	0	4.9	6.3	0.01	1.3	0	4.8	6.0	0.02	1.2	1	4.9	6.4	0.02
0.01	0.2	0	5.0	6.3	0.01	0.4	2	5.0	6.1	0.01	0.6	0	5.1	6.4	0.01

0.02	0.1	0	5.2	6.6	0.01	0.4	0	5.1	6.4	0.01	0.4	0	5.2	6.4	0.01
0.02	0.1	0	5.3	6.7	0.01	0.4	0	5.2	6.5	0.01	0.4	0	5.2	6.5	0.01
0.05	13.8	1	5.0	6.0	0.04	4.3	3	4.9	5.9	0.04	9.2	0	4.8	5.8	0.04
0.03	2.4	0	4.8	6.1	0.02	3.1	1	4.8	5.9	0.02	2.0	0	4.7	5.8	0.02
0.02	1.5	0	5.0	6.2	0.02	1.2	2	4.9	6.0	0.02	1.3	0	4.8	6.0	0.02
0.02	1.0	0	5.1	6.4	0.01	0.5	0	5.2	6.2	0.02	1.3	0	5.0	6.2	0.01
0.04	0.8	0	5.2	6.6	0.01	0.4	0	5.2	6.4	0.01	0.4	0	5.2	6.3	0.01
0.02	0.6	0	5.3	6.9	0.01	0.5	0	5.3	6.5	0.01	0.3	0	5.2	6.7	0.01
0.04	3.9	0	4.9	6.0	0.06	5.7	0	5.0	5.9	0.04	5.7	2	4.7	5.7	0.03
0.02	3.7	1	4.9	5.9	0.03	4.0	0	4.8	5.9	0.02	3.5	1	4.7	5.8	0.02
0.02	1.7	1	5.0	6.0	0.02	1.9	1	4.9	6.0	0.01	1.4	0	5.0	6.1	0.02
0.01	0.2	0	5.2	6.2	0.01	2.2	1	5.1	6.2	0.01	0.8	0	5.2	6.1	0.02
0.01	0.6	0	5.3	6.4	0.01	0.6	0	5.2	6.3	0.01	0.7	0	5.2	6.3	0.01
0.01	0.2	0	5.5	6.6	0.01	0.3	0	5.3	6.3	0.01	0.7	0	5.4	6.5	0.01
0.06	3.5	0	5.0	5.8	0.07	5.5	14	4.9	5.8	0.03	4.2	0	5.9	5.8	0.04
0.04	2.1	0	5.1	6.0	0.03	3.8	1	4.8	5.7	0.02	2.3	0	4.8	5.8	0.03
0.01	1.1	0	5.3	6.1	0.02	1.4	1	4.9	5.9	0.02	2.0	0	5.0	6.0	0.02
0.01	0.5	0	5.4	6.4	0.01	0.7	0	5.0	6.1	0.01	1.0	0	5.1	6.2	0.01
0.01	0.3	0	5.5	6.7	0.01	0.5	0	5.2	6.3	0.01	1.4	0	5.3	6.4	0.01
0.01	1.0	0	5.5	6.9	0.01	0.5	0	5.3	6.4	0.01	0.3	0	5.3	6.5	0.01

Paddock 3

Paddock 3

Paddock 3

0.02	2.7	0	5.1	6.2	0.02	3.0	0	4.9	6.0	0.03	4.4	0	4.8	5.9	0.02
0.01	2.0	0	4.9	6.2	0.01	2.0	0	4.8	6.0	0.02	2.0	0	4.7	5.7	0.02
0.01	1.5	0	5.0	6.3	0.01	1.2	0	4.9	6.1	0.01	1.3	0	4.8	5.9	0.01
0.01	0.9	0	5.0	6.4	0.01	1.0	0	5.0	6.2	0.01	0.5	0	4.9	6.0	0.01
0.01	0.8	0	5.2	6.6	0.01	1.0	0	5.1	6.3	0.01	0.4	0	4.9	6.4	0.01
0.01	0.7	0	5.2	6.8	0.01	0.8	0	5.1	6.4	0.01	0.3	0	4.9	6.7	0.01
0.02	2.5	0	5.2	6.4	0.03	7.2	0	5.0	6.1	0.02	2.3	0	4.8	5.9	0.02
0.01	2.7	0	5.0	6.0	0.02	3.2	0	4.9	6.0	0.01	1.7	0	4.7	5.9	0.02
0.01	1.3	0	5.0	6.4	0.01	1.8	0	5.0	6.1	0.01	1.1	0	4.9	6.0	0.01
0.01	1.1	0	5.1	6.6	0.01	1.1	0	5.0	6.4	0.01	0.6	0	5.0	6.2	0.01
0.01	0.9	0	5.2	6.8	0.01	1.0	0	5.1	6.4	0.01	1.7	0	5.0	6.2	0.01
0.01	0.2	0	5.3	6.6	0.01	1.0	0	5.1	6.5	0.01	0.5	0	5.1	6.3	0.01
0.03	2.3	0	4.9	6.1	0.02	2.6	0	4.8	6.0	0.03	2.4	0	4.9	5.9	0.02
0.02	1.7	0	4.9	6.2	0.01	2.0	0	4.7	6.0	0.02	1.6	0	4.8	6.0	0.02

0.01	1.0	0	5.0	6.3	0.01	1.1	0	4.9	6.1	0.01	1.2	0	4.9	6.1	0.01
0.01	0.4	0	5.2	6.5	0.01	0.4	0	5.0	6.2	0.01	1.0	0	5.0	6.2	0.01
0.01	0.3	0	5.2	6.6	0.01	0.3	0	5.1	6.4	0.01	1.0	0	5.1	6.3	0.01
0.01	0.3	0	5.2	6.7	0.01	0.3	0	5.2	6.5	0.01	1.1	0	5.2	6.6	0.01
0.02	3.9	0	4.9	6.1	0.01	3.8	0	5.0	6.0	0.02	3.4	0	4.9	6.0	0.02
0.02	13.2	0	4.8	6.1	0.02	1.5	0	4.9	6.1	0.02	2.5	0	4.8	6.0	0.02
0.01	0.9	0	4.9	6.1	0.01	1.1	0	4.9	6.2	0.01	1.7	0	4.9	6.0	0.01
0.01	0.3	0	5.1	6.3	0.01	0.7	0	5.0	6.2	0.01	1.1	0	5.0	6.3	0.01
0.01	0.2	0	5.1	6.7	0.01	0.2	0	5.1	6.4	0.01	0.9	0	5.1	6.2	0.01
0.01	0.1	0	5.2	6.6	0.01	0.3	0	5.1	6.5	0.01	0.8	0	5.2	6.6	0.01

Paddock 4

Paddock 4

Paddock 4

0.04	15.6	4	5.1	6.0	0.04	5.3	5	5.0	5.9	0.04	4.2	2	4.9	5.9	0.03
0.02	3.1	1	4.9	6.1	0.02	3.2	0	4.9	5.9	0.03	5.0	0	4.8	6.0	0.02
0.01	1.7	1	5.0	6.2	0.02	1.9	0	4.9	6.1	0.02	1.4	0	4.9	6.2	0.02
0.02	1.3	0	5.2	6.4	0.01	0.7	0	5.1	6.5	0.03	1.2	0	5.1	6.5	0.02
0.02	1.0	0	5.3	6.7	0.01	0.5	0	5.2	6.7	0.03	0.5	0	5.1	6.7	0.02
0.02	0.9	0	5.5	6.8	0.03	0.6	0	5.5	6.9	0.03	0.4	0	5.3	6.8	0.03
0.04	5.6	1	5.1	6.0	0.04	3.8	5	5.1	5.9	0.06	7.9	8	5.0	6.0	0.04
0.02	3.2	0	5.0	6.0	0.03	3.5	1	4.9	6.0	0.03	4.5	1	4.9	6.0	0.02
0.02	1.6	1	5.0	6.2	0.02	5.1	3	5.1	6.2	0.02	2.1	0	4.9	6.3	0.02
0.01	1.0	1	5.0	5.6	0.02	0.8	0	5.2	6.5	0.02	1.9	1	5.0	6.5	0.02
0.01	0.7	0	5.1	6.7	0.02	0.9	0	5.3	6.7	0.02	0.7	0	5.2	6.7	0.02
0.02	1.1	0	5.3	6.9	0.02	0.8	0	5.5	6.8	0.03	0.7	0	5.3	6.8	0.03
0.05	11.8	5	5.2	6.0	0.05	8.3	8	5.1	6.0	0.05	6.2	4	5.1	6.1	0.04
0.03	3.9	2	5.0	6.2	0.03	4.2	4	4.9	5.9	0.03	4.7	2	5.0	6.2	0.02
0.02	2.1	3	5.1	6.4	0.02	1.9	3	5.0	6.2	0.02	3.2	2	5.1	6.3	0.02
0.02	0.9	1	5.3	6.6	0.01	0.9	1	5.2	6.4	0.01	0.7	1	5.2	6.4	0.02
0.02	0.8	1	5.3	6.8	0.02	0.8	0	5.3	6.6	0.02	0.6	0	5.2	6.7	0.02
0.03	1.4	0	5.4	6.8	0.03	0.9	0	5.4	6.8	0.03	0.7	0	5.3	6.7	0.03
0.04	6.5	2	5.1	6.1	0.06	16.6	15	5.1	6.1	0.05	4.8	6	5.0	6.1	0.03
0.02	2.6	1	5.0	6.2	0.03	3.3	4	5.1	6.1	0.03	3.5	1	5.1	6.2	0.02
0.02	1.3	1	5.1	6.4	0.02	2.1	2	5.1	6.2	0.02	1.7	0	5.2	6.4	0.02
0.01	0.7	1	5.2	6.5	0.01	0.6	1	5.2	6.3	0.01	0.7	1	5.2	6.7	0.02
0.01	0.4	0	5.3	6.9	0.02	0.5	0	5.2	6.6	0.02	0.6	0	5.2	6.7	0.03
0.01	0.5	0	5.2	6.8	0.02	1.1	0	5.1	6.6	0.02	0.8	0	5.2	6.8	0.02

			Paddock 5					Paddock 5					Paddock 5		
0.06	1.2	0	5.7	6.4	0.10	4.9	18	5.5	6.4	0.08	5.1	8	5.6	6.4	0.06
0.04	3.1	1	5.7	6.7	0.04	2.1	5	5.7	6.5	0.05	2.2	3	5.7	6.7	0.04
0.03	2.2	1	5.9	6.9	0.02	0.8	2	5.8	6.7	0.03	1.2	1	5.8	6.8	0.03
0.03	1.4	1	6.0	7.0	0.02	0.4	1	5.9	6.9	0.03	0.6	1	5.9	6.9	0.02
0.02	1.2	0	6.2	6.9	0.02	0.4	1	6.0	6.7	0.02	0.5	0	5.8	6.8	0.02
0.02	1.0	0	6.1	6.9	0.03	1.3	0	5.9	6.7	0.02	0.6	1	5.8	6.8	0.02
0.08	1.8	2	5.7	6.5	0.09	7.6	14	5.5	6.3	0.07	2.0	2	5.7	6.4	0.08
0.05	2.5	3	5.8	6.6	0.05	2.6	10	5.6	6.5	0.04	2.4	2	5.7	6.6	0.05
0.03	2.2	2	5.8	6.7	0.03	1.1	6	5.7	6.6	0.03	1.2	0	5.9	6.8	0.04
0.02	1.3	1	6.1	6.9	0.02	0.8	1	5.9	6.8	0.02	0.9	0	6.0	7.0	0.02
0.03	0.7	0	6.1	7.1	0.02	0.9	0	6.0	6.9	0.02	0.4	0	6.2	7.1	0.02
0.04	0.7	0	6.3	7.2	0.04	1.4	0	5.7	6.4	0.03	0.3	0	6.3	7.1	0.02
0.10	7.3	8	5.6	6.4	0.08	7.3	10	5.7	6.2	0.10	5.3	11	5.5	6.2	0.07
0.06	2.6	2	5.6	6.5	0.04	2.8	5	5.6	6.4	0.05	3.2	3	5.5	6.5	0.04
0.03	1.6	1	5.7	6.7	0.03	1.7	4	5.7	6.7	0.03	1.3	0	5.7	6.6	0.04
0.02	0.8	0	5.9	6.9	0.03	1.1	2	5.9	7.2	0.03	0.8	0	5.7	6.8	0.03
0.02	0.6	0	5.9	6.9	0.02	0.9	0	6.0	6.7	0.02	0.6	0	5.8	6.8	0.02
0.04	0.6	1	5.4	6.8	0.03	0.8	0	5.8	6.6	0.03	0.6	0	5.8	6.8	0.05
0.07	0.8	0	5.4	6.3	0.08	1.0	2	5.3	5.9	0.08	3.7	8	5.5	6.5	0.06
0.05	4.1	2	5.3	6.3	0.06	3.2	5	5.1	5.8	0.05	1.7	1	5.3	6.4	0.04
0.03	1.2	1	5.4	6.6	0.03	1.3	2	5.2	6.0	0.03	1.0	0	5.3	6.5	0.03
0.02	0.8	0	5.6	6.8	0.02	0.6	3	5.3	6.2	0.02	0.8	0	5.4	6.6	0.03
0.02	0.7	0	5.7	6.8	0.02	0.9	2	5.6	6.4	0.02	0.4	0	5.6	6.6	0.02
0.04	0.8	0	5.7	6.8	0.02	1.1	0	5.2	6.1	0.03	0.3	0	5.6	6.7	0.02

NH ₄ ⁺ -N (mg kg ⁻¹)	NO ₃ ⁻ -N (mg kg ⁻¹)	Time 9					Time 10					Time 11			
		pH _{Ca}	pH _W	EC * (dS m ⁻¹)	NH ₄ ⁺ -N (mg kg ⁻¹)	NO ₃ ⁻ -N (mg kg ⁻¹)	pH _{Ca}	pH _W	EC * (dS m ⁻¹)	NH ₄ ⁺ -N (mg kg ⁻¹)	NO ₃ ⁻ -N (mg kg ⁻¹)	pH _{Ca}	pH _W	EC * (dS m ⁻¹)	NH ₄ ⁺ -N (mg kg ⁻¹)
		Paddock 1					Paddock 1					Paddock 1			
2.5	1	4.7	5.8	0.05	5.0	4	4.7	5.3	0.11	9.4	37	4.6	5.4	0.07	4.5
2.1	0	4.7	5.7	0.04	4.7	3	4.6	5.5	0.04	5.0	8	4.6	5.5	0.04	3.5
1.9	1	4.8	5.8	0.04	2.5	3	4.8	5.7	0.03	2.0	3	4.8	5.7	0.03	1.3
0.9	1	4.8	6.0	0.03	1.2	4	5.0	5.8	0.03	0.7	4	4.9	5.8	0.03	0.5
1.0	1	4.9	6.6	0.03	0.8	2	5.0	5.8	0.03	0.5	2	4.9	6.2	0.03	0.5
1.1	0	5.1	6.8	0.04	0.8	0	5.1	6.5	0.04	0.9	1	5.1	6.5	0.05	1.2
3.5	0	5.0	6.0	0.04	6.8	3	4.8	5.6	0.07	13.1	22	4.8	5.5	0.08	8.2
3.2	0	4.8	5.8	0.04	4.2	1	4.7	5.6	0.04	9.6	11	4.7	5.7	0.03	4.1
2.6	1	5.0	6.0	0.02	3.5	1	4.9	5.8	0.02	5.9	3	4.8	5.8	0.03	2.7
3.8	1	5.0	6.2	0.02	3.5	2	4.9	6.0	0.02	1.4	2	4.9	6.0	0.02	0.7
1.4	1	5.1	6.7	0.03	1.3	0	5.0	6.4	0.03	0.6	2	5.0	6.4	0.03	0.7
1.4	0	5.3	6.8	0.05	1.2	0	5.3	6.7	0.05	1.0	0	5.2	6.6	0.05	1.4
2.8	0	4.9	6.0	0.03	3.8	2	4.8	5.7	0.06	4.3	9	4.8	5.6	0.06	6.3
2.4	0	4.7	5.9	0.02	3.8	1	4.7	5.7	0.04	5.0	6	4.7	5.6	0.03	7.0
2.0	0	4.9	6.0	0.02	1.7	0	4.8	5.8	0.03	6.3	5	4.8	5.7	0.03	3.4
1.2	0	5.9	6.4	0.02	0.8	0	5.0	6.2	0.02	0.7	2	4.9	6.2	0.02	1.0
1.8	0	5.9	6.7	0.03	1.4	0	5.2	6.6	0.04	1.0	0	5.1	6.4	0.04	9.6
1.4	0	5.1	6.8	0.04	1.0	0	5.3	6.7	0.04	0.9	0	5.4	6.6	0.05	1.7
2.8	0	4.9	5.9	0.06	5.6	1	5.1	5.8	0.08	3.8	10	5.0	5.8	0.07	4.8
2.5	0	4.8	5.7	0.06	5.1	0	4.8	5.7	0.04	5.1	4	4.8	5.7	0.05	2.6
2.0	0	4.8	6.0	0.04	2.5	0	4.9	5.7	0.04	2.0	5	4.9	5.7	0.04	1.2
1.5	0	4.9	6.4	0.02	1.1	0	5.0	5.9	0.03	0.7	3	5.0	6.1	0.03	0.4
1.0	0	4.9	6.5	0.04	1.1	0	5.0	6.3	0.04	0.9	1	5.1	6.4	0.03	2.8
1.1	0	5.1	6.7	0.04	1.0	0	5.1	6.3	0.05	1.5	1	5.1	6.4	0.04	2.4
		Paddock 2					Paddock 2					Paddock 2			
2.4	0	4.8	6.0	0.03	6.5	2	5.1	5.9	0.04	4.2	5	4.9	5.9	0.03	4.7
1.6	0	4.8	5.9	0.02	2.9	1	5.0	6.0	0.03	5.4	2	4.8	5.9	0.02	2.6
1.4	0	4.9	6.1	0.01	2.0	1	5.1	6.0	0.02	0.8	1	5.0	6.1	0.02	1.2
0.7	0	5.1	6.3	0.01	1.3	0	5.2	6.1	0.01	0.4	0	5.2	6.2	0.01	0.7

0.5	0	5.2	6.4	0.01	1.0	0	5.3	6.2	0.01	0.2	0	5.3	6.3	0.01	0.2
0.3	0	5.3	6.5	0.01	1.0	0	5.3	6.2	0.02	0.3	0	5.3	6.3	0.01	0.3
3.3	0	4.9	6.0	0.03	7.7	0	5.1	6.1	0.07	15.3	10	4.8	5.8	0.04	8.9
2.0	0	4.9	6.0	0.02	2.7	0	4.8	5.9	0.03	2.5	1	4.7	5.9	0.02	2.8
1.5	0	4.9	6.2	0.01	1.4	1	5.0	5.9	0.02	0.8	1	4.9	6.0	0.02	0.9
0.7	0	5.1	6.3	0.01	0.7	0	5.3	6.2	0.01	0.3	1	5.2	6.2	0.01	0.3
0.5	0	5.1	6.4	0.01	0.6	0	5.3	6.1	0.01	0.2	1	5.3	6.3	0.01	0.2
0.5	0	5.2	6.4	0.01	0.6	0	5.4	6.1	0.02	0.9	1	5.3	6.2	0.02	0.1
0.0	0	4.9	6.1	0.04	11.5	1	5.1	5.9	0.05	9.3	3	5.0	5.8	0.08	12.6
1.5	0	4.8	5.9	0.02	3.9	1	4.9	5.9	0.02	2.7	1	4.7	5.7	0.03	4.9
9.1	0	5.0	6.1	0.02	1.9	0	5.1	5.9	0.02	0.8	2	4.8	5.9	0.02	1.1
2.4	0	5.2	6.3	0.01	1.3	0	5.3	6.2	0.01	0.5	1	5.1	6.1	0.02	0.4
0.4	0	5.3	6.4	0.01	0.9	0	5.4	6.2	0.01	0.5	0	5.2	6.3	0.01	0.3
0.3	0	5.4	6.5	0.01	1.0	0	5.4	6.5	0.02	0.6	0	5.2	6.4	0.01	1.0
3.2	0	5.0	6.1	0.03	5.4	1	5.1	5.9	0.04	7.4	5	5.0	5.9	0.04	5.7
3.9	0	4.9	6.1	0.02	2.2	0	5.0	5.8	0.02	4.2	2	4.9	5.9	0.03	2.9
1.8	0	5.1	6.2	0.02	1.6	0	5.1	5.9	0.02	1.9	1	5.0	6.1	0.02	0.8
0.9	0	5.2	6.3	0.02	0.7	0	5.3	6.1	0.01	0.3	1	5.2	6.2	0.01	0.4
0.5	0	5.3	6.7	0.02	0.5	0	5.4	6.2	0.01	0.2	0	5.4	6.4	0.01	0.3
0.4	0	5.4	6.9	0.02	0.6	0	5.6	6.3	0.01	0.1	0	5.5	6.4	0.02	0.3

Paddock 3

Paddock 3

Paddock 3

3.2	0	4.9	6.2	0.02	3.7	0	5.1	6.2	0.03	2.7	1	5.1	6.0	0.03	3.3
1.7	0	4.9	6.0	0.02	1.6	0	5.0	6.0	0.02	1.8	1	5.0	6.0	0.02	2.1
1.3	0	5.0	6.1	0.01	1.2	0	5.1	6.0	0.01	1.1	0	5.1	6.0	0.01	0.9
0.7	0	5.0	6.3	0.01	0.8	0	5.2	6.1	0.01	0.4	1	5.1	6.1	0.01	0.4
0.6	0	5.0	6.4	0.01	0.4	0	5.3	6.1	0.01	0.3	0	5.2	6.2	0.01	0.3
0.4	0	5.1	6.4	0.01	0.5	0	5.4	6.3	0.01	0.4	0	-	-	-	-
1.5	0	4.9	6.1	0.02	3.5	0	5.1	6.2	0.02	2.4	0	4.9	5.9	0.02	3.5
1.3	0	4.9	6.1	0.02	1.3	0	5.0	6.1	0.02	2.6	0	4.8	5.9	0.02	1.8
1.0	0	5.0	6.2	0.01	1.1	0	5.0	6.2	0.01	1.2	0	5.0	5.9	0.01	1.2
0.8	0	4.0	6.3	0.01	0.6	0	5.1	6.2	0.01	0.5	1	5.1	6.0	0.01	0.4
0.5	0	5.1	6.4	0.01	0.5	0	5.2	6.2	0.01	0.3	1	5.2	6.1	0.01	0.2
0.3	0	5.2	6.6	0.01	0.9	0	5.3	6.4	0.01	0.2	0	5.1	6.2	0.01	0.2
2.4	0	4.9	6.1	0.03	2.9	0	5.1	6.2	0.03	8.9	0	4.9	6.0	0.02	4.7
1.6	0	4.9	6.1	0.02	1.8	0	4.9	6.0	0.02	1.7	0	4.8	5.8	0.02	1.9

3.6	0	4.9	6.2	0.01	1.4	0	5.0	5.9	0.01	1.2	0	4.9	5.9	0.01	1.3
0.7	0	5.1	6.2	0.01	0.7	0	5.1	6.1	0.01	2.1	1	5.0	6.0	0.01	0.9
0.4	0	5.2	6.3	0.01	0.8	0	4.9	6.2	0.01	0.3	0	4.8	6.1	0.01	0.8
0.2	0	5.2	6.4	0.01	1.0	0	-	-	-	-	-	5.1	6.3	0.01	0.5
2.5	0	5.9	6.1	0.02	2.9	0	5.0	6.1	0.02	2.8	0	5.0	6.2	0.02	3.4
1.4	0	4.8	6.0	0.02	2.6	0	4.9	6.0	0.02	1.8	0	4.8	6.0	0.02	2.5
1.1	0	4.9	6.0	0.01	1.9	0	5.0	5.9	0.01	1.2	0	4.9	6.0	0.01	1.3
0.7	0	4.9	6.2	0.01	0.7	0	5.1	6.0	0.01	0.4	2	5.1	6.1	0.01	1.3
0.5	0	5.1	6.3	0.01	0.4	0	5.2	6.3	0.01	0.2	1	5.1	6.1	0.01	0.9
0.3	0	5.1	6.4	0.01	0.3	0	5.3	6.4	0.01	0.2	0	5.2	6.2	0.01	0.9

Paddock 4

Paddock 4

Paddock 4

5.2	0	5.3	6.3	0.06	19.9	0	5.3	6.0	0.05	3.9	10	4.8	5.8	0.05	4.9
2.7	0	5.0	6.1	0.03	2.3	0	5.1	5.9	0.02	2.3	3	4.7	5.8	0.02	2.7
1.7	0	5.0	6.3	0.02	1.6	0	5.1	6.0	0.02	1.0	2	4.8	5.9	0.02	1.8
1.1	0	5.3	6.6	0.03	0.8	0	5.3	6.2	0.02	0.4	0	5.1	6.4	0.02	0.4
1.2	0	5.2	6.6	0.02	1.0	0	5.6	6.6	0.02	0.4	0	5.3	6.7	0.02	0.5
0.9	0	5.4	6.8	0.03	0.7	0	5.7	6.7	0.03	0.5	0	5.5	6.9	0.03	0.8
4.4	0	5.1	6.1	0.04	4.9	0	5.0	5.9	0.03	3.9	3	4.9	5.9	0.05	3.0
2.6	0	5.0	6.1	0.03	2.1	0	4.9	5.9	0.02	3.6	2	4.9	6.0	0.03	5.5
1.9	0	5.0	6.1	0.02	1.7	0	5.0	6.1	0.02	1.5	1	5.0	6.2	0.02	0.9
1.0	0	5.1	6.4	0.02	1.2	0	5.1	6.4	0.03	0.5	0	5.1	6.5	0.02	0.4
0.8	0	5.2	6.6	0.02	0.6	0	5.2	6.6	0.02	0.5	0	5.3	6.7	0.02	0.5
1.5	0	5.4	6.9	0.03	0.6	0	5.4	6.8	0.03	0.5	0	5.6	7.0	0.03	0.5
5.9	1	5.1	6.1	0.04	4.9	0	5.0	5.9	0.05	4.0	14	5.1	6.1	0.05	2.7
3.3	0	5.0	6.1	0.03	3.6	0	4.9	6.0	0.03	3.4	5	5.0	6.0	0.03	2.1
1.8	1	5.0	6.2	0.02	2.1	0	5.1	6.0	0.02	1.2	2	5.1	6.1	0.02	1.8
2.4	1	5.2	6.4	0.02	1.2	0	5.1	6.4	0.02	0.6	1	5.2	6.3	0.02	0.4
0.9	0	5.2	6.7	0.02	0.9	0	5.2	6.5	0.02	0.5	2	5.4	6.5	0.02	0.4
0.8	0	5.4	6.8	0.02	0.9	0	5.4	6.6	0.03	0.6	0	5.6	6.7	0.03	0.5
2.7	0	5.0	6.1	0.03	4.5	0	5.2	6.1	0.04	3.3	8	5.2	6.1	0.08	7.8
1.9	0	5.0	6.1	0.02	2.0	0	5.1	6.1	0.03	1.8	2	5.0	6.0	0.03	2.2
1.1	0	5.1	6.3	0.02	1.3	0	5.3	6.2	0.02	1.0	2	5.1	6.1	0.02	1.4
0.8	0	5.2	6.5	0.01	0.7	0	5.4	6.4	0.02	0.6	1	5.2	6.2	0.02	0.5
0.8	0	5.2	6.8	0.03	0.5	0	5.4	6.6	0.02	0.3	0	5.2	6.6	0.02	0.3
0.6	0	5.3	6.9	0.03	1.1	0	5.4	6.6	0.02	0.3	0	5.4	6.7	0.03	0.5

		Paddock 5					Paddock 5					Paddock 5			
0.9	0	5.8	6.5	0.08	2.1	3	5.6	6.2	0.09	10.9	17	5.6	6.2	0.15	8.7
2.4	0	5.9	6.7	0.05	4.4	3	5.6	6.4	0.06	3.6	4	5.6	6.4	0.05	1.7
1.6	0	5.9	6.8	0.04	2.1	2	5.8	6.5	0.04	0.9	3	5.8	6.6	0.03	0.5
0.9	0	6.1	7.0	0.04	1.2	1	5.9	6.7	0.03	0.3	2	6.0	6.8	0.02	0.2
0.6	0	6.1	7.0	0.03	0.6	0	6.1	6.8	0.03	0.3	2	6.0	7.1	0.02	0.2
0.6	0	-	-	-	-	-	6.2	7.0	0.03	0.2	1	6.2	7.2	0.02	0.1
1.4	1	5.6	6.4	0.08	1.8	2	5.9	6.4	0.12	1.0	7	5.9	6.4	0.17	5.1
3.4	0	5.6	6.6	0.06	2.3	3	5.9	6.6	0.06	2.9	9	6.0	6.7	0.07	1.7
1.8	0	5.8	6.8	0.04	1.2	1	6.1	6.8	0.04	0.6	4	6.1	6.9	0.04	0.6
0.9	0	5.8	6.9	0.03	1.1	1	6.2	6.9	0.03	0.4	3	6.2	7.0	0.03	0.2
0.5	0	6.0	7.0	0.03	1.0	0	5.3	6.9	0.03	0.3	1	6.2	7.1	0.03	0.2
0.5	0	6.2	7.1	0.03	0.7	0	6.3	7.0	0.03	0.2	1	6.2	7.0	0.04	0.2
4.6	6	5.6	6.5	0.07	3.3	6	5.4	5.9	0.13	3.7	31	5.4	6.0	0.15	12.7
3.4	1	5.7	6.6	0.04	2.0	2	5.5	6.1	0.08	0.3	2	5.5	6.2	0.06	1.9
1.6	1	5.8	6.7	0.04	1.5	2	5.8	6.5	0.05	0.9	6	5.8	5.6	0.04	0.6
0.9	0	5.9	6.9	0.03	0.9	0	5.9	6.6	0.03	0.3	4	6.0	6.7	0.03	0.3
0.6	0	6.1	7.1	0.02	0.5	0	5.7	6.6	0.03	0.4	1	6.1	6.8	0.03	0.3
1.0	0	6.0	7.0	0.04	1.9	0	5.4	6.2	0.07	0.7	0	5.9	6.8	0.05	0.2
2.8	3	5.7	6.4	0.09	5.2	14	5.4	6.0	0.10	10.4	20	5.5	6.2	0.10	1.2
1.8	3	5.6	6.5	0.05	1.9	5	5.5	6.3	0.06	2.2	9	5.4	6.2	0.07	2.1
1.3	3	5.6	6.6	0.03	1.1	3	5.8	6.5	0.04	0.7	4	5.5	6.4	0.03	0.5
0.6	1	5.7	6.7	0.03	3.4	2	6.1	6.8	0.03	0.2	2	5.7	6.6	0.03	0.2
0.3	0	5.8	6.8	0.02	0.5	0	6.1	6.9	0.03	0.3	1	5.9	6.8	0.02	0.1
0.3	0	5.7	6.8	0.02	0.3	0	5.5	6.3	0.04	0.6	1	5.8	6.7	0.05	0.9

NO ₃ ⁻ -N (mg kg ⁻¹)	Time 12					Time 13				
	pH _{Ca}	pH _W	EC * (dS m ⁻¹)	NH ₄ ⁺ -N (mg kg ⁻¹)	NO ₃ ⁻ -N (mg kg ⁻¹)	pH _{Ca}	pH _W	EC * (dS m ⁻¹)	NH ₄ ⁺ -N (mg kg ⁻¹)	NO ₃ ⁻ -N (mg kg ⁻¹)
	Paddock 1					Paddock 1				
17	4.8	5.6	0.07	3.0	6	4.9	5.6	0.06	4.0	0
4	4.6	5.6	0.03	2.6	2	4.8	5.6	0.03	2.0	1
3	4.8	5.7	0.03	1.5	3	4.8	5.6	0.03	2.0	0
3	4.9	6.0	0.02	0.2	1	5.0	5.9	0.03	<2	1
2	5.0	6.3	0.03	1.5	1	5.0	6.4	0.04	2.0	1
2	5.0	6.4	0.06	1.2	0	5.3	6.6	0.06	8.0	1
14	5.0	5.8	0.04	1.9	1	5.0	5.6	0.05	7.0	1
0	4.8	5.8	0.02	2.5	1	4.7	5.5	0.03	4.0	1
2	4.9	5.9	0.02	1.3	3	4.8	5.7	0.02	3.0	0
3	5.0	6.1	0.02	0.2	1	5.1	6.1	0.02	<2	1
2	5.0	6.6	0.03	0.4	1	5.1	6.5	0.04	<2	0
0	5.1	6.5	0.04	0.8	0	5.4	6.7	0.06	2.0	0
8	4.9	5.7	0.06	2.8	12	4.9	5.7	0.04	4.0	1
2	4.8	5.8	0.02	3.3	1	4.9	5.8	0.03	4.0	0
3	4.9	6.0	0.02	1.3	1	4.9	5.9	0.02	3.0	1
1	5.1	6.3	0.02	0.4	1	5.2	6.4	0.03	2.0	1
3	5.1	6.6	0.04	0.7	0	5.3	6.6	0.04	3.0	0
0	5.2	6.5	0.05	1.0	0	5.8	7.0	0.05	3.0	1
9	5.0	5.9	0.05	2.4	6	4.9	5.6	0.05	3.0	0
2	4.8	5.9	0.03	3.7	2	4.7	5.6	0.03	3.0	0
2	5.0	6.0	0.02	1.4	1	4.8	5.7	0.02	<2	0
2	5.1	6.3	0.02	0.7	1	5.0	6.0	0.02	<2	0
2	5.0	6.6	0.03	1.0	0	5.0	6.4	0.04	<2	0
0	5.1	6.5	0.04	0.8	0	5.1	6.4	0.04	3.0	0
	Paddock 2					Paddock 2				
3	4.9	5.8	0.06	7.4	8	5.0	5.6	0.07	4.0	1
1	4.9	6.0	0.03	4.1	2	4.8	5.7	0.02	3.0	0
2	5.0	6.0	0.02	1.4	2	5.0	5.8	0.02	2.0	1
1	5.3	6.2	0.01	0.3	1	5.3	6.0	0.01	<2	1

0	5.4	6.4	0.01	0.2	0	5.4	6.2	0.01	<2	1
0	-	-	-	-	-	5.6	6.4	0.02	<2	1
2	5.0	5.9	0.03	4.6	2	5.0	5.8	0.04	6.0	1
1	4.8	5.9	0.02	4.6	0	4.9	5.8	0.02	2.0	1
1	5.0	6.0	0.02	1.2	1	5.2	6.0	0.02	<2	0
1	5.2	6.2	0.01	0.2	1	5.5	6.2	0.02	<2	0
0	5.4	6.4	0.01	0.2	0	5.7	6.4	0.01	<2	0
0	-	-	-	-	-	5.0	6.4	0.03	<2	0
20	5.0	5.8	0.06	5.9	3	5.2	5.9	0.05	5.0	1
4	4.8	5.9	0.02	2.8	1	5.0	5.8	0.03	2.0	1
2	5.0	5.9	0.02	1.4	2	5.1	5.9	0.02	<2	1
1	5.0	6.1	0.01	0.3	1	5.4	6.2	0.02	<2	1
1	5.4	6.3	0.01	0.2	0	5.6	6.3	0.01	<2	0
1	-	-	-	-	-	5.7	6.6	0.02	<2	0
8	5.0	5.9	0.04	5.7	4	5.0	5.7	0.03	4.0	0
3	5.0	5.9	0.02	1.4	1	4.8	5.6	0.02	3.0	0
2	5.2	6.0	0.02	0.7	2	5.0	5.8	0.02	<2	1
1	5.3	6.3	0.01	0.8	2	5.3	6.2	0.01	<2	1
0	5.5	6.4	0.01	0.3	0	5.5	6.2	0.01	<2	0
0	5.5	6.9	0.01	0.2	0	5.8	6.4	0.01	<2	0

Paddock 3

Paddock 3

2	5.1	6.1	0.03	5.8	1	5.3	6.1	0.03	4.0	0
0	4.9	6.0	0.02	1.8	0	4.9	5.8	0.02	3.0	0
0	5.0	6.0	0.01	0.9	0	5.0	5.9	0.02	2.0	0
1	5.4	6.4	0.02	17.3	1	5.2	6.0	0.01	<2	0
0	-	-	-	-	-	5.4	6.1	0.01	<2	0
-	-	-	-	-	-	5.4	6.1	0.01	<2	0
0	5.2	6.3	0.03	4.3	0	5.0	5.9	0.03	3.0	0
0	5.0	6.1	0.02	2.8	0	4.9	5.7	0.02	<2	0
0	5.0	6.1	0.01	1.4	0	5.0	5.9	0.01	<2	<0.2
1	5.2	6.2	0.01	0.5	0	5.3	6.1	0.01	<2	0
0	-	-	-	-	-	5.5	6.2	0.01	<2	0
0	-	-	-	-	-	5.6	6.3	0.01	<2	0
0	5.0	6.1	0.02	3.3	0	5.0	5.9	0.02	3.0	0
0	5.0	6.1	0.02	1.7	0	4.9	5.8	0.02	2.0	<0.2

0	5.0	6.1	0.01	1.1	0	5.1	5.9	0.02	<2	0
0	5.1	6.1	0.02	1.1	0	5.2	6.1	0.01	<2	<0.2
0	-	-	-	-	-	5.4	6.1	0.01	<2	0
0	-	-	-	-	-	5.5	6.3	0.01	<2	0
1	5.2	6.1	0.03	3.1	1	5.0	5.9	0.02	3.0	<0.2
0	5.0	6.0	0.02	1.2	0	4.9	5.7	0.02	2.0	<0.2
0	5.0	6.1	0.01	0.7	0	5.1	5.9	0.01	<2	0
1	5.2	6.2	0.01	0.6	0	5.3	6.2	0.01	<2	0
1	-	-	-	-	-	5.3	6.1	0.01	<2	0
0	-	-	-	-	-	5.2	6.1	0.01	<2	0

Paddock 4

Paddock 4

10	5.0	6.0	0.03	3.2	2	5.1	5.9	0.05	10.0	2
2	4.9	6.0	0.02	2.8	1	5.0	5.9	0.03	3.0	0
3	4.9	6.0	0.02	0.9	2	5.0	6.1	0.02	<2	0
1	5.2	6.4	0.02	0.4	0	5.2	6.4	0.02	<2	0
0	5.2	6.5	0.03	0.4	0	5.4	6.5	0.03	<2	0
0	5.4	6.7	0.03	0.3	0	5.8	6.9	0.03	2.0	0
4	5.1	6.1	0.06	7.0	4	5.3	6.0	0.05	4.0	2
3	5.0	6.0	0.03	1.9	1	5.2	6.0	0.03	2.0	1
2	5.1	6.1	0.02	0.8	1	5.2	6.2	0.02	<2	1
1	5.2	6.4	0.03	0.7	0	5.4	6.5	0.03	<2	0
0	5.3	6.5	0.03	0.8	0	5.7	6.8	0.02	<2	0
0	5.7	6.7	0.03	0.5	0	5.8	6.9	0.03	<2	0
9	5.2	6.1	0.04	2.5	5	5.3	6.0	0.06	5.0	1
3	5.0	6.0	0.03	3.8	2	5.1	5.9	0.04	4.0	1
4	5.1	6.0	0.02	1.7	1	5.2	6.1	0.03	3.0	1
2	5.1	6.2	0.02	0.6	1	5.2	6.3	0.04	2.0	0
1	5.1	6.5	0.02	0.4	0	5.4	6.4	0.04	<2	0
0	5.2	6.5	0.03	0.4	0	5.7	6.8	0.04	<2	<0.2
10	5.2	5.9	0.07	4.0	23	5.1	5.9	0.05	4.0	3
5	5.1	6.0	0.03	1.6	7	5.1	5.9	0.04	3.0	1
3	5.2	6.1	0.03	1.1	5	5.2	6.0	0.03	<2	1
3	5.3	6.3	0.02	0.5	3	5.4	6.1	0.03	<2	1
1	5.3	6.4	0.02	0.3	1	5.4	6.4	0.03	<2	<0.2
0	5.2	6.5	0.03	0.6	0	5.4	6.5	0.04	2.0	0

	Paddock 5					Paddock 5				
32	5.4	6.1	0.06	5.0	10	6.0	6.5	0.09	6.0	9
11	5.5	6.2	0.04	1.8	3	6.0	6.6	0.06	4.0	3
6	5.5	6.4	0.03	0.9	3	6.1	6.8	0.05	3.0	2
2	5.7	6.6	0.02	0.4	2	6.3	7.0	0.03	2.0	1
1	6.1	6.9	0.03	0.1	2	6.4	7.1	0.03	2.0	1
0	6.0	6.9	0.04	0.2	1	6.3	7.1	0.04	<2	0
47	5.7	6.4	0.10	4.0	13	5.7	6.1	0.10	8.0	8
12	5.7	6.5	0.05	1.2	8	5.8	6.3	0.06	5.0	3
6	5.8	6.6	0.03	0.5	3	6.0	6.6	0.05	3.0	2
3	6.0	6.8	0.03	0.3	2	6.3	7.0	0.05	4.0	1
1	6.2	7.1	0.03	0.3	2	6.4	7.1	0.04	4.0	1
1	6.2	6.9	0.05	0.3	1	6.5	7.2	0.04	3.0	1
33	5.6	6.2	0.12	4.9	19	5.5	6.1	0.09	7.0	6
10	5.6	6.3	0.07	2.1	10	5.6	6.3	0.05	4.0	3
5	5.9	6.8	0.04	0.9	5	6.0	6.6	0.03	2.0	2
3	6.1	7.0	0.04	0.8	4	6.0	6.6	0.03	2.0	1
2	6.2	7.1	0.03	0.6	2	6.0	6.7	0.04	<2	1
1	6.2	7.0	0.06	0.8	0	5.5	6.3	0.06	3.0	0
1	5.2	5.9	0.08	5.2	16	5.8	6.2	0.14	10.0	10
7	5.2	6.0	0.05	2.7	7	5.6	6.2	0.06	7.0	3
4	5.3	6.3	0.03	1.2	4	6.0	6.6	0.05	4.0	1
2	5.5	6.5	0.02	0.8	2	6.0	6.6	0.04	4.0	1
1	5.6	6.6	0.02	0.1	1	6.1	6.8	0.04	<2	1
0	5.5	6.3	0.04	10.5	1	5.6	6.4	0.05	2.0	0

**Paddocks 2 and 3 were interchanged to facilitate discussion of results and analysis.
The remaining sheets show the original paddock labels.**

Paddock	Depth	pH _w	pH _{Ca}	EC	NH ₄ ⁺	NO ₃ ⁻	NH ₄ ⁺ vs NO ₃ ⁻
1	0-5	<0.001	0.35	0.270	0.667	0.078	0.34
1	5-10	0.003	0.62	0.543	0.871	0.105	0.43
1	10-20	<0.001	0.89	0.930	0.317	0.013	0.15
1	20-30	0.177	0.17	<0.001	0.297	0.008	-0.07
1	30-40	0.002	0.14	<0.001	0.929	0.018	0.53
1	40-50	0.003	0.03	<0.001	0.619	0.030	0.48
2	0-5	0.083	0.07	0.386	0.374	0.016	0.63
2	5-10	0.510	0.77	<0.001	0.572	0.005	0.57
2	10-20	0.030	0.32	0.126	0.442	0.002	-0.46
2	20-30	<0.001	0.10	0.622	0.015	0.006	-0.12
2	30-40	0.007	0.00	0.435	0.197	0.011	-0.05
2	40-50	0.247	0.38	0.041	0.391	<0.001	0.47
3	0-5	0.481	0.18	0.794	0.368	0.002	0.40
3	5-10	0.038	0.71	0.456	0.150	0.410	0.34
3	10-20	0.002	0.40	0.540	0.044	0.239	0.19
3	20-30	<0.001	0.48	0.157	0.344	0.022	0.26
3	30-40	<0.001	0.69	NA	0.138	0.001	0.21
3	40-50	0.009	0.81	NA	0.478	0.175	0.73
4	0-5	0.009	0.86	0.004	0.933	0.048	-0.11
4	5-10	0.018	0.67	0.244	0.022	0.026	-0.26
4	10-20	0.009	0.74	0.012	0.033	0.042	-0.28
4	20-30	0.026	0.73	<0.001	<0.001	0.024	-0.38
4	30-40	0.335	0.25	0.003	<0.001	0.051	-0.08
4	40-50	0.008	0.20	<0.001	0.078	0.626	0.91
5	0-5	<0.001	0.16	0.010	0.227	0.011	0.56
5	5-10	0.005	0.33	0.055	0.237	0.020	-0.53
5	10-20	0.014	0.90	0.021	0.691	0.014	-0.59
5	20-30	<0.001	0.91	0.007	0.809	0.120	-0.08
5	30-40	0.147	0.72	<0.001	0.002	0.029	-0.23
5	40-50	0.040	0.82	<0.001	0.274	0.024	0.30

Shaded areas represent significant figures.

Paddock	Depth	pH _W	pH _{Ca}	EC	NH ₄ ⁺	NO ₃ ⁻	Rainfall
1	0-5	-0.62	-0.01	0.24	0.22	0.78	17.60
1	5-10	-0.46	-0.31	-0.02	0.23	0.84	29.80
1	10-20	-0.58	-0.05	0.30	0.05	0.78	6.20
1	20-30	-0.50	-0.30	0.40	-0.29	0.70	30.60
1	30-40	-0.65	-0.19	0.23	-0.19	0.50	52.80
1	40-50	-0.67	-0.09	0.32	-0.25	0.26	24.20
							23.40
2	0-5	-0.14	0.33	-0.05	0.35	0.52	101.60
2	5-10	-0.13	-0.02	-0.43	0.28	0.45	74.60
2	10-20	-0.44	0.13	-0.02	-0.13	0.53	12.00
2	20-30	-0.59	0.03	-0.18	-0.28	0.41	180.60
2	30-40	-0.76	0.02	0.01	-0.32	0.45	61.40
2	40-50	-0.30	0.07	0.14	-0.27	0.19	103.20
							23.00
3	0-5	0.06	-0.13	0.09	0.04	0.50	
3	5-10	-0.16	0.02	-0.05	-0.28	0.24	
3	10-20	-0.38	-0.07	-0.16	-0.37	0.30	
3	20-30	-0.46	0.17	0.22	0.23	0.72	
3	30-40	-0.40	-0.29	-0.07	-0.22	0.35	
3	40-50	-0.24	-0.01	0.20	-0.24	-0.05	
4	0-5	-0.57	-0.24	0.16	-0.47	0.62	
4	5-10	-0.42	-0.15	-0.15	-0.33	0.55	
4	10-20	-0.42	0.07	0.18	-0.50	0.43	
4	20-30	-0.24	-0.20	0.26	-0.37	0.36	
4	30-40	-0.20	0.12	0.25	-0.36	0.41	
4	40-50	-0.62	-0.01	0.42	-0.46	-0.30	
5	0-5	-0.71	-0.60	0.34	0.11	0.52	
5	5-10	-0.59	-0.43	0.36	-0.53	0.37	
5	10-20	-0.51	-0.28	0.22	-0.56	0.44	
5	20-30	-0.56	-0.14	0.17	-0.41	0.48	
5	30-40	-0.59	-0.57	0.24	-0.42	0.58	
5	40-50	-0.67	-0.48	0.41	-0.11	0.68	

correlations > 0.532 significant at 5%

correlations > 0.661 significant at 1%

Paddock	Depth	pH _W	pH _{Ca}	EC	NH ₄ ⁺	NO ₃ ⁻	Temperature
1	0-5	-0.19	-0.40	-0.29	0.13	0.41	15.24
1	5-10	-0.07	-0.50	0.11	0.52	0.35	13.54
1	10-20	-0.15	-0.22	0.23	0.06	0.32	12.43
1	20-30	0.23	-0.08	0.37	0.09	0.50	14.64
1	30-40	0.05	0.04	0.11	-0.14	0.28	15.65
1	40-50	0.01	-0.21	0.07	-0.34	-0.04	20.77
							25.18
2	0-5	-0.06	0.09	-0.44	0.23	0.34	23.71
2	5-10	0.34	-0.10	-0.54	0.22	0.30	24.91
2	10-20	0.13	-0.03	-0.15	0.17	0.23	26.39
2	20-30	-0.26	-0.31	0.02	-0.01	0.22	22.81
2	30-40	-0.11	-0.36	0.20	-0.16	-0.03	20.22
2	40-50	-0.05	-0.32	-0.20	-0.09	-0.16	16.90
							14.34
3	0-5	0.10	-0.09	-0.43	-0.19	-0.09	
3	5-10	0.07	-0.30	-0.32	-0.11	-0.18	
3	10-20	0.07	-0.38	-0.32	-0.41	-0.26	
3	20-30	-0.07	-0.54	-0.25	-0.20	0.10	
3	30-40	0.14	-0.53	-0.42	-0.19	-0.10	
3	40-50	0.32	-0.48	-0.11	-0.07	-0.28	
4	0-5	-0.24	-0.28	0.05	0.45	0.30	
4	5-10	0.04	-0.29	-0.46	-0.44	0.24	
4	10-20	0.11	-0.18	-0.06	-0.09	0.21	
4	20-30	-0.14	-0.37	-0.16	-0.20	0.16	
4	30-40	0.30	-0.17	-0.04	-0.18	-0.02	
4	40-50	-0.09	-0.37	0.02	-0.28	-0.36	
5	0-5	-0.15	-0.48	0.01	-0.43	0.17	
5	5-10	-0.03	-0.36	-0.14	-0.56	0.19	
5	10-20	-0.18	-0.38	-0.05	-0.35	0.28	
5	20-30	-0.21	-0.34	-0.09	-0.34	0.05	
5	30-40	-0.37	-0.40	-0.14	-0.36	-0.03	
5	40-50	-0.28	-0.33	-0.01	-0.26	0.11	

correlations > 0.532 significant at 5%

Set	Area	Transect	Rate	Soil ID	Sample	Soil Weight (g)	H ₂ O or (NH ₄) ₂ SO ₄ Added	KCL Added (mL)	Total Added (mL)
1	Reserve	1	Blank	41 R B 1	1	10.0	6.0	30.0	36.0
		3	Blank	41 R B 3	2	10.0	6.0	30.0	36.0
		1	0	41 R 0 1	3	10.0	6.0	30.0	36.0
		2	0	41 R 0 2	4	10.0	6.0	30.0	36.0
		3	0	41 R 0 3	5	10.0	6.0	30.0	36.0
		4	0	41 R 0 4	6	10.0	6.0	30.0	36.0
		1	40	41 R 1 1	7	10.0	6.0	30.0	36.0
		3	40	41 R 1 3	8	10.0	6.0	30.0	36.0
		1	80	41 R 2 1	9	10.0	6.0	30.0	36.0
		3	80	41 R 2 3	10	10.0	6.0	30.0	36.0
		1	120	41 R 3 1	11	10.0	6.0	30.0	36.0
		3	120	41 R 3 3	12	10.0	6.0	30.0	36.0
		1	160	41 R 4 1	13	10.0	6.0	30.0	36.0
		3	160	41 R 4 3	14	10.0	6.0	30.0	36.0
		1	200	41 R 5 1	15	10.0	6.0	30.0	36.0
		3	200	41 R 5 3	16	10.0	6.0	30.0	36.0
1	Paddock	1	Blank	41 P B 1	17	10.0	6.0	30.0	36.0
		3	Blank	41 P B 3	18	10.0	6.0	30.0	36.0
		1	0	41 P 0 1	19	10.0	6.0	30.0	36.0
		2	0	41 P 0 2	20	10.0	6.0	30.0	36.0
		3	0	41 P 0 3	21	10.0	6.0	30.0	36.0
		4	0	41 P 0 4	22	10.0	6.0	30.0	36.0
		1	40	41 P 1 1	23	10.0	6.0	30.0	36.0
		3	40	41 P 1 3	24	10.0	6.0	30.0	36.0
		1	80	41 P 2 1	25	10.0	6.0	30.0	36.0
		3	80	41 P 2 3	26	10.0	6.0	30.0	36.0
		1	120	41 P 3 1	27	10.0	6.0	30.0	36.0
		3	120	41 P 3 3	28	10.0	6.0	30.0	36.0
		1	160	41 P 4 1	29	10.0	6.0	30.0	36.0
		3	160	41 P 4 3	30	10.0	6.0	30.0	36.0
		1	200	41 P 5 1	31	10.0	6.0	30.0	36.0
		3	200	41 P 5 3	32	10.0	6.0	30.0	36.0
2	Reserve	1	Blank	41 R B 1	33	10.0	6.0	30.0	36.0
		3	Blank	41 R B 3	34	10.0	6.0	30.0	36.0
		1	0	41 R 0 1	35	10.0	6.0	30.0	36.0
		2	0	41 R 0 2	36	10.0	6.0	30.0	36.0
		3	0	41 R 0 3	37	10.0	6.0	30.0	36.0
		4	0	41 R 0 4	38	10.0	6.0	30.0	36.0
		1	40	41 R 1 1	39	10.0	6.0	30.0	36.0
		3	40	41 R 1 3	40	10.0	6.0	30.0	36.0
		1	80	41 R 2 1	41	10.0	6.0	30.0	36.0
		3	80	41 R 2 3	42	10.0	6.0	30.0	36.0
		1	120	41 R 3 1	43	10.0	6.0	30.0	36.0
		3	120	41 R 3 3	44	10.0	6.0	30.0	36.0
		1	160	41 R 4 1	45	10.0	6.0	30.0	36.0
		3	160	41 R 4 3	46	10.0	6.0	30.0	36.0
		1	200	41 R 5 1	47	10.0	6.0	30.0	36.0
		3	200	41 R 5 3	48	10.0	6.0	30.0	36.0
2	Paddock	1	Blank	41 P B 1	49	10.0	6.0	30.0	36.0
		3	Blank	41 P B 3	50	10.0	6.0	30.0	36.0

		1	0	41 P 0 1	51	10.0	6.0	30.0	36.0
		2	0	41 P 0 2	52	10.0	6.0	30.0	36.0
		3	0	41 P 0 3	53	10.0	6.0	30.0	36.0
		4	0	41 P 0 4	54	10.0	6.0	30.0	36.0
		1	40	41 P 1 1	55	10.0	6.0	30.0	36.0
		3	40	41 P 1 3	56	10.0	6.0	30.0	36.0
		1	80	41 P 2 1	57	10.0	6.0	30.0	36.0
		3	80	41 P 2 3	58	10.0	6.0	30.0	36.0
		1	120	41 P 3 1	59	10.0	6.0	30.0	36.0
		3	120	41 P 3 3	60	10.0	6.0	30.0	36.0
		1	160	41 P 4 1	61	10.0	6.0	30.0	36.0
		3	160	41 P 4 3	62	10.0	6.0	30.0	36.0
		1	200	41 P 5 1	63	10.0	6.0	30.0	36.0
		3	200	41 P 5 3	64	10.0	6.0	30.0	36.0
3	Reserve	1	Blank	41 R B 1	65	10.0	6.0	30.0	36.0
		3	Blank	41 R B 3	66	10.0	6.0	30.0	36.0
		1	0	41 R 0 1	67	10.0	6.0	30.0	36.0
		2	0	41 R 0 2	68	10.0	6.0	30.0	36.0
		3	0	41 R 0 3	69	10.0	6.0	30.0	36.0
		4	0	41 R 0 4	70	10.0	6.0	30.0	36.0
		1	40	41 R 1 1	71	10.0	6.0	30.0	36.0
		3	40	41 R 1 3	72	10.0	6.0	30.0	36.0
		1	80	41 R 2 1	73	10.0	6.0	30.0	36.0
		3	80	41 R 2 3	74	10.0	6.0	30.0	36.0
		1	120	41 R 3 1	75	10.0	6.0	30.0	36.0
		3	120	41 R 3 3	76	10.0	6.0	30.0	36.0
		1	160	41 R 4 1	77	10.0	6.0	30.0	36.0
		3	160	41 R 4 3	78	10.0	6.0	30.0	36.0
		1	200	41 R 5 1	79	10.0	6.0	30.0	36.0
		3	200	41 R 5 3	80	10.0	6.0	30.0	36.0
3	Paddock	1	Blank	41 P B 1	81	10.0	6.0	30.0	36.0
		3	Blank	41 P B 3	82	10.0	6.0	30.0	36.0
		1	0	41 P 0 1	83	10.0	6.0	30.0	36.0
		2	0	41 P 0 2	84	10.0	6.0	30.0	36.0
		3	0	41 P 0 3	85	10.0	6.0	30.0	36.0
		4	0	41 P 0 4	86	10.0	6.0	30.0	36.0
		1	40	41 P 1 1	87	10.0	6.0	30.0	36.0
		3	40	41 P 1 3	88	10.0	6.0	30.0	36.0
		1	80	41 P 2 1	89	10.0	6.0	30.0	36.0
		3	80	41 P 2 3	90	10.0	6.0	30.0	36.0
		1	120	41 P 3 1	91	10.0	6.0	30.0	36.0
		3	120	41 P 3 3	92	10.0	6.0	30.0	36.0
		1	160	41 P 4 1	93	10.0	6.0	30.0	36.0
		3	160	41 P 4 3	94	10.0	6.0	30.0	36.0
		1	200	41 P 5 1	95	10.0	6.0	30.0	36.0
		3	200	41 P 5 3	96	10.0	6.0	30.0	36.0
4	Reserve	1	Blank	41 R B 1	97	10.0	6.0	30.0	36.0
		3	Blank	41 R B 3	98	10.0	6.0	30.0	36.0
		1	0	41 R 0 1	99	10.0	6.0	30.0	36.0
		2	0	41 R 0 2	100	10.0	6.0	30.0	36.0
		3	0	41 R 0 3	101	10.0	6.0	30.0	36.0
		4	0	41 R 0 4	102	10.0	6.0	30.0	36.0
		1	40	41 R 1 1	103	10.0	6.0	30.0	36.0

4	Paddock	3	40	41 R 1 3	104	10.0	6.0	30.0	36.0	
		1	80	41 R 2 1	105	10.0	6.0	30.0	36.0	
		3	80	41 R 2 3	106	10.0	6.0	30.0	36.0	
		1	120	41 R 3 1	107	10.0	6.0	30.0	36.0	
		3	120	41 R 3 3	108	10.0	6.0	30.0	36.0	
		1	160	41 R 4 1	109	10.0	6.0	30.0	36.0	
		3	160	41 R 4 3	110	10.0	6.0	30.0	36.0	
		1	200	41 R 5 1	111	10.0	6.0	30.0	36.0	
		3	200	41 R 5 3	112	10.0	6.0	30.0	36.0	
		1	Blank	41 P B 1	113	10.0	6.0	30.0	36.0	
		3	Blank	41 P B 3	114	10.0	6.0	30.0	36.0	
		1	0	41 P 0 1	115	10.0	6.0	30.0	36.0	
		2	0	41 P 0 2	116	10.0	6.0	30.0	36.0	
		3	0	41 P 0 3	117	10.0	6.0	30.0	36.0	
	4	0	41 P 0 4	118	10.0	6.0	30.0	36.0		
	1	40	41 P 1 1	119	10.0	6.0	30.0	36.0		
	3	40	41 P 1 3	120	10.0	6.0	30.0	36.0		
	1	80	41 P 2 1	121	10.0	6.0	30.0	36.0		
	3	80	41 P 2 3	122	10.0	6.0	30.0	36.0		
	1	120	41 P 3 1	123	10.0	6.0	30.0	36.0		
	3	120	41 P 3 3	124	10.0	6.0	30.0	36.0		
	1	160	41 P 4 1	125	10.0	6.0	30.0	36.0		
	3	160	41 P 4 3	126	10.0	6.0	30.0	36.0		
	1	200	41 P 5 1	127	10.0	6.0	30.0	36.0		
	3	200	41 P 5 3	128	10.0	6.0	30.0	36.0		
	5	Reserve	1	Blank	41 R B 1	129	10.0	6.0	30.0	36.0
			3	Blank	41 R B 3	130	10.0	6.0	30.0	36.0
			1	0	41 R 0 1	131	10.0	6.0	30.0	36.0
2			0	41 R 0 2	132	10.0	6.0	30.0	36.0	
3			0	41 R 0 3	133	10.0	6.0	30.0	36.0	
4			0	41 R 0 4	134	10.0	6.0	30.0	36.0	
1			40	41 R 1 1	135	10.0	6.0	30.0	36.0	
3			40	41 R 1 3	136	10.0	6.0	30.0	36.0	
1			80	41 R 2 1	137	10.0	6.0	30.0	36.0	
3			80	41 R 2 3	138	10.0	6.0	30.0	36.0	
1			120	41 R 3 1	139	10.0	6.0	30.0	36.0	
3			120	41 R 3 3	140	10.0	6.0	30.0	36.0	
1			160	41 R 4 1	141	10.0	6.0	30.0	36.0	
3			160	41 R 4 3	142	10.0	6.0	30.0	36.0	
1		200	41 R 5 1	143	10.0	6.0	30.0	36.0		
3		200	41 R 5 3	144	10.0	6.0	30.0	36.0		
Paddock		1	Blank	41 P B 1	145	10.0	6.0	30.0	36.0	
		3	Blank	41 P B 3	146	10.0	6.0	30.0	36.0	
		1	0	41 P 0 1	147	10.0	6.0	30.0	36.0	
		2	0	41 P 0 2	148	10.0	6.0	30.0	36.0	
		3	0	41 P 0 3	149	10.0	6.0	30.0	36.0	
		4	0	41 P 0 4	150	10.0	6.0	30.0	36.0	
		1	40	41 P 1 1	151	10.0	6.0	30.0	36.0	
		3	40	41 P 1 3	152	10.0	6.0	30.0	36.0	
		1	80	41 P 2 1	153	10.0	6.0	30.0	36.0	
		3	80	41 P 2 3	154	10.0	6.0	30.0	36.0	
		1	120	41 P 3 1	155	10.0	6.0	30.0	36.0	
		3	120	41 P 3 3	156	10.0	6.0	30.0	36.0	
	1	160	41 P 4 1	157	10.0	6.0	30.0	36.0		

		3	160	41 P 4 3	158	10.0	6.0	30.0	36.0
		1	200	41 P 5 1	159	10.0	6.0	30.0	36.0
		3	200	41 P 5 3	160	10.0	6.0	30.0	36.0
6	Reserve	1	Blank	41 R B 1	161	10.0	6.0	30.0	36.0
		3	Blank	41 R B 3	162	10.0	6.0	30.0	36.0
		1	0	41 R 0 1	163	10.0	6.0	30.0	36.0
		2	0	41 R 0 2	164	10.0	6.0	30.0	36.0
		3	0	41 R 0 3	165	10.0	6.0	30.0	36.0
		4	0	41 R 0 4	166	10.0	6.0	30.0	36.0
		1	40	41 R 1 1	167	10.0	6.0	30.0	36.0
		3	40	41 R 1 3	168	10.0	6.0	30.0	36.0
		1	80	41 R 2 1	169	10.0	6.0	30.0	36.0
		3	80	41 R 2 3	170	10.0	6.0	30.0	36.0
		1	120	41 R 3 1	171	10.0	6.0	30.0	36.0
		3	120	41 R 3 3	172	10.0	6.0	30.0	36.0
		1	160	41 R 4 1	173	10.0	6.0	30.0	36.0
		3	160	41 R 4 3	174	10.0	6.0	30.0	36.0
		1	200	41 R 5 1	175	10.0	6.0	30.0	36.0
		3	200	41 R 5 3	176	10.0	6.0	30.0	36.0
6	Paddock	1	Blank	41 P B 1	177	10.0	6.0	30.0	36.0
		3	Blank	41 P B 3	178	10.0	6.0	30.0	36.0
		1	0	41 P 0 1	179	10.0	6.0	30.0	36.0
		2	0	41 P 0 2	180	10.0	6.0	30.0	36.0
		3	0	41 P 0 3	181	10.0	6.0	30.0	36.0
		4	0	41 P 0 4	182	10.0	6.0	30.0	36.0
		1	40	41 P 1 1	183	10.0	6.0	30.0	36.0
		3	40	41 P 1 3	184	10.0	6.0	30.0	36.0
		1	80	41 P 2 1	185	10.0	6.0	30.0	36.0
		3	80	41 P 2 3	186	10.0	6.0	30.0	36.0
		1	120	41 P 3 1	187	10.0	6.0	30.0	36.0
		3	120	41 P 3 3	188	10.0	6.0	30.0	36.0
		1	160	41 P 4 1	189	10.0	6.0	30.0	36.0
		3	160	41 P 4 3	190	10.0	6.0	30.0	36.0
		1	200	41 P 5 1	191	10.0	6.0	30.0	36.0
		3	200	41 P 5 3	192	10.0	6.0	30.0	36.0
7	Reserve	1	Blank	41 R B 1	193	10.0	6.0	30.0	36.0
		3	Blank	41 R B 3	194	10.0	6.0	30.0	36.0
		1	0	41 R 0 1	195	10.0	6.0	30.0	36.0
		2	0	41 R 0 2	196	10.0	6.0	30.0	36.0
		3	0	41 R 0 3	197	10.0	6.0	30.0	36.0
		4	0	41 R 0 4	198	10.0	6.0	30.0	36.0
		1	40	41 R 1 1	199	10.0	6.0	30.0	36.0
		3	40	41 R 1 3	200	10.0	6.0	30.0	36.0
		1	80	41 R 2 1	201	10.0	6.0	30.0	36.0
		3	80	41 R 2 3	202	10.0	6.0	30.0	36.0
		1	120	41 R 3 1	203	10.0	6.0	30.0	36.0
		3	120	41 R 3 3	204	10.0	6.0	30.0	36.0
		1	160	41 R 4 1	205	10.0	6.0	30.0	36.0
		3	160	41 R 4 3	206	10.0	6.0	30.0	36.0
		1	200	41 R 5 1	207	10.0	6.0	30.0	36.0
		3	200	41 R 5 3	208	10.0	6.0	30.0	36.0
7	Paddock	1	Blank	41 P B 1	209	10.0	6.0	30.0	36.0
		3	Blank	41 P B 3	210	10.0	6.0	30.0	36.0

1	1	0	41 P 0 1	211	10.0	6.0	30.0	36.0
	2	0	41 P 0 2	212	10.0	6.0	30.0	36.0
	3	0	41 P 0 3	213	10.0	6.0	30.0	36.0
	4	0	41 P 0 4	214	10.0	6.0	30.0	36.0
	1	40	41 P 1 1	215	10.0	6.0	30.0	36.0
	3	40	41 P 1 3	216	10.0	6.0	30.0	36.0
	1	80	41 P 2 1	217	10.0	6.0	30.0	36.0
	3	80	41 P 2 3	218	10.0	6.0	30.0	36.0
	1	120	41 P 3 1	219	10.0	6.0	30.0	36.0
	3	120	41 P 3 3	220	10.0	6.0	30.0	36.0
	1	160	41 P 4 1	221	10.0	6.0	30.0	36.0
	3	160	41 P 4 3	222	10.0	6.0	30.0	36.0
	1	200	41 P 5 1	223	10.0	6.0	30.0	36.0
	3	200	41 P 5 3	224	10.0	6.0	30.0	36.0

General	27.1.04	27.1.04	29.1.04	27.1.04	2.2.04	29.1.04	2.2.04	Dilution	Volume
Dilution	NH ₄ ⁺ -N	NH ₄ ⁺ -N	NH ₄ ⁺ -N	NO ₃ ⁻ -N	NO ₃ ⁻ -N	NO ₃ ⁻ -N	NO ₃ ⁻ -N	Ratio	Sample
Factor	(Auto-A)	(Auto-A)	(Auto-A)	(Auto-A)	(Auto-A)	(Auto-A)	(Auto-A)		(mL)
3.6	1.93			0.07				-	
3.6	1.45			0.07				-	
3.6	2.89			0.93				-	
3.6	1.77			0.12				-	
3.6	0.80			8.92				-	
3.6	1.21			2.76				-	
3.6		2.05					0.67	1+5	1.00
3.6		0.64					2.64	1+5	1.00
3.6			2.83			0.12		1+10	1.00
3.6			1.99			1.23		1+10	1.00
3.6			2.34		2.09	0.07		1+14	1.00
3.6			1.85			0.87		1+14	1.00
3.6			2.16		2.68	0.03		1+19	1.00
3.6			2.04		10.08	0.31		1+19	1.00
3.6			2.11		1.64	0.06		1+24	1.00
3.6			2.22		4.11	0.11		1+24	1.00
3.6	2.87			0.48				-	
3.6			0.82	1.48		0.37		1+5	1.00
3.6	0.46						1.83	-	
3.6	0.61						2.40	-	
3.6	1.05						2.38	-	
3.6	0.40						1.85	-	
3.6		0.03					5.85	1+5	1.00
3.6		0.42					6.25	1+5	1.00
3.6			0.29			4.27		1+10	1.00
3.6			0.85			4.69		1+10	1.00
3.6			0.56			3.35		1+14	1.00
3.6			0.84			2.97		1+14	1.00
3.6			0.87			2.37		1+19	1.00
3.6			1.17			1.89		1+19	1.00
3.6			1.16			1.94		1+24	1.00
3.6			1.28			1.54		1+24	1.00
3.6	1.92			0.10				-	
3.6	1.40			0.06				-	
3.6	2.23			0.32				-	
3.6	0.94			0.02				-	
3.6	1.59			5.23				-	
3.6	1.92			2.72				-	
3.6		2.07					0.19	1+5	1.00
3.6		1.51					1.67	1+5	1.00
3.6			2.12		1.07	0.06		1+10	1.00
3.6			2.03			0.61		1+10	1.00
3.6			2.11		0.28	0.00		1+14	1.00
3.6			2.17		7.61	0.49		1+14	1.00
3.6			2.01		0.16	0.00		1+19	1.00
3.6			2.10		5.62	0.18		1+19	1.00
3.6			2.15		0.46	0.06		1+24	1.00
3.6			2.22		3.92	0.07		1+24	1.00
3.6	2.63			0.42				-	
3.6			0.78	1.32		0.16		1+5	1.00

3.6	0.36				1.63	-		
3.6	0.50				1.82	-		
3.6	1.21				2.09	-		
3.6	0.33				1.45	-		
3.6		0.03			5.38	1+5		1.00
3.6		0.51			5.65	1+5		1.00
3.6			0.58		3.78	1+10		1.00
3.6			0.72		3.40	1+10		1.00
3.6			0.78		2.72	1+14		1.00
3.6			0.97		2.65	1+14		1.00
3.6			1.23		1.83	1+19		1.00
3.6			1.25		1.84	1+19		1.00
3.6			1.55		1.54	1+24		1.00
3.6			1.45		1.42	1+24		1.00
3.6	1.92			0.06		-		
3.6	1.37			0.04		-		
3.6	2.66			0.36		-		
3.6	1.40			0.00		-		
3.6	3.43			3.94		-		
3.6	1.53			1.80		-		
3.6		2.23				0.08	1+5	1.00
3.6		2.19				0.74	1+5	1.00
3.6			2.17		0.35	0.06	1+10	1.00
3.6			2.20		5.31	0.43	1+10	1.00
3.6			2.32		0.51	0.01	1+14	1.00
3.6			2.40		3.25	0.16	1+14	1.00
3.6			2.25		0.37	0.03	1+19	1.00
3.6			2.22		3.70	0.10	1+19	1.00
3.6			2.22		0.29	0.04	1+24	1.00
3.6			2.29		2.99	0.06	1+24	1.00
3.6	2.67			0.47			-	
3.6			0.82	1.33		0.16	1+5	1.00
3.6	0.41					1.93	-	
3.6	1.23					1.91	-	
3.6	1.02					2.05	-	
3.6	0.34					1.39	-	
3.6		0.13				4.88	1+5	1.00
3.6		0.95				5.27	1+5	1.00
3.6			0.51		3.10		1+10	1.00
3.6			1.10		3.11		1+10	1.00
3.6			1.45		2.33		1+14	1.00
3.6			1.32		2.49		1+14	1.00
3.6			1.44		1.69		1+19	1.00
3.6			1.53		1.78		1+19	1.00
3.6			1.71		1.29		1+24	1.00
3.6			1.68		1.37		1+24	1.00
3.6	1.91			0.02			-	
3.6	1.40			0.03			-	
3.6	2.73			0.22			-	
3.6	1.27			0.00			-	
3.6			0.71	2.37		0.22	1+5	1.00
3.6	4.83			1.82			-	
3.6		2.46				0.01	1+5	1.00

3.6		2.68				0.47	1+5	1.00
3.6		2.16		0.25	0.02		1+10	1.00
3.6		2.30		2.31	0.13		1+10	1.00
3.6		2.30		0.28	0.04		1+14	1.00
3.6		2.38		1.99	0.07		1+14	1.00
3.6		2.21		0.23	0.00		1+19	1.00
3.6		2.29		1.75	0.00		1+19	1.00
3.6		2.06		0.10	0.02		1+24	1.00
3.6		2.22		1.76	0.02		1+24	1.00
3.6	2.76		0.47				-	
3.6		0.80	1.44		0.17		1+5	1.00
3.6	0.33					1.37	-	
3.6	1.81					1.36	-	
3.6	3.03					1.81	-	
3.6	0.35					1.20	-	
3.6		0.46				4.66	1+5	1.00
3.6		1.57				5.02	1+5	1.00
3.6		1.07			2.32		1+10	1.00
3.6		1.55			2.60		1+10	1.00
3.6		1.44			1.71		1+14	1.00
3.6		1.68			1.91		1+14	1.00
3.6		1.65			1.17		1+19	1.00
3.6		1.77			1.45		1+19	1.00
3.6		1.85			0.89		1+24	1.00
3.6		1.80			1.25		1+24	1.00
3.6	2.09		0.07				-	
3.6	1.64		0.05				-	
3.6		0.83	0.22		0.00		1+5	1.00
3.6	2.47		0.01				-	
3.6		0.91	1.03		0.06		1+5	1.00
3.6		0.79	0.90		0.03		1+5	1.00
3.6		2.50				0.04	1+5	1.00
3.6		2.73				0.12	1+5	1.00
3.6		2.23		0.22	0.02		1+10	1.00
3.6		2.36		1.20	0.04		1+10	1.00
3.6		2.32		0.16	0.00		1+14	1.00
3.6		2.46		1.04	0.00		1+14	1.00
3.6		2.33		0.16	0.00		1+19	1.00
3.6		2.29		0.92	0.00		1+19	1.00
3.6		2.37		0.12	0.07		1+24	1.00
3.6		2.31		0.91	0.06		1+24	1.00
3.6	2.88		0.39				-	
3.6		0.85	1.38		0.14		1+5	1.00
3.6	2.07					1.17	-	1.00
3.6		1.08			1.76	0.90	1+5	1.00
3.6		0.83			2.76	1.41	1+5	1.00
3.6	0.42					1.03	-	1.00
3.6		1.79				2.58	1+5	1.00
3.6		2.36				2.93	1+5	1.00
3.6		2.02			1.45		1+10	1.00
3.6		2.23			1.79		1+10	1.00
3.6		2.08			1.03		1+14	1.00
3.6		2.14			1.33		1+14	1.00
3.6		2.29			0.80		1+19	1.00

3.6		2.12		0.94	1+19	1.00	
3.6		2.05		0.58	1+24	1.00	
3.6		2.15		0.71	1+24	1.00	
3.6	1.82		0.15		-		
3.6	1.26		0.20		-		
3.6	4.56		0.13		-		
3.6	2.83		0.62		-		
3.6	3.05		0.00		-		
3.6		0.46	0.55	0.00	1+9	1.00	
3.6	2.62				0.01	1+5	1.00
3.6	3.20				0.01	1+5	1.00
3.6		2.47		0.14	0.00	1+10	1.00
3.6		2.52		0.21	0.00	1+10	1.00
3.6		2.40		0.21	0.00	1+14	1.00
3.6		2.43		0.56	0.00	1+14	1.00
3.6		2.33		0.19	0.00	1+19	1.00
3.6		2.35		0.61	0.00	1+19	1.00
3.6		2.23		0.24	0.04	1+24	1.00
3.6		2.23		0.51	0.04	1+24	1.00
3.6	2.54		0.57			-	
3.6		0.83	1.58	0.18		1+5	1.00
3.6		0.59	9.52	0.72		1+9	1.00
3.6		0.93	5.86	0.49		1+9	1.00
3.6		0.87	11.23	0.87		1+9	1.00
3.6	2.17		10.07			-	
3.6		2.97			1.87	1+5	1.00
3.6		3.89			1.71	1+5	1.00
3.6		2.40		0.62		1+10	1.00
3.6		2.63		1.03		1+10	1.00
3.6		2.43		0.52		1+14	1.00
3.6		2.70		0.73		1+14	1.00
3.6		2.34	6.32	0.19		1+19	1.00
3.6		2.45	10.08	0.37		1+19	1.00
3.6		2.36	4.14	0.07		1+24	1.00
3.6		2.38	10.66	0.35		1+24	1.00
3.6	1.87		0.02			-	
3.6	1.32		0.01			-	
3.6		1.76	0.00	0.00		1+9	1.00
3.6	3.85		0.00			-	
3.6		0.43	0.12	0.00		1+9	1.00
3.6	3.37		0.29			-	
3.6		2.53			0.01	1+5	1.00
3.6		2.70			0.01	1+5	1.00
3.6		2.33	0.10	0.04		1+10	1.00
3.6		2.33	0.14	0.00		1+10	1.00
3.6		2.32	0.08	0.00		1+14	1.00
3.6		2.31	0.27	0.00		1+14	1.00
3.6		2.41	3.69	0.05		1+19	1.00
3.6		2.56	5.58	0.16		1+19	1.00
3.6		2.22	0.14	0.06		1+24	1.00
3.6		2.21	0.24	0.05		1+24	1.00
3.6	2.81		0.47			-	
3.6		0.86	1.44	0.13		1+5	1.00

3.6		0.68	4.02	4.40	0.31	1+9	1.00
3.6		0.75	2.65	2.75	0.17	1+9	1.00
3.6		1.18		5.49	0.46	1+9	1.00
3.6	4.79			5.24		-	
3.6		3.10				0.64	1+5
3.6		3.86				0.94	1+5
3.6		2.51		4.14	0.27		1+10
3.6		2.87		6.16	0.53		1+10
3.6		2.44		3.81	0.08		1+14
3.6		2.79		5.57	0.19		1+14
3.6		2.37		3.76	0.14		1+19
3.6		2.54		5.68	0.23		1+19
3.6		2.27		3.85	0.11		1+24
3.6		2.48		5.33	0.13		1+24

Extra Dilution Nitrate 2.2.04

Weight Vial+Sample (mg)	Weight Vial+Sample +KCl (mg)	KCL Added (mg)	Further Dilution	Further Dilution Factor	Dilution Ratio	Volume Sample (mL)	KCL Added (mg)	Further Dilution
14.27	19.69	5.42	6.42	23.11				
14.01	19.43	5.42	6.42	23.11				
14.40	24.64	10.24	11.24	40.46				
14.26	25.13	10.87	11.87	42.73				
14.08	29.20	15.12	16.12	58.03				
14.07	29.20	15.13	16.13	58.07				
14.22	34.76	20.54	21.54	77.54				
14.02	34.57	20.55	21.55	77.58				
14.48	40.54	26.06	27.06	97.42				
14.29	40.28	25.99	26.99	97.16				
		5.43	6.43	23.15				
					1+11	1.00	11.89	12.89
					1+11	1.00	11.89	12.89
					1+11	1.00	11.89	12.89
					1+11	1.00	11.89	12.89
14.36	19.77	5.41	6.41	23.08				
14.37	19.78	5.41	6.41	23.08				
14.25	25.04	10.79	11.79	42.44				
13.93	23.14	9.21	10.21	36.76				
14.14	29.30	15.16	16.16	58.18				
14.30	29.47	15.17	16.17	58.21				
14.14	34.70	20.56	21.56	77.62				
14.31	34.82	20.51	21.51	77.44				
14.28	40.27	25.99	26.99	97.16				
14.05	40.09	26.04	27.04	97.34				
14.25	19.67	5.42	6.42	23.11				
13.81	19.15	5.34	6.34	22.82				
14.37	24.58	10.21	11.21	40.36				
14.16	24.41	10.25	11.25	40.50				
14.20	29.34	15.14	16.14	58.10				
14.26	29.41	15.15	16.15	58.14				
14.09	34.66	20.57	21.57	77.65				
14.26	34.85	20.59	21.59	77.72				
14.07	40.01	25.94	26.94	96.98				
14.14	40.18	26.04	27.04	97.34				
		5.43	6.43	23.15				

					1+11	1.00	11.89	12.89
					1+11	1.00	11.89	12.89
					1+11	1.00	11.89	12.89
					1+11	1.00	11.89	12.89
14.39	19.80	5.41	6.41	23.08				
14.15	19.57	5.42	6.42	23.11				
14.35	24.66	10.31	11.31	40.72				
14.07	24.92	10.85	11.85	42.66				
14.17	29.32	15.15	16.15	58.14				
14.15	29.35	15.20	16.20	58.32				
14.30	34.91	20.61	21.61	77.80				
14.12	34.66	20.54	21.54	77.54				
14.17	40.14	25.97	26.97	97.09				
14.32	40.35	26.03	27.03	97.31				

14.17	19.60	5.43	6.43	23.15
14.45	19.83	5.38	6.38	22.97
14.31	25.12	10.81	11.81	42.52
14.42	24.76	10.34	11.34	40.82
14.33	29.50	15.17	16.17	58.21
14.24	29.45	15.21	16.21	58.36
14.30	34.88	20.58	21.58	77.69
14.10	34.73	20.63	21.63	77.87
14.26	40.25	25.99	26.99	97.16
14.08	40.09	26.01	27.01	97.24

5.43 6.43 23.15

1+11	1.00	11.89	12.89
1+11	1.00	11.89	12.89
1+11	1.00	11.89	12.89
1+11	1.00	11.89	12.89

14.09	19.52	5.43	6.43	23.15
14.16	19.56	5.40	6.40	23.04
14.15	24.95	10.80	11.80	42.48
14.21	25.06	10.85	11.85	42.66
14.31	29.40	15.09	16.09	57.92
14.41	29.53	15.12	16.12	58.03
14.31	34.92	20.61	21.61	77.80
14.02	34.03	20.01	21.01	75.64
14.04	40.02	25.98	26.98	97.13
14.10	40.12	26.02	27.02	97.27

5.43 6.43 23.15

14.12	18.98	4.86	5.86	21.10
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14.30	19.17	4.87	5.87	21.13
14.14	24.97	10.83	11.83	42.59
14.37	25.21	10.84	11.84	42.62
14.38	29.51	15.13	16.13	58.07
14.24	29.44	15.20	16.20	58.32
14.14	34.62	20.48	21.48	77.33
14.10	34.65	20.55	21.55	77.58
14.36	40.33	25.97	26.97	97.09
14.10	40.09	25.99	26.99	97.16

5.43	6.43	23.15
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1+11	1.00	11.89	12.89
1+11	1.00	11.89	12.89
1+11	1.00	11.89	12.89
1+11	1.00	11.89	12.89

14.20	19.07	4.87	5.87	21.13
14.00	18.90	4.90	5.90	21.24
14.30	25.15	10.85	11.85	42.66
14.26	25.15	10.89	11.89	42.80
14.41	29.52	15.11	16.11	58.00
14.00	29.29	15.29	16.29	58.64
14.22	34.78	20.56	21.56	77.62
14.11	34.69	20.58	21.58	77.69
14.13	40.08	25.95	26.95	97.02
13.86	39.92	26.06	27.06	97.42

5.43	6.43	23.15
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5.43	6.43	23.15
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5.43	6.43	23.15
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14.05	19.45	5.40	6.40	23.04
14.14	19.58	5.44	6.44	23.18
14.42	25.37	10.95	11.95	43.02
14.13	25.01	10.88	11.88	42.77
14.27	29.42	15.15	16.15	58.14
14.25	29.43	15.18	16.18	58.25
14.41	34.90	20.49	21.49	77.36
13.77	34.39	20.62	21.62	77.83
14.42	40.26	25.84	26.84	96.62
14.35	40.34	25.99	26.99	97.16

5.43	6.43	23.15
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1+11	1.00	11.89	12.89
1+11	1.00	11.89	12.89
1+11	1.00	11.89	12.89
1+11	1.00	11.89	12.89

5.43	6.43	23.15
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5.43	6.43	23.15
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14.35	19.81	5.46	6.46	23.26
14.10	19.56	5.46	6.46	23.26
14.02	24.36	10.34	11.34	40.82
14.06	24.33	10.27	11.27	40.57
14.24	29.45	15.21	16.21	58.36
14.34	29.54	15.20	16.20	58.32
14.23	34.83	20.60	21.60	77.76

14.12	34.69	20.57	21.57	77.65
14.42	40.42	26.00	27.00	97.20
13.94	39.94	26.00	27.00	97.20

		9.74	10.74	38.66
13.93	19.36	5.43	6.43	23.15
14.36	19.24	4.88	5.88	21.17
14.20	24.56	10.36	11.36	40.90
14.22	24.64	10.42	11.42	41.11
14.38	29.52	15.14	16.14	58.10
14.01	29.18	15.17	16.17	58.21
14.00	34.63	20.63	21.63	77.87
14.04	34.41	20.37	21.37	76.93
14.19	40.10	25.91	26.91	96.88
14.26	40.26	26.00	27.00	97.20

		5.43	6.43	23.15
		9.74	10.74	38.66
		9.74	10.74	38.66
		9.74	10.74	38.66

14.35	19.22	4.87	5.87	21.13
13.87	18.74	4.87	5.87	21.13
14.41	25.24	10.83	11.83	42.59
14.29	25.10	10.81	11.81	42.52
14.12	28.69	14.57	15.57	56.05
14.28	29.39	15.11	16.11	58.00
14.21	34.76	20.55	21.55	77.58
14.25	34.62	20.37	21.37	76.93
14.24	40.10	25.86	26.86	96.70
14.31	40.26	25.95	26.95	97.02

		9.74	10.74	38.66
		9.74	10.74	38.66

14.15	19.55	5.40	6.40	23.04
14.40	19.84	5.44	6.44	23.18
14.38	25.20	10.82	11.82	42.55
14.33	25.20	10.87	11.87	42.73
14.36	29.54	15.18	16.18	58.25
14.13	29.30	15.17	16.17	58.21
14.43	35.01	20.58	21.58	77.69
14.09	34.64	20.55	21.55	77.58
14.12	40.06	25.94	26.94	96.98
14.37	40.39	26.02	27.02	97.27

		5.43	6.43	23.15
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		9.74	10.74	38.66
		9.74	10.74	38.66
		9.74	10.74	38.66
14.34	19.77	5.43	6.43	23.15
14.12	19.55	5.43	6.43	23.15
14.10	24.97	10.87	11.87	42.73
14.03	24.81	10.78	11.78	42.41
14.10	29.46	15.36	16.36	58.90
14.45	29.59	15.14	16.14	58.10
14.32	34.90	20.58	21.58	77.69
14.02	34.55	20.53	21.53	77.51
14.24	40.20	25.96	26.96	97.06
14.27	40.23	25.96	26.96	97.06

Further Dilution Factor	Value NH ₄ ⁺ -N (mg/kg)	Dilution NH ₄ ⁺ -N (mg/kg)	Dilution NH ₄ ⁺ -N (mg/kg)	Value NO ₃ ⁻ -N (mg/kg)	Value NO ₃ ⁻ -N (mg/kg)	Dilution NO ₃ ⁻ -N (mg/kg)	Dilution NO ₃ ⁻ -N (mg/kg)	NH ₄ ⁺ -N (mg/kg)
	6.94			0.26				6.94
	5.23			0.27				5.23
	10.40			3.36				10.40
	6.39			0.42				6.39
	2.89			32.12				2.89
	4.34			9.95				4.34
		47.39					15.56	47.39
		14.73					61.09	14.73
			114.51			4.78		114.51
			85.13			52.38		85.13
			135.58		7.51	4.07		135.58
			107.62			50.64		107.62
			167.23		9.64	2.14		167.23
			158.43		36.28	23.90		158.43
			205.24		5.89	5.93		205.24
			215.62		14.78	40.60		215.62
	10.33			1.74				10.33
			19.02	5.33		8.50		19.02
46.40	1.67						85.10	1.67
46.40	2.18						111.45	2.18
46.40	3.78						110.62	3.78
46.40	1.43						86.03	1.43
		0.65					135.09	0.65
		9.60					144.17	9.60
			12.24			181.04		12.24
			31.33			172.28		31.33
			32.53			195.17		32.53
			49.02			172.85		49.02
			67.33			184.27		67.33
			90.64			146.08		90.64
			112.61			188.37		112.61
			124.23			150.35		124.23
	6.92			0.35				6.92
	5.05			0.23				5.05
	8.03			1.14				8.03
	3.38			0.07				3.38
	5.71			18.83				5.71
	6.91			9.79				6.91
		47.76					4.45	47.76
		34.50					38.17	34.50
			85.51		3.86	2.24		85.51
			82.32			24.90		82.32
			122.52		1.01	0.29		122.52
			126.09		27.41	28.48		126.09
			156.27		0.57	0.00		156.27
			163.20		20.22	44.14		163.20
			208.72		1.67	5.55		208.72
			216.53		14.12	6.68		216.53
	9.45			1.50				9.45
			18.13	4.76		3.63		18.13

46.40	1.29					75.84	1.29
46.40	1.82					84.42	1.82
46.40	4.35					96.95	4.35
46.40	1.20					67.30	1.20
		0.71				124.05	0.71
		11.77				130.69	11.77
			23.56			153.94	23.56
			30.75			145.14	30.75
			45.34			158.01	45.34
			56.86			154.66	56.86
			95.60			142.66	95.60
			97.29			142.95	97.29
			150.49			149.42	150.49
			141.27			138.22	141.27
	6.91			0.23			6.91
	4.92			0.15			4.92
	9.57			1.30			9.57
	5.04			0.00			5.04
	12.37			14.19			12.37
	5.52			6.48			5.52
		51.70					51.70
		50.24				1.95	50.24
			92.24		1.25	2.72	92.24
			89.68		19.12	17.68	89.68
			135.07		1.85	0.68	135.07
			139.92		11.68	9.40	139.92
			174.81		1.32	2.51	174.81
			173.09		13.31	8.16	173.09
			215.24		1.05	3.81	215.24
			222.69		10.77	6.11	222.69
	9.62			1.71			9.62
			19.03	4.79		3.61	19.03
46.40	1.46					89.63	1.46
46.40	4.41					88.49	4.41
46.40	3.69					94.90	3.69
46.40	1.22					64.36	1.22
		3.01				112.92	3.01
		21.95				121.47	21.95
			21.67			131.85	21.67
			46.83			132.88	46.83
			83.93			135.22	83.93
			76.65			144.77	76.65
			112.14			131.16	112.14
			115.85			134.44	115.85
			166.27			124.94	166.27
			163.73			132.92	163.73
	6.87			0.07			6.87
	5.03			0.11			5.03
	9.83			0.80			9.83
	4.56			0.00			4.56
			16.34	8.53		5.18	16.34
	17.38			6.57			17.38
		52.00				0.25	52.00

		56.63			9.99	56.63
		92.05		0.91	4.06	92.05
		98.02		8.31	5.60	98.02
		133.66		1.02	0.46	133.66
		138.73		7.16	4.04	138.73
		170.83		0.83	0.00	170.83
		177.65		6.30	0.00	177.65
		200.40		0.35	2.24	200.40
		216.12		6.33	2.15	216.12
	9.94		1.69			9.94
		18.57	5.17		3.84	18.57
46.40	1.20				63.76	1.20
46.40	6.53				63.16	6.53
46.40	10.92				83.87	10.92
46.40	1.26				55.78	1.26
		9.73			98.57	9.73
		33.38			106.56	33.38
		45.58			98.93	45.58
		66.14			111.49	66.14
		83.35			99.00	83.35
		98.61			111.89	98.61
		128.02			91.00	128.02
		137.54			112.99	137.54
		179.06			86.45	179.06
		175.67			122.21	175.67
	7.53		0.24			7.53
	5.91		0.20			5.91
		19.12	0.80		0.00	19.12
	8.89		0.02			8.89
		21.04	3.70		4.39	21.04
		18.36	3.24		0.79	18.36
		57.54			0.82	57.54
		63.41			2.77	63.41
		96.14		0.78	0.91	96.14
		100.73		4.33	0.36	100.73
		135.13		0.57	0.00	135.13
		143.19		3.73	0.00	143.19
		179.99		0.56	0.00	179.99
		178.19		3.32	0.00	178.19
		229.35		0.45	6.61	229.35
		224.38		3.28	5.36	224.38
	10.37		1.40			10.37
		19.60	4.96		3.24	19.60
46.40	7.45				54.15	7.45
46.40		25.06			40.67	25.06
46.40		19.23			63.84	19.23
46.40	1.53				47.71	1.53
		41.56			59.94	41.56
		54.85			68.15	54.85
		82.55			59.27	82.55
		90.62			72.52	90.62
		121.11			59.86	121.11
		124.72			77.44	124.72
		177.80			61.96	177.80

		164.89		72.96		164.89
		199.32		55.96		199.32
		208.60		68.62		208.60
6.54			0.55			6.54
4.53			0.72			4.53
16.43			0.47			16.43
10.20			2.23			10.20
10.98			0.00			10.98
		17.60	1.98	0.00		17.60
	60.61				0.26	60.61
	67.77				0.24	67.77
		101.21		0.52	0.16	101.21
		103.50		0.74	0.00	103.50
		139.32		0.75	0.00	139.32
		141.64		2.03	0.00	141.64
		181.16		0.70	0.00	181.16
		180.96		2.19	0.00	180.96
		216.26		0.88	3.88	216.26
		216.94		1.85	1.41	216.94
9.15			2.06			9.15
		19.30	5.67	4.08		19.30
		22.89	34.27	27.68		22.89
		36.04	21.10	18.78		36.04
		33.53	40.44	33.58		33.53
7.80			36.23			7.80
	62.67				39.49	62.67
	82.27				36.13	82.27
		102.05		26.51		102.05
		111.69		43.58		111.69
		136.44		29.15		136.44
		156.86		42.34		156.86
		181.37		22.76	14.64	181.37
		188.50		36.30	28.51	188.50
		228.08		14.89	7.24	228.08
		231.04		38.38	34.29	231.04
6.74			0.07			6.74
4.76			0.02			4.76
		68.05	0.00	0.00		68.05
13.85			0.00			13.85
		16.66	0.44	0.00		16.66
12.13			1.03			12.13
	58.30				0.25	58.30
	62.51				0.25	62.51
		99.12		0.34	0.52	99.12
		99.37		0.52	0.00	99.37
		134.93		0.30	0.00	134.93
		134.26		0.97	0.00	134.26
		187.45		13.29	4.06	187.45
		198.64		20.07	12.54	198.64
		215.24		0.50	5.72	215.24
		215.36		0.88	4.45	215.36
10.11			1.69			10.11
		19.88	5.19	2.91		19.88

		26.40	14.48	15.84	12.01	26.40
		29.05	9.53	9.90	6.73	29.05
		45.56		19.75	17.93	45.56
17.23				18.87		17.23
	71.80					71.80
	89.26				14.88	89.26
		107.47		14.91	11.45	107.47
		121.52		22.18	22.31	121.52
		143.89		13.72	4.63	143.89
		161.91		20.04	10.91	161.91
		183.86		13.52	10.59	183.86
		197.14		20.44	18.08	197.14
		219.98		13.85	10.31	219.98
		240.84		19.20	12.61	240.84

NO ₃ ⁻ -N (mg/kg)	NH ₄ ⁺ -N Replicate1 (mg/kg)	NO ₃ ⁻ -N Replicate1 (mg/kg)	NH ₄ ⁺ -N Replicate3 (mg/kg)	NO ₃ ⁻ -N Replicate3 (mg/kg)
0.26	6.94	0.26		
0.27			5.23	0.27
3.36	10.40	3.36		
0.42				
32.12			2.89	32.12
9.95				
15.56	47.39	15.56		
61.09			14.73	61.09
4.78	114.51	4.78		
52.38			85.13	52.38
7.51	135.58	7.51		
50.64			107.62	50.64
9.64	167.23	9.64		
36.28			158.43	36.28
5.89	205.24	5.89		
14.78			215.62	14.78
1.74	10.33	1.74		
5.33			19.02	5.33
85.10	1.67	85.10		
111.45				
110.62			3.78	110.62
86.03				
135.09	0.65	135.09		
144.17			9.60	144.17
181.04	12.24	181.04		
172.28			31.33	172.28
195.17	32.53	195.17		
172.85			49.02	172.85
184.27	67.33	184.27		
146.08			90.64	146.08
188.37	112.61	188.37		
150.35			124.23	150.35
0.35	6.92	0.35		
0.23			5.05	0.23
1.14	8.03	1.14		
0.07				
18.83			5.71	18.83
9.79				
4.45	47.76	4.45		
38.17			34.50	38.17
3.86	85.51	3.86		
24.90			82.32	24.90
1.01	122.52	1.01		
27.41			126.09	27.41
0.57	156.27	0.57		
20.22			163.20	20.22
1.67	208.72	1.67		
14.12			216.53	14.12
1.50	9.45	1.50		
4.76			18.13	4.76

All Rate-40 dilution calculations corrected 28.

75.84	1.29	75.84		
84.42				
96.95			4.35	96.95
67.30				
124.05	0.71	124.05		
130.69			11.77	130.69
153.94	23.56	153.94		
145.14			30.75	145.14
158.01	45.34	158.01		
154.66			56.86	154.66
142.66	95.60	142.66		
142.95			97.29	142.95
149.42	150.49	149.42		
138.22			141.27	138.22
0.23	6.91	0.23		
0.15			4.92	0.15
1.30	9.57	1.30		
0.00				
14.19			12.37	14.19
6.48				
1.95	51.70	1.95		
16.96			50.24	16.96
1.25	92.24	1.25		
19.12			89.68	19.12
1.85	135.07	1.85		
11.68			139.92	11.68
1.32	174.81	1.32		
13.31			173.09	13.31
1.05	215.24	1.05		
10.77			222.69	10.77
1.71	9.62	1.71		
4.79			19.03	4.79
89.63	1.46	89.63		
88.49				
94.90			3.69	94.90
64.36				
112.92	3.01	112.92		
121.47			21.95	121.47
131.85	21.67	131.85		
132.88			46.83	132.88
135.22	83.93	135.22		
144.77			76.65	144.77
131.16	112.14	131.16		
134.44			115.85	134.44
124.94	166.27	124.94		
132.92			163.73	132.92
0.07	6.87	0.07		
0.11			5.03	0.11
0.80	9.83	0.80		
0.00				
8.53			16.34	8.53
6.57				
0.25	52.00	0.25		

9.99			56.63	9.99
0.91	92.05	0.91		
8.31			98.02	8.31
1.02	133.66	1.02		
7.16			138.73	7.16
0.83	170.83	0.83		
6.30			177.65	6.30
0.35	200.40	0.35		
6.33			216.12	6.33
1.69	9.94	1.69		
5.17			18.57	5.17
63.76	1.20	63.76		
63.16				
83.87			10.92	83.87
55.78				
98.57	9.73	98.57		
106.56			33.38	106.56
98.93	45.58	98.93		
111.49			66.14	111.49
99.00	83.35	99.00		
111.89			98.61	111.89
91.00	128.02	91.00		
112.99			137.54	112.99
86.45	179.06	86.45		
122.21			175.67	122.21
0.24	7.53	0.24		
0.20			5.91	0.20
0.80	19.12	0.80		
0.02				
3.70			21.04	3.70
3.24				
0.82	57.54	0.82		
2.77			63.41	2.77
0.78	96.14	0.78		
4.33			100.73	4.33
0.57	135.13	0.57		
3.73			143.19	3.73
0.56	179.99	0.56		
3.32			178.19	3.32
0.45	229.35	0.45		
3.28			224.38	3.28
1.40	10.37	1.40		
4.96			19.60	4.96
54.15	7.45	54.15		
40.67				
63.81			19.23	63.81
47.71				
59.94	41.56	59.94		
68.15			54.85	68.15
59.27	82.55	59.27		
72.52			90.62	72.52
59.86	121.11	59.86		
77.44			124.72	77.44
61.96	177.80	61.96		

72.96			164.89	72.96	
55.96	199.32	55.96			
68.62			208.60	68.62	
0.55	6.54	0.55			
0.72			4.53	0.72	
0.47	16.43	0.47			
2.23					
0.00			10.98	0.00	
1.98					
0.26	60.61	0.26			
0.24			67.77	0.24	
0.52	101.21	0.52			
0.74			103.50	0.74	
0.75	139.32	0.75			
2.03			141.64	2.03	
0.70	181.16	0.70			
2.19			180.96	2.19	
0.88	216.26	0.88			
1.85			216.94	1.85	
2.06	9.15	2.06			
5.67			19.30	5.67	
34.27	22.89	34.27			
21.10					
40.44			33.53	40.44	
36.23					
39.49	62.67	39.49			
36.13			82.27	36.13	
26.51	102.05	26.51			
43.58			111.69	43.58	
29.15	136.44	29.15			Nitrate Corrected 28.12.05
42.34			156.86	42.34	Nitrate Corrected 28.12.05
22.76	181.37	22.76			
36.30			188.50	36.30	
14.89	228.08	14.89			
38.38			231.04	38.38	
0.07	6.74	0.07			
0.02			4.76	0.02	
0.00	68.05	0.00			
0.00					
0.44			16.66	0.44	
1.03					
0.25	58.30	0.25			
0.25			62.51	0.25	
0.34	99.12	0.34			
0.52			99.37	0.52	
0.30	134.93	0.30			
0.97			134.26	0.97	
13.29	187.45	13.29			
20.07			198.64	20.07	
0.50	215.24	0.50			
0.88			215.36	0.88	
1.69	10.11	1.69			
5.19			19.88	5.19	

14.48	26.40	14.48		
9.53				
19.75			45.56	19.75
18.87				
14.88	71.80	14.88		
21.83			89.26	21.83
14.91	107.47	14.91		
22.18			121.52	22.18
13.72	143.89	13.72		
20.04			161.91	20.04
13.52	183.86	13.52		
20.44			197.14	20.44
13.85	219.98	13.85		
19.20			240.84	19.20

.12.05

Site	Area	Soil Depth (cm)	Transect	Rate	Soil ID	Sample	Soil Weight (g)	H ₂ O or (NH ₄) ₂ SO ₄ Added (g)	KCL Added (mL)
40	Reserve	0-2.5	1	0		1	10.0	6.0	30.0
		2.5-5	1	0		2	10.0	6.0	30.0
		5-10	1	0		3	10.0	6.0	30.0
		10-15	1	0		4	10.0	6.0	30.0
		15-20	1	0		5	10.0	6.0	30.0
		0-2.5	2	0		6	10.0	6.0	30.0
		2.5-5	2	0		7	10.0	6.0	30.0
		5-10	2	0		8	10.0	6.0	30.0
		10-15	2	0		9	10.0	6.0	30.0
		15-20	2	0		10	10.0	6.0	30.0
	Reserve	0-2.5	1	100		11	10.0	6.0	30.0
		2.5-5	1	100		12	10.0	6.0	30.0
		5-10	1	100		13	10.0	6.0	30.0
		10-15	1	100		14	10.0	6.0	30.0
		15-20	1	100		15	10.0	6.0	30.0
		0-2.5	2	100		16	10.0	6.0	30.0
		2.5-5	2	100		17	10.0	6.0	30.0
		5-10	2	100		18	10.0	6.0	30.0
		10-15	2	100		19	10.0	6.0	30.0
		15-20	2	100		20	10.0	6.0	30.0
40	Paddock	0-2.5	1	0		21	10.0	6.0	30.0
		2.5-5	1	0		22	10.0	6.0	30.0
		5-10	1	0		23	10.0	6.0	30.0
		10-15	1	0		24	10.0	6.0	30.0
		15-20	1	0		25	10.0	6.0	30.0
		0-2.5	2	0		26	10.0	6.0	30.0
		2.5-5	2	0		27	10.0	6.0	30.0
		5-10	2	0		28	10.0	6.0	30.0
		10-15	2	0		29	10.0	6.0	30.0
		15-20	2	0		30	10.0	6.0	30.0
	Paddock	0-2.5	1	100		31	10.0	6.0	30.0
		2.5-5	1	100		32	10.0	6.0	30.0
		5-10	1	100		33	10.0	6.0	30.0
		10-15	1	100		34	10.0	6.0	30.0
		15-20	1	100		35	10.0	6.0	30.0
		0-2.5	2	100		36	10.0	6.0	30.0
		2.5-5	2	100		37	10.0	6.0	30.0
		5-10	2	100		38	10.0	6.0	30.0
		10-15	2	100		39	10.0	6.0	30.0
		15-20	2	100		40	10.0	6.0	30.0
41	Reserve	0-2.5	1	0		41	10.0	6.0	30.0
		2.5-5	1	0		42	10.0	6.0	30.0
		5-10	1	0		43	10.0	6.0	30.0
		10-15	1	0		44	10.0	6.0	30.0
		15-20	1	0		45	10.0	6.0	30.0
		0-2.5	2	0		46	10.0	6.0	30.0
		2.5-5	2	0		47	10.0	6.0	30.0
		5-10	2	0		48	10.0	6.0	30.0
		10-15	2	0		49	10.0	6.0	30.0
		15-20	2	0		50	10.0	6.0	30.0

41	Reserve	0-2.5	1	100	51	10.0	6.0	30.0
		2.5-5	1	100	52	10.0	6.0	30.0
		5-10	1	100	53	10.0	6.0	30.0
		10-15	1	100	54	10.0	6.0	30.0
		15-20	1	100	55	10.0	6.0	30.0
		0-2.5	2	100	56	10.0	6.0	30.0
		2.5-5	2	100	57	10.0	6.0	30.0
		5-10	2	100	58	10.0	6.0	30.0
		10-15	2	100	59	10.0	6.0	30.0
		15-20	2	100	60	10.0	6.0	30.0
	Paddock	0-2.5	1	0	61	10.0	6.0	30.0
		2.5-5	1	0	62	10.0	6.0	30.0
		5-10	1	0	63	10.0	6.0	30.0
		10-15	1	0	64	10.0	6.0	30.0
		15-20	1	0	65	10.0	6.0	30.0
		0-2.5	2	0	66	10.0	6.0	30.0
		2.5-5	2	0	67	10.0	6.0	30.0
		5-10	2	0	68	10.0	6.0	30.0
		10-15	2	0	69	10.0	6.0	30.0
		15-20	2	0	70	10.0	6.0	30.0
Paddock	0-2.5	1	100	71	10.0	6.0	30.0	
	2.5-5	1	100	72	10.0	6.0	30.0	
	5-10	1	100	73	10.0	6.0	30.0	
	10-15	1	100	74	10.0	6.0	30.0	
	15-20	1	100	75	10.0	6.0	30.0	
	0-2.5	2	100	76	10.0	6.0	30.0	
	2.5-5	2	100	77	10.0	6.0	30.0	
	5-10	2	100	78	10.0	6.0	30.0	
	10-15	2	100	79	10.0	6.0	30.0	
	15-20	2	100	80	10.0	6.0	30.0	
61	Reserve	0-2.5	1	0	81	10.0	6.0	30.0
		2.5-5	1	0	82	10.0	6.0	30.0
		5-10	1	0	83	10.0	6.0	30.0
		10-15	1	0	84	10.0	6.0	30.0
		15-20	1	0	85	10.0	6.0	30.0
		0-2.5	2	0	86	10.0	6.0	30.0
		2.5-5	2	0	87	10.0	6.0	30.0
		5-10	2	0	88	10.0	6.0	30.0
		10-15	2	0	89	10.0	6.0	30.0
		15-20	2	0	90	10.0	6.0	30.0
	Reserve	0-2.5	1	100	91	10.0	6.0	30.0
		2.5-5	1	100	92	10.0	6.0	30.0
		5-10	1	100	93	10.0	6.0	30.0
		10-15	1	100	94	10.0	6.0	30.0
		15-20	1	100	95	10.0	6.0	30.0
		0-2.5	2	100	96	10.0	6.0	30.0
		2.5-5	2	100	97	10.0	6.0	30.0
		5-10	2	100	98	10.0	6.0	30.0
		10-15	2	100	99	10.0	6.0	30.0
		15-20	2	100	100	10.0	6.0	30.0
61	Paddock	0-2.5	1	0	101	10.0	6.0	30.0
		2.5-5	1	0	102	10.0	6.0	30.0
		5-10	1	0	103	10.0	6.0	30.0
		10-15	1	0	104	10.0	6.0	30.0

		15-20	1	0	105	10.0	6.0	30.0
		0-2.5	2	0	106	10.0	6.0	30.0
		2.5-5	2	0	107	10.0	6.0	30.0
		5-10	2	0	108	10.0	6.0	30.0
		10-15	2	0	109	10.0	6.0	30.0
		15-20	2	0	110	10.0	6.0	30.0
	Paddock	0-2.5	1	100	111	10.0	6.0	30.0
		2.5-5	1	100	112	10.0	6.0	30.0
		5-10	1	100	113	10.0	6.0	30.0
		10-15	1	100	114	10.0	6.0	30.0
		15-20	1	100	115	10.0	6.0	30.0
		0-2.5	2	100	116	10.0	6.0	30.0
		2.5-5	2	100	117	10.0	6.0	30.0
		5-10	2	100	118	10.0	6.0	30.0
		10-15	2	100	119	10.0	6.0	30.0
		15-20	2	100	120	10.0	6.0	30.0
63	Reserve	0-2.5	1	0	121	10.0	6.0	30.0
		2.5-5	1	0	122	10.0	6.0	30.0
		5-10	1	0	123	10.0	6.0	30.0
		10-15	1	0	124	10.0	6.0	30.0
		15-20	1	0	125	10.0	6.0	30.0
		0-2.5	2	0	126	10.0	6.0	30.0
		2.5-5	2	0	127	10.0	6.0	30.0
		5-10	2	0	128	10.0	6.0	30.0
		10-15	2	0	129	10.0	6.0	30.0
		15-20	2	0	130	10.0	6.0	30.0
	Reserve	0-2.5	1	100	131	10.0	6.0	30.0
		2.5-5	1	100	132	10.0	6.0	30.0
		5-10	1	100	133	10.0	6.0	30.0
		10-15	1	100	134	10.0	6.0	30.0
		15-20	1	100	135	10.0	6.0	30.0
		0-2.5	2	100	136	10.0	6.0	30.0
		2.5-5	2	100	137	10.0	6.0	30.0
		5-10	2	100	138	10.0	6.0	30.0
		10-15	2	100	139	10.0	6.0	30.0
		15-20	2	100	140	10.0	6.0	30.0
63	Paddock	0-2.5	1	0	141	10.0	6.0	30.0
		2.5-5	1	0	142	10.0	6.0	30.0
		5-10	1	0	143	10.0	6.0	30.0
		10-15	1	0	144	10.0	6.0	30.0
		15-20	1	0	145	10.0	6.0	30.0
		0-2.5	2	0	146	10.0	6.0	30.0
		2.5-5	2	0	147	10.0	6.0	30.0
		5-10	2	0	148	10.0	6.0	30.0
		10-15	2	0	149	10.0	6.0	30.0
		15-20	2	0	150	10.0	6.0	30.0
	Paddock	0-2.5	1	100	151	10.0	6.0	30.0
		2.5-5	1	100	152	10.0	6.0	30.0
		5-10	1	100	153	10.0	6.0	30.0
		10-15	1	100	154	10.0	6.0	30.0
		15-20	1	100	155	10.0	6.0	30.0
		0-2.5	2	100	156	10.0	6.0	30.0
		2.5-5	2	100	157	10.0	6.0	30.0
		5-10	2	100	158	10.0	6.0	30.0

		10-15	2	100	159	10.0	6.0	30.0	
		15-20	2	100	160	10.0	6.0	30.0	
201	Reserve	0-2.5	1	0	161	10.0	6.0	30.0	
		2.5-5	1	0	162	10.0	6.0	30.0	
		5-10	1	0	163	10.0	6.0	30.0	
		10-15	1	0	164	10.0	6.0	30.0	
		15-20	1	0	165	10.0	6.0	30.0	
		0-2.5	2	0	166	10.0	6.0	30.0	
		2.5-5	2	0	167	10.0	6.0	30.0	
		5-10	2	0	168	10.0	6.0	30.0	
		10-15	2	0	169	10.0	6.0	30.0	
		15-20	2	0	170	10.0	6.0	30.0	
		Reserve	0-2.5	1	100	171	10.0	6.0	30.0
			2.5-5	1	100	172	10.0	6.0	30.0
			5-10	1	100	173	10.0	6.0	30.0
			10-15	1	100	174	10.0	6.0	30.0
			15-20	1	100	175	10.0	6.0	30.0
			0-2.5	2	100	176	10.0	6.0	30.0
	2.5-5		2	100	177	10.0	6.0	30.0	
	5-10		2	100	178	10.0	6.0	30.0	
	10-15		2	100	179	10.0	6.0	30.0	
	15-20		2	100	180	10.0	6.0	30.0	
201	Paddock	0-2.5	1	0	181	10.0	6.0	30.0	
		2.5-5	1	0	182	10.0	6.0	30.0	
		5-10	1	0	183	10.0	6.0	30.0	
		10-15	1	0	184	10.0	6.0	30.0	
		15-20	1	0	185	10.0	6.0	30.0	
		0-2.5	2	0	186	10.0	6.0	30.0	
		2.5-5	2	0	187	10.0	6.0	30.0	
		5-10	2	0	188	10.0	6.0	30.0	
		10-15	2	0	189	10.0	6.0	30.0	
		15-20	2	0	190	10.0	6.0	30.0	
	Paddock	0-2.5	1	100	191	10.0	6.0	30.0	
		2.5-5	1	100	192	10.0	6.0	30.0	
		5-10	1	100	193	10.0	6.0	30.0	
		10-15	1	100	194	10.0	6.0	30.0	
		15-20	1	100	195	10.0	6.0	30.0	
		0-2.5	2	100	196	10.0	6.0	30.0	
		2.5-5	2	100	197	10.0	6.0	30.0	
		5-10	2	100	198	10.0	6.0	30.0	
		10-15	2	100	199	10.0	6.0	30.0	
		15-20	2	100	200	10.0	6.0	30.0	
205	Reserve	0-2.5	1	0	201	10.0	6.0	30.0	
		2.5-5	1	0	202	10.0	6.0	30.0	
		5-10	1	0	203	10.0	6.0	30.0	
		10-15	1	0	204	10.0	6.0	30.0	
		15-20	1	0	205	10.0	6.0	30.0	
		0-2.5	2	0	206	10.0	6.0	30.0	
		2.5-5	2	0	207	10.0	6.0	30.0	
		5-10	2	0	208	10.0	6.0	30.0	
		10-15	2	0	209	10.0	6.0	30.0	
		15-20	2	0	210	10.0	6.0	30.0	
	Reserve	0-2.5	1	100	211	10.0	6.0	30.0	

205		2.5-5	1	100	212	10.0	6.0	30.0
		5-10	1	100	213	10.0	6.0	30.0
		10-15	1	100	214	10.0	6.0	30.0
		15-20	1	100	215	10.0	6.0	30.0
		0-2.5	2	100	216	10.0	6.0	30.0
		2.5-5	2	100	217	10.0	6.0	30.0
		5-10	2	100	218	10.0	6.0	30.0
		10-15	2	100	219	10.0	6.0	30.0
		15-20	2	100	220	10.0	6.0	30.0
		Paddock	0-2.5	1	0	221	10.0	6.0
	Paddock	2.5-5	1	0	222	10.0	6.0	30.0
		5-10	1	0	223	10.0	6.0	30.0
		10-15	1	0	224	10.0	6.0	30.0
		15-20	1	0	225	10.0	6.0	30.0
		0-2.5	2	0	226	10.0	6.0	30.0
		2.5-5	2	0	227	10.0	6.0	30.0
		5-10	2	0	228	10.0	6.0	30.0
		10-15	2	0	229	10.0	6.0	30.0
		15-20	2	0	230	10.0	6.0	30.0
		Paddock	0-2.5	1	100	231	10.0	6.0
Paddock	2.5-5	1	100	232	10.0	6.0	30.0	
	5-10	1	100	233	10.0	6.0	30.0	
	10-15	1	100	234	10.0	6.0	30.0	
	15-20	1	100	235	10.0	6.0	30.0	
	0-2.5	2	100	236	10.0	6.0	30.0	
	2.5-5	2	100	237	10.0	6.0	30.0	
	5-10	2	100	238	10.0	6.0	30.0	
	10-15	2	100	239	10.0	6.0	30.0	
	15-20	2	100	240	10.0	6.0	30.0	

Total Added (mL)	General Dilution Factor	18/19.5.04	20.5.04	24.5.04	18/19.5.04	20.5.04	20.5.04	24.5.04	Dilution Ratio
		Value NH ₄ ⁺ -N (Auto-A)	Dilution NH ₄ ⁺ -N (Auto-A)	Dilution NH ₄ ⁺ -N (Auto-A)	Value NO ₃ ⁻ -N (Auto-A)	Value NO ₃ ⁻ -N (Auto-A)	Dilution NO ₃ ⁻ -N (Auto-A)	Dilution NO ₃ ⁻ -N (Auto-A)	
36.0	3.6		1.24		2.05		0.23		10
36.0	3.6		0.74		0.04				10
36.0	3.6	3.54			0.00				
36.0	3.6	5.67			0.00				
36.0	3.6	5.58			0.00				
36.0	3.6		0.87		3.98		0.40		10
36.0	3.6		0.88		0.69				10
36.0	3.6		0.81		0.04				10
36.0	3.6		1.36		0.01				5
36.0	3.6		1.10		0.01				5
36.0	3.6		2.09		3.14				20
36.0	3.6		1.93		0.04				20
36.0	3.6		1.86		0.03				20
36.0	3.6		1.72		0.01				20
36.0	3.6		1.63		0.00				20
36.0	3.6		2.18		3.90				20
36.0	3.6		2.06		0.63				20
36.0	3.6		1.92		0.01				20
36.0	3.6		1.74		0.01				20
36.0	3.6		1.68		0.00				20
36.0	3.6	0.33					1.80		20
36.0	3.6	0.51					0.87		20
36.0	3.6		0.80		10.03		1.05		10
36.0	3.6		1.44		2.34		0.49		5
36.0	3.6		1.06		0.42				5
36.0	3.6	0.32					1.51		20
36.0	3.6	0.64					1.55		20
36.0	3.6	4.69	0.46				1.30		20
36.0	3.6		1.62		0.62				5
36.0	3.6		1.32		0.70				5
36.0	3.6		0.48				2.63		20
36.0	3.6		1.16				1.13		20
36.0	3.6		1.84		9.05		0.42		20
36.0	3.6		1.93		0.70				20
36.0	3.6		1.65		0.57				20
36.0	3.6		0.46				2.33		20
36.0	3.6		0.88				1.33		20
36.0	3.6		1.60				0.67		20
36.0	3.6		1.83		0.96				20
36.0	3.6		1.87		0.73				20
36.0	3.6	2.53			0.00				
36.0	3.6	3.67			0.00				
36.0	3.6	4.79			0.00				
36.0	3.6		1.19		0.00				5
36.0	3.6	3.04			3.34				
36.0	3.6	2.74			5.48				
36.0	3.6	3.44			4.82				
36.0	3.6	2.34			6.53				
36.0	3.6	2.87			5.03				
36.0	3.6	2.91			2.33				

36.0	3.6		1.58	0.04			20
36.0	3.6		1.45	0.01			20
36.0	3.6		1.66	0.03			20
36.0	3.6		1.70	0.18			20
36.0	3.6		1.65	0.27			20
36.0	3.6		1.54	7.42		0.36	20
36.0	3.6		1.51	6.32		0.27	20
36.0	3.6		1.36	9.15		0.39	20
36.0	3.6		1.27	9.08		0.41	20
36.0	3.6		1.16	9.07		0.42	20
36.0	3.6		0.34			3.48	20
36.0	3.6	0.38				1.36	20
36.0	3.6	0.54				0.80	20
36.0	3.6	0.29				0.76	20
36.0	3.6	0.30				0.50	20
36.0	3.6	0.76				3.05	20
36.0	3.6	0.38				1.30	20
36.0	3.6	0.54				0.90	20
36.0	3.6	0.29				0.64	20
36.0	3.6	0.85		8.90			20
36.0	3.6		1.36			3.79	20
36.0	3.6		0.36			2.38	20
36.0	3.6		0.74			1.52	20
36.0	3.6		0.67			1.54	20
36.0	3.6		0.85			1.05	20
36.0	3.6		0.36			3.97	20
36.0	3.6		0.60			1.99	20
36.0	3.6		1.05			1.25	20
36.0	3.6		0.65			1.44	20
36.0	3.6		1.14			0.65	20
36.0	3.6	1.10		7.86			20
36.0	3.6	3.72		7.53			20
36.0	3.6		0.58	1.65			10
36.0	3.6		0.61	1.16			10
36.0	3.6	4.81		0.51			20
36.0	3.6	1.56	0.13			1.00	10
36.0	3.6	5.00		2.19	2.27		20
36.0	3.6		0.61	0.01			10
36.0	3.6		0.65	0.00			10
36.0	3.6		0.60	0.07			10
36.0	3.6		1.38	7.39		0.33	20
36.0	3.6		1.65	1.93			20
36.0	3.6		1.62	1.33			20
36.0	3.6		1.61	1.29			20
36.0	3.6		1.58	0.33			20
36.0	3.6		1.80	2.82			20
36.0	3.6		1.76	0.05			20
36.0	3.6		1.64	0.00			20
36.0	3.6		1.65	0.00			20
36.0	3.6		1.59	0.00			20
36.0	3.6	0.28				1.50	20
36.0	3.6	2.87		8.44	8.86		20
36.0	3.6	2.47		4.20			20
36.0	3.6	0.71		6.39	6.49		20

36.0	3.6	1.08			5.44	5.52				
36.0	3.6	0.26					1.34			20
36.0	3.6	0.41			8.93	9.65				
36.0	3.6	0.71			8.51	9.11				
36.0	3.6	0.81			7.40	7.84				
36.0	3.6	0.47			5.47	5.72				
36.0	3.6		1.18				2.04			20
36.0	3.6		1.26				0.49			20
36.0	3.6		1.06				0.48			20
36.0	3.6		0.68				0.98			20
36.0	3.6		0.82				0.79			20
36.0	3.6		0.42				2.27			20
36.0	3.6		0.34				1.51			20
36.0	3.6		0.44				1.32			20
36.0	3.6		0.67				1.04			20
36.0	3.6		1.04				0.58			20
36.0	3.6		0.47	0.47	10.33		0.47			20
36.0	3.6	2.10			5.54					
36.0	3.6	2.60			1.37					
36.0	3.6	2.76			1.23					
36.0	3.6		0.57	0.59	1.08					10
36.0	3.6		0.55	0.55	5.56		0.52			10
36.0	3.6		0.56	0.56	1.19					10
36.0	3.6		0.55	0.55	0.34					10
36.0	3.6	4.59			0.04					
36.0	3.6		0.58	0.59	0.04					10
36.0	3.6		1.60	1.59			0.48			20
36.0	3.6		1.48	1.47	6.03		0.25			20
36.0	3.6		1.57	1.55	1.65					20
36.0	3.6		1.44	1.42	0.71					20
36.0	3.6		1.51	1.49	0.54					20
36.0	3.6		1.82	1.82	6.77		0.30			20
36.0	3.6		1.74	1.71	1.40					20
36.0	3.6		1.68	1.65	0.33					20
36.0	3.6		1.61	1.58	0.04					20
36.0	3.6		1.60	1.57	0.03					20
36.0	3.6	1.97	0.11	0.10			0.93	0.92		20
36.0	3.6	1.94			6.73					
36.0	3.6	3.92			4.60					
36.0	3.6	3.91			0.90					
36.0	3.6	3.57			0.91					
36.0	3.6	0.83	0.04	0.03			0.88	0.87		20
36.0	3.6	1.39			4.90					
36.0	3.6	0.77			5.98					
36.0	3.6	0.70			4.86					
36.0	3.6	1.45			2.35					
36.0	3.6		1.57	1.52			1.11	1.02		20
36.0	3.6		1.45	1.44	9.45		0.42	0.41		20
36.0	3.6			1.61	3.19					20
36.0	3.6			1.51	0.61					20
36.0	3.6			1.51	1.09					20
36.0	3.6			1.06				1.02		20
36.0	3.6			1.26	9.63			0.44		20
36.0	3.6			1.12				0.51		20

36.0	3.6		1.22	7.28	0.27	20
36.0	3.6		1.22	6.15	0.18	20
36.0	3.6	0.42			1.61	20
36.0	3.6	2.46			0.90	20
36.0	3.6	2.04		9.97		
36.0	3.6	1.11		7.30		
36.0	3.6	0.88		5.41		
36.0	3.6	0.98			0.96	20
36.0	3.6	1.30			0.75	20
36.0	3.6	0.54			0.54	20
36.0	3.6	0.68		6.23		
36.0	3.6	0.71		4.93		
36.0	3.6		1.15		1.99	20
36.0	3.6		1.29		1.07	20
36.0	3.6		1.16		0.85	20
36.0	3.6		1.08		0.55	20
36.0	3.6		1.19		0.66	20
36.0	3.6		1.34		1.37	20
36.0	3.6		1.26		0.95	20
36.0	3.6		0.72		1.09	20
36.0	3.6		0.76		0.81	20
36.0	3.6		0.76		0.81	20
36.0	3.6		0.66		2.59	20
36.0	3.6	4.29	0.20		0.94	20
36.0	3.6	2.94	0.10		0.67	20
36.0	3.6	3.36	0.17		0.52	20
36.0	3.6	2.12	0.10	9.20	0.37	20
36.0	3.6	0.49			2.72	20
36.0	3.6	3.18	0.17		1.20	20
36.0	3.6	4.07	0.21		0.79	20
36.0	3.6	2.01	0.08		0.46	20
36.0	3.6	4.01		4.28		
36.0	3.6		1.72		2.65	20
36.0	3.6		1.55		1.23	20
36.0	3.6		1.12		1.24	20
36.0	3.6		1.09		0.93	20
36.0	3.6		1.00		0.78	20
36.0	3.6		0.48		3.44	20
36.0	3.6		1.07		1.18	20
36.0	3.6		1.21		1.11	20
36.0	3.6		0.81		1.13	20
36.0	3.6		0.96		0.87	20
36.0	3.6	0.41		9.13		
36.0	3.6	0.30		5.56		
36.0	3.6	0.45		8.27		
36.0	3.6	3.04		2.99		
36.0	3.6	3.84		0.04		
36.0	3.6		1.09	3.67	0.69	5
36.0	3.6	2.91		3.22		
36.0	3.6		0.59	3.09	0.25	10
36.0	3.6		0.58	0.53		10
36.0	3.6	3.62		0.00		
36.0	3.6		1.52	5.74	0.22	20

36.0	3.6		1.25		0.52	20
36.0	3.6		1.31	7.49	0.30	20
36.0	3.6		1.45	2.84		20
36.0	3.6		1.40	0.11		20
36.0	3.6		1.56	3.44		20
36.0	3.6		1.68	3.95		20
36.0	3.6		1.60	3.17		20
36.0	3.6		1.82	0.16		20
36.0	3.6		1.51	0.10		20
36.0	3.6		1.46		1.66	20
36.0	3.6		0.64		1.03	20
36.0	3.6		0.33		1.11	10
36.0	3.6	3.13				
36.0	3.6	3.35		2.20		
36.0	3.6	1.82		0.78		
36.0	3.6		1.10		1.06	20
36.0	3.6	4.26	0.21		1.63	20
36.0	3.6	1.03	0.04		1.01	20
36.0	3.6	2.27		6.05		
36.0	3.6	0.70		3.67		
36.0	3.6		3.25		1.41	20
36.0	3.6		2.44		0.52	20
36.0	3.6		1.70	7.36	0.33	20
36.0	3.6		1.35	5.11	0.19	20
36.0	3.6		1.39	1.57		20
36.0	3.6		3.25		1.06	20
36.0	3.6		1.72		1.54	20
36.0	3.6		1.21		1.14	20
36.0	3.6		1.42	7.52	0.35	20
36.0	3.6		1.37	4.06	0.12	20

Weight Empty Vial (mg)	Weight Vial+Sample (mg)	Weight Sample (mg)	Weight NH ₄ ⁺ -N (mg)	KCL Added (mg)	Further Dilution	Further Dilution Factor	Value NH ₄ ⁺ -N (mg/kg)	Dilution NH ₄ ⁺ -N (mg/kg)
12.999	14.075	1.08	23.835	9.76	10.1	36.3		44.97
13.439	14.489	1.05	24.239	9.75	10.3	37.0		27.45
							12.74	
							20.41	
							20.08	
13.343	14.364	1.02	24.125	9.76	10.6	38.0		33.06
13.312	14.389	1.08	24.129	9.74	10.0	36.2		31.81
13.266	14.336	1.07	24.077	9.74	10.1	36.4		29.54
13.009	14.068	1.06	18.400	4.33	5.1	18.3		24.88
13.264	14.334	1.07	18.653	4.32	5.0	18.1		19.95
13.040	13.560	0.52	23.582	10.02	20.3	73.0		152.74
12.892	13.428	0.54	23.714	10.29	20.2	72.7		140.52
12.923	13.454	0.53	23.728	10.27	20.3	73.3		136.02
13.181	13.706	0.53	23.992	10.29	20.6	74.1		127.85
13.252	13.775	0.52	24.080	10.31	20.7	74.5		121.27
13.161	13.684	0.52	23.895	10.21	20.5	73.9		161.31
13.309	13.856	0.55	24.135	10.28	19.8	71.2		146.74
13.429	13.955	0.53	24.240	10.29	20.6	74.0		142.30
12.884	13.413	0.53	23.707	10.29	20.5	73.7		128.20
13.509	14.042	0.53	24.334	10.29	20.3	73.1		123.01
12.977	13.512	0.54	23.909	10.40	20.4	73.6	1.20	
13.269	13.800	0.53	24.077	10.28	20.4	73.3	1.83	
12.878	13.940	1.06	23.683	9.74	10.2	36.6		29.30
13.066	14.113	1.05	18.460	4.35	5.2	18.5		26.64
13.435	14.489	1.05	18.817	4.33	5.1	18.4		19.47
13.349	13.857	0.51	24.138	10.28	21.2	76.5	1.14	
13.230	13.756	0.53	24.057	10.30	20.6	74.1	2.29	
13.325	13.860	0.54	24.112	10.25	20.2	72.6	16.89	33.07
13.007	14.081	1.07	18.407	4.33	5.0	18.1		29.37
13.019	14.083	1.06	18.411	4.33	5.1	18.2		24.04
13.447	13.982	0.54	24.272	10.29	20.2	72.8		34.76
13.135	13.660	0.53	23.972	10.31	20.6	74.3		86.32
13.419	13.932	0.51	24.233	10.30	21.1	75.9		139.70
13.034	13.561	0.53	23.845	10.28	20.5	73.9		142.21
13.320	13.850	0.53	24.129	10.28	20.4	73.4		120.97
13.269	13.781	0.51	24.074	10.29	21.1	76.0		35.05
13.286	13.801	0.52	24.116	10.32	21.0	75.7		66.74
12.898	13.427	0.53	23.676	10.25	20.4	73.3		117.72
13.310	13.836	0.53	24.117	10.28	20.5	74.0		135.59
13.085	13.680	0.59	23.971	10.29	18.3	65.9		123.37
							9.11	
							13.23	
							17.25	
13.387	14.453	1.07	18.796	4.34	5.1	18.3		21.66
							10.94	
							9.88	
							12.37	
							8.44	
							10.32	
							10.49	

12.836	13.359	0.52	23.597	10.24	20.6	74.1	3.90 0.93 1.49 2.56 2.92 1.67	
13.309	13.834	0.53	23.953	10.12	20.3	73.0		86.18
13.144	13.666	0.52	23.908	10.24	20.6	74.2		93.26
13.326	13.834	0.51	24.097	10.26	21.2	76.3		80.73
12.960	13.481	0.52	23.757	10.28	20.7	74.6		50.87
13.235	13.755	0.52	24.001	10.25	20.7	74.5		61.27
13.131	13.651	0.52	23.918	10.27	20.7	74.7		31.01
13.452	13.967	0.52	24.229	10.26	20.9	75.3		25.46
13.288	13.795	0.51	24.043	10.25	21.2	76.4		33.82
13.118	13.631	0.51	23.918	10.29	21.1	75.8		50.91
13.120	13.642	0.52	23.895	10.25	20.6	74.3		77.49
13.028	13.555	0.53	23.824	10.27	20.5	73.7		34.30
							7.55 9.37 9.92	
13.394	14.424	1.03	24.171	9.75	10.5	37.7		21.64
13.143	14.188	1.05	23.909	9.72	10.3	37.1		20.47
13.135	14.179	1.04	23.905	9.73	10.3	37.1		20.87
13.175	14.204	1.03	23.948	9.74	10.5	37.7		20.75
							16.52	
13.113	14.161	1.05	23.878	9.72	10.3	37.0		21.34
13.334	13.852	0.52	24.130	10.28	20.8	75.0		119.93
13.051	13.568	0.52	23.848	10.28	20.9	75.2		110.95
13.195	13.715	0.52	23.995	10.28	20.8	74.8		117.15
15.254	15.749	0.50	26.028	10.28	21.8	78.4		113.21
15.370	15.892	0.52	26.143	10.25	20.6	74.3		112.06
15.291	15.808	0.52	26.053	10.25	20.8	74.9		136.57
15.221	15.735	0.51	25.982	10.25	20.9	75.4		130.84
15.254	15.767	0.51	26.005	10.24	21.0	75.4		126.61
15.276	15.786	0.51	26.024	10.24	21.1	75.9		122.14
15.354	15.872	0.52	26.118	10.25	20.8	74.8		119.47
15.344	15.879	0.54	26.171	10.29	20.2	72.9	7.10 6.99 14.11 14.07 12.85	7.67
15.251	15.753	0.50	26.041	10.29	21.5	77.4	2.98 4.99 2.76 2.53 5.20	2.89
15.250	15.776	0.53	26.057	10.28	20.5	74.0		116.07
15.350	15.868	0.52	26.137	10.27	20.8	75.0		108.99
15.275	15.793	0.52	26.085	10.29	20.9	75.1		
15.133	15.638	0.51	25.899	10.26	21.3	76.7		
15.318	15.846	0.53	26.124	10.28	20.5	73.7		
15.249	15.767	0.52	26.057	10.29	20.9	75.1		
15.238	15.758	0.52	26.026	10.27	20.7	74.7		
15.180	15.695	0.52	25.970	10.28	21.0	75.4		

15.266	15.779	0.51	26.025	10.25	21.0	75.5	
15.253	15.774	0.52	26.039	10.27	20.7	74.5	
15.176	15.701	0.53	25.984	10.28	20.6	74.1	1.52
15.312	15.828	0.52	26.089	10.26	20.9	75.2	8.86
							7.34
							4.01
							3.19
15.213	15.717	0.50	25.994	10.28	21.4	77.0	3.52
15.364	15.852	0.49	26.130	10.28	22.1	79.4	4.67
15.240	15.756	0.52	26.004	10.25	20.9	75.1	1.94
							2.46
							2.56
15.195	15.712	0.52	25.976	10.26	20.9	75.1	
15.244	15.704	0.46	25.969	10.27	23.3	83.9	
15.222	15.744	0.52	26.035	10.29	20.7	74.6	
15.219	15.738	0.52	26.022	10.28	20.8	74.9	
15.290	15.822	0.53	26.073	10.25	20.3	73.0	
15.347	15.876	0.53	26.125	10.25	20.4	73.3	
15.271	15.785	0.51	26.050	10.27	21.0	75.5	
15.255	15.767	0.51	26.054	10.29	21.1	75.9	
15.148	15.658	0.51	25.929	10.27	21.1	76.1	
15.132	15.656	0.52	25.922	10.27	20.6	74.1	
15.277	15.794	0.52	26.048	10.25	20.8	75.0	
15.195	15.679	0.48	26.947	11.27	24.3	87.4	15.44
15.340	15.706	0.37	25.985	10.28	29.1	104.7	10.58
15.214	15.726	0.51	26.009	10.28	21.1	75.9	12.08
15.257	15.768	0.51	26.048	10.28	21.1	76.0	7.63
15.213	15.739	0.53	25.986	10.25	20.5	73.7	1.77
15.252	15.770	0.52	26.047	10.28	20.8	75.0	11.44
15.302	15.832	0.53	26.120	10.29	20.4	73.5	14.64
13.435	13.890	0.46	24.178	10.29	23.6	85.0	7.25
							14.45
13.168	13.687	0.52	23.967	10.28	20.8	74.9	
13.042	13.570	0.53	23.852	10.28	20.5	73.7	
13.087	13.611	0.52	23.904	10.29	20.6	74.3	
13.345	13.876	0.53	24.156	10.28	20.4	73.3	
12.711	13.199	0.49	23.228	10.03	21.6	77.6	
13.119	13.617	0.50	23.905	10.29	21.7	78.0	
12.799	13.209	0.41	23.489	10.28	26.1	93.9	
12.909	13.424	0.51	23.713	10.29	21.0	75.5	
12.991	13.511	0.52	23.791	10.28	20.8	74.8	
13.011	13.532	0.52	23.793	10.26	20.7	74.5	
							1.48
							1.07
							1.61
							10.95
							13.82
15.250	16.284	1.03	20.622	4.34	5.2	18.7	
							10.46
15.260	16.304	1.04	26.061	9.76	10.3	37.2	
15.170	16.236	1.07	25.975	9.74	10.1	36.5	
							13.02
15.243	15.743	0.52	26.035	10.29	20.8	74.9	

15.155	15.655	0.52	25.933	10.28	20.8	74.8	
15.314	15.814	0.52	26.111	10.30	20.8	74.9	
15.190	15.690	0.52	25.992	10.30	20.8	74.9	
15.280	15.780	0.52	26.064	10.28	20.8	74.8	
15.219	15.719	0.52	25.989	10.27	20.8	74.7	
15.212	15.712	0.52	25.986	10.27	20.8	74.7	
15.186	15.686	0.52	25.992	10.31	20.8	74.9	
15.202	15.702	0.52	26.051	10.35	20.9	75.2	
15.265	15.765	0.52	26.057	10.29	20.8	74.9	
		0.52	26.081	10.29	20.8	74.8	
		0.52	23.933	10.29	20.8	74.8	
		0.52	23.874	10.29	20.8	74.8	11.27
							12.05
							6.56
		0.52	24.435	10.29	20.8	74.8	
		0.52	23.852	10.29	20.8	74.8	15.34
		0.52	24.124	10.29	20.8	74.8	3.72
							8.19
							2.53
		0.52	23.757	10.29	20.8	74.8	
		0.52	24.053	10.29	20.8	74.8	
		0.52	23.737	10.29	20.8	74.8	
		0.52	23.913	10.29	20.8	74.8	
		0.52	23.681	10.29	20.8	74.8	
		0.52	23.654	10.29	20.8	74.8	
		0.52	23.933	10.29	20.8	74.8	
		0.52	23.809	10.29	20.8	74.8	
		0.52	23.911	10.29	20.8	74.8	
		0.52	24.039	10.29	20.8	74.8	

Dilution	Value	Value	Dilution	Dilution	Final Value	Final Value	
NH ₄ ⁺ -N	NO ₃ ⁻ -N	NO ₃ ⁻ -N	NO ₃ ⁻ -N	NO ₃ ⁻ -N	NH ₄ ⁺ -N	NO ₃ ⁻ -N	
(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
	7.39		8.27		44.97	7.39	
	0.13				27.45	0.13	
	0.00				12.74	0.00	
	0.00				20.41	0.00	
	0.00				20.08	0.00	
	14.34		15.37		33.06	14.34	
	2.49				31.81	2.49	
	0.14				29.54	0.14	
	0.04				24.88	0.04	
	0.04				19.95	0.04	
	11.31				152.74	11.31	
	0.14				140.52	0.14	
	0.09				136.02	0.09	
	0.04				127.85	0.04	
	0.00				121.27	0.00	
	14.05				161.31	14.05	
	2.27				146.74	2.27	
	0.05				142.30	0.05	
	0.05				128.20	0.05	
	0.00				123.01	0.00	
			132.50		1.20	132.50	
			63.91		1.83	63.91	
	36.13		38.34		29.30	36.13	
	8.42		9.04		26.64	8.42	
	1.50				19.47	1.50	
			115.10		1.14	115.10	
			114.77		2.29	114.77	
			94.70		16.89	94.70	
	2.23				29.37	2.23	
	2.54				24.04	2.54	
			191.83		34.76	191.83	
			84.30		86.32	84.30	
	32.59		31.66		139.70	32.59	
	2.54				142.21	2.54	
	2.05				120.97	2.05	
			176.84		35.05	176.84	
			100.51		66.74	100.51	
			49.47		117.72	49.47	
	3.45				135.59	3.45	
	2.63				123.37	2.63	
	0.00				9.11	0.00	Checked
	0.00				13.23	0.00	Checked
	0.00				17.25	0.00	Checked
	0.01				21.66	0.01	
	12.03				10.94	12.03	
	19.73				9.88	19.73	
	17.36				12.37	17.36	
	23.50				8.44	23.50	
	18.12				10.32	18.12	
	8.40				10.49	8.40	

0.14			117.18	0.14
0.03			126.90	0.03
0.12			125.95	0.12
0.65			126.85	0.65
0.98			124.33	0.98
26.71		26.44	113.75	26.71
22.74		49.97	112.96	22.74
32.95		29.44	101.62	32.95
32.68		30.58	95.45	32.68
32.66		30.59	84.75	32.66
		259.41	25.58	259.41
		102.27	1.35	102.27
		59.67	1.95	59.67
		55.12	1.06	55.12
		36.56	1.06	36.56
		225.39	2.75	225.39
		95.85	1.38	95.85
		67.40	1.95	67.40
		48.69	1.03	48.69
32.03			3.07	32.03
		285.41	102.27	285.41
		179.60	27.16	179.60
		115.13	56.18	115.13
		115.28	50.25	115.28
		79.95	64.57	79.95
		297.29	26.85	297.29
		146.86	43.97	146.86
		89.73	75.43	89.73
		109.48	49.18	109.48
		48.45	85.58	48.45
			3.97	28.28
28.28			13.38	27.11
27.11			12.34	5.93
5.93			22.71	4.17
4.17			17.33	1.85
1.85			5.61	37.28
		37.28	17.99	7.90
7.90	8.18		22.14	0.03
0.03			23.85	0.00
0.00			22.15	0.27
0.27			104.16	26.60
26.60		25.11	119.93	6.95
6.95			120.93	4.79
4.79			122.22	4.64
4.64			115.01	1.18
1.18			135.25	10.14
10.14			129.85	0.20
0.20			124.13	0.00
0.00			123.99	0.00
0.00			120.11	0.00
0.00			1.02	112.32
		112.32	10.35	30.39
30.39	31.91		8.90	15.12
15.12			2.54	23.02
23.02	23.36			

Checked

19.57	19.89		3.90	19.57
		99.55	0.93	99.55
32.13	34.76		1.49	32.13
30.62	32.80		2.56	30.62
26.64	28.24		2.92	26.64
19.70	20.58		1.67	19.70
		149.21	86.18	149.21
		36.38	93.26	36.38
		36.38	80.73	36.38
		73.42	50.87	73.42
		59.15	61.27	59.15
		169.77	31.01	169.77
		114.11	25.46	114.11
		101.12	33.82	101.12
		78.63	50.91	78.63
		43.26	77.49	43.26

34.40	37.18		34.30	37.18
	19.95		7.55	19.95
	4.92		9.37	4.92
	4.44		9.92	4.44
22.33	3.88		21.64	3.88
20.27	20.02	19.14	20.47	20.02
20.71	4.29		20.87	4.29
20.78	1.21		20.75	1.21
	0.15		16.52	0.15
21.64	0.14		21.34	0.14
119.44		35.73	119.93	35.73
110.38	21.71	18.51	110.95	21.71
115.75	5.93		117.15	5.93
111.24	2.56		113.21	2.56
110.95	1.94		112.06	1.94
136.10	24.38	22.11	136.57	24.38
129.09	5.06		130.84	5.06
124.21	1.20		126.61	1.20
119.93	0.14		122.14	0.14
117.71	0.09		119.47	0.09
7.11		67.90	7.10	67.90
	24.21		67.24	24.21
	16.56		6.99	16.56
	3.23		14.11	3.23
	3.27		14.07	3.27
2.41		68.42	12.85	3.27
	17.64		2.98	68.42
	21.54		4.99	17.64
	17.50		2.76	21.54
	8.47		2.53	17.50
112.19		81.81	5.20	8.47
408.13	34.01	75.74	116.07	81.81
121.31	11.49	31.29	108.99	34.01
115.51	2.20	30.46	121.31	11.49
111.31	3.91		115.51	2.20
79.63			111.31	3.91
93.79	34.67		79.63	76.88
84.59			93.79	34.67
			84.59	38.62

91.84	26.19	20.40	91.84	26.19	
90.66	22.12	13.51	90.66	22.12	
		119.67	1.52	119.67	
		67.81	8.86	67.81	
	35.90		7.34	35.90	
	26.29		4.01	26.29	
	19.47		3.19	19.47	
		74.12	3.52	74.12	
		59.17	4.67	59.17	
		40.91	1.94	40.91	
	22.43		2.46	22.43	
	17.75		2.56	17.75	
86.28		149.62	86.28	149.62	
108.67		89.42	108.67	89.42	
86.54		63.67	86.54	63.67	
80.62		41.35	80.62	41.35	
86.99		47.96	86.99	47.96	
98.47		100.64	98.47	100.64	
95.37		71.52	95.37	71.52	
54.93		82.88	54.93	82.88	
57.57		61.56	57.57	61.56	
56.47		59.91	56.47	59.91	
49.14		194.03	49.14	194.03	
17.29		82.47	15.44	82.47	
10.20		69.67	10.58	69.67	
13.22		39.41	12.08	39.41	
7.40	33.13	27.98	7.63	33.13	
		200.51	1.77	200.51	
13.05		90.06	11.44	90.06	
15.35		58.06	14.64	58.06	
6.75		39.30	7.25	39.30	
	15.40		14.45	15.40	
128.86		198.85	128.86	198.85	
114.14		90.74	114.14	90.74	
83.28		92.08	83.28	92.08	
79.76		68.37	79.76	68.37	
77.21		60.83	77.21	60.83	
37.75		268.52	37.75	268.52	Checked
100.74		110.47	100.74	110.47	
91.51		83.56	91.51	83.56	
60.51		84.37	60.51	84.37	
71.85		64.53	71.85	64.53	
	32.85		1.48	32.85	
	20.00		1.07	20.00	
	29.78		1.61	29.78	
	10.76		10.95	10.76	
	0.16		13.82	0.16	
20.42	13.22	12.94	20.42	13.22	
	11.58		10.46	11.58	
22.08	11.13	9.13	22.08	11.13	
21.23	1.92		21.23	1.92	
	0.00		13.02	0.00	
113.50	20.66	16.12	113.50	20.66	

93.78		38.75	93.78	38.75	
98.15	26.96	22.42	98.15	26.96	
108.28	10.22		108.28	10.22	
104.80	0.38		104.80	0.38	
116.89	12.37		116.89	12.37	
125.91	14.23		125.91	14.23	
119.88	11.39		119.88	11.39	
137.09	0.58		137.09	0.58	
112.85	0.35		112.85	0.35	
109.00		124.41	109.00	124.41	
47.84		77.15	47.84	77.15	
24.86		83.13	11.27	83.13	
	7.92		12.05	7.92	
	2.80		6.56	2.80	
82.29		79.67	82.29	79.67	Checked
15.72		121.85	15.34	121.85	Checked
2.89		75.28	3.72	75.28	
	21.77		8.19	21.77	
	13.22		2.53	13.22	
243.23		105.22	243.23	105.22	
182.63		39.14	182.63	39.14	
127.53	26.50	24.93	127.53	26.50	
100.67	18.40	44.34	100.67	18.40	
103.95	5.67		103.95	5.67	
243.11		79.49	243.11	79.49	Checked
128.97		115.29	128.97	115.29	Checked
90.18		85.41	90.18	85.41	
106.25	27.06	25.99	106.25	27.06	
102.89	14.60	8.85	102.89	14.60	

		Mean	
	Type	Reserve	Paddock
Texture	Depth		
40 201 205	a0-2.5	4.893	4.750
	b2.5-5	4.800	4.480
	c5-10	4.863	4.537
	d10-15	4.910	4.637
	e15-20	5.010	4.787
41 61 63	a0-2.5	4.690	4.733
	b2.5-5	4.570	4.537
	c5-10	4.577	4.537
	d10-15	4.607	4.587
	e15-20	4.690	4.607

386.....

***** Analysis of variance *****

Variate: pH_Ca

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Site stratum					
Texture	1	0.352667	0.352667	0.56	0.495
Residual	4	2.511233	0.627808	6.97	
Site.Type stratum					
Type	1	0.302460	0.302460	3.36	0.141
Type.Texture	1	0.199527	0.199527	2.22	0.211
Residual	4	0.360313	0.090078	9.49	
Site.Type.Depth stratum					
Depth	4	0.304333	0.076083	8.02	<.001
Type.Depth	4	0.034573	0.008643	0.91	0.469
Depth.Texture	4	0.048933	0.012233	1.29	0.295
Type.Depth.Texture	4	0.012707	0.003177	0.33	0.852
Residual	32	0.303653	0.009489		
Total	59	4.430400			

* MESSAGE: the following units have large residuals.

Site 40.00	Type Paddock	Depth a0-2.5	0.162	s.e.	0.071
Site 40.00	Type Paddock	Depth e15-20	-0.165	s.e.	0.071
Site 201.00	Type Reserve	Depth e15-20	0.159	s.e.	0.071
Site 205.00	Type Paddock	Depth a0-2.5	-0.264	s.e.	0.071
Site 205.00	Type Paddock	Depth e15-20	0.189	s.e.	0.071

***** Tables of means *****

Variate: pH_Ca

Grand mean 4.690

Type	Reserve	Paddock						
	4.761	4.619						
Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20			
	4.767	4.597	4.628	4.685	4.773			
Texture	40	201	205	41	61	63		
		4.767		4.613				
Type	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20		
Reserve		4.792	4.685	4.720	4.758	4.850		
Paddock		4.742	4.508	4.537	4.612	4.697		
Type	Texture	40	201	205	41	61	63	
Reserve			4.895		4.627			
Paddock			4.638		4.600			
Depth	Texture	40	201	205	41	61	63	
a0-2.5			4.822		4.712			
b2.5-5			4.640		4.553			
c5-10			4.700		4.557			
d10-15			4.773		4.597			
e15-20			4.898		4.648			
Type	Depth	Texture	40	201	205	41	61	63
Reserve	a0-2.5			4.893		4.690		
	b2.5-5			4.800		4.570		
	c5-10			4.863		4.577		
	d10-15			4.910		4.607		
	e15-20			5.010		4.690		
Paddock	a0-2.5			4.750		4.733		
	b2.5-5			4.480		4.537		
	c5-10			4.537		4.537		
	d10-15			4.637		4.587		
	e15-20			4.787		4.607		

*** Standard errors of differences of means ***

Table	Type	Depth	Texture	Type Depth	Type Texture	Depth Texture
rep.	30	12	30	6	15	6
s.e.d.	0.0775	0.0398	0.2046	0.0924	0.2188	0.2107
d.f.	4	32	4	7.91	5.12	4.50
Except when comparing means with the same level(s) of				Type		
				d.f.	0.0562	
				Texture		0.1096
				d.f.	4	32

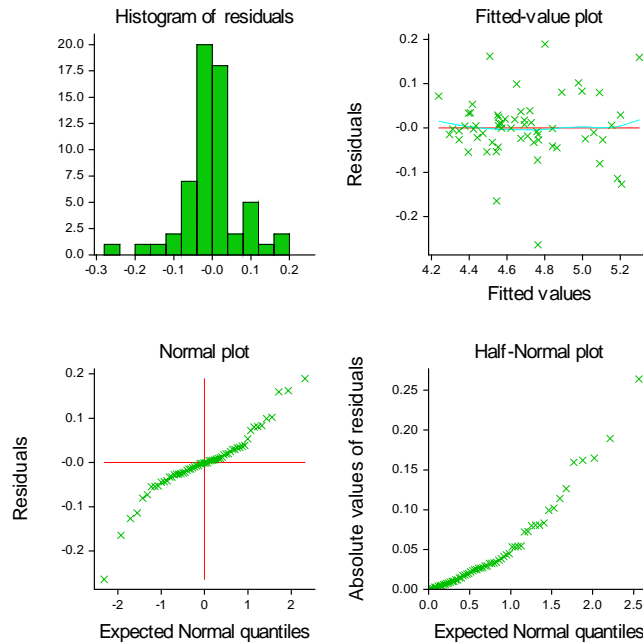
Table	Type Depth Texture
rep.	3
s.e.d.	0.2300
d.f.	6.25
Except when comparing means with the same level(s) of	
Texture	0.1307
d.f.	7.91
Type.Texture	0.0795
d.f.	32
Depth.Texture	0.1307
d.f.	7.91

*** Least significant differences of means (5% level) ***

Table	Type	Depth	Texture	Type Depth	Type Texture	Depth Texture
rep.	30	12	30	6	15	6
l.s.d.	0.2151	0.0810	0.5680	0.2135	0.5583	0.5603
d.f.	4	32	4	7.91	5.12	4.50
Except when comparing means with the same level(s) of				Type		
				d.f.	0.1146	
				Texture		0.3043
				d.f.	4	32

Table	Type Depth Texture
rep.	3
l.s.d.	0.5574
d.f.	6.25
Except when comparing means with the same level(s) of	
Texture	0.3019
d.f.	7.91
Type.Texture	0.1620
d.f.	32
Depth.Texture	0.3019
d.f.	7.91

pH_Ca



386.....

**** REML Variance Components Analysis ****

Response Variate : pH_Ca

Fixed model : Constant+Type+Depth+Texture+Type.Depth+Type.Texture+Depth.Texture+Type.Depth.Texture

Random model : Site+Site.Type+Plots.Depth

Number of units : 60

* Plots.Depth used as residual term with covariance structure as below

* Sparse algorithm with AI optimisation

*** Covariance structures defined for random model ***

Covariance structures defined within terms:

Term	Factor	Model	Order	Nrows
Plots.Depth	Plots	Identity	1	12
	Depth	Power - city block distance	1	5

*** Convergence monitoring ***

Cycle Deviance Current variance parameters: gammas, sigma2, others

0	*	1.00000	1.00000	1.00000	0.0500000
1	-93.4382	1.43445	1.19158	0.0130150	0.904100
2	-114.885	2.04994	0.119158	0.0141992	0.989510
3	-120.148	0.204994	0.0119158	0.0406265	0.998051
4	-119.119	0.0204994	1.19158E-03	0.0484004	0.998051
5	-117.184	0.307491	-0.0988084	0.0526817	0.998051
6	-119.711	0.902867	-0.494042	0.0479998	0.998051
7	-121.630	1.16214	-0.474646	0.0470371	0.998051
8	-121.768	1.23066	-0.474322	0.0456118	0.998051
9	-121.773	1.23391	-0.474324	0.0453775	0.998051
10	-121.773	1.23392	-0.474324	0.0453671	0.998051

*** Estimated Variance Components ***

Random term	Component	S.e.
Site	0.05598	0.04617
Site.Type	-0.02152	0.01573

*** Residual variance model ***

Term	Factor	Model (order)	Parameter	Estimate	S.e.
Plots.Depth			Sigma2	0.0454	0.01134
	Plots	Identity	-	-	-
	Depth	Power(1)	phi_1	0.9981	BOUND

*** Deviance: -2*Log-Likelihood ***

Deviance	d.f.
-121.77	36

Note: deviance omits constants which depend on fixed model fitted.

*** Wald tests for fixed effects ***

Fixed term	Wald statistic	d.f.	Wald/d.f.	Chi-sq prob
* Sequentially adding terms to fixed model				
Type	2.05	1	2.05	0.152
Depth	92.32	4	23.08	<0.001
Texture	0.72	1	0.72	0.395
Type.Depth	11.19	4	2.80	0.025
Type.Texture	1.32	1	1.32	0.251
Depth.Texture	4.23	4	1.06	0.375
Type.Depth.Texture	2.81	4	0.70	0.590
* Dropping individual terms from full fixed model				
Type.Depth.Texture	2.81	4	0.70	0.590

* Message: chi-square distribution for Wald tests is an asymptotic approximation (i.e. for large samples) and underestimates the probabilities in other cases.

386.....

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+Constant

* Model terms excluded for prediction: Site+Site.Type

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Classifies predictions
Depth	factor	Averaged over - equal weights
Type	factor	Averaged over - equal weights
Constant	factor	Included in prediction
Site	factor	Ignored

Response variate: pH_Ca

Predictions

Texture	40	201	205	41	61	63
		4.767			4.613	

Standard errors

Texture	40	201	205	41	61	63
		0.1474			0.1474	

Approximate average SED = 0.2084 (calculated on variance scale)

386.....

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+Constant+Site.Type

* Model terms excluded for prediction: Site

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Averaged over - equal weights
Depth	factor	Averaged over - equal weights
Type	factor	Classifies predictions
Constant	factor	Included in prediction
Site	factor	Averaged over - equal weights

Response variate: pH_Ca

Predictions

Type	Reserve	Paddock
	4.761	4.619

Standard errors

Type	Reserve	Paddock
	0.1264	0.1264

Approximate average SED = 0.1153 (calculated on variance scale)

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+Constant

* Model terms excluded for prediction: Site+Site.Type

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Averaged over - equal weights
Depth	factor	Classifies predictions
Type	factor	Averaged over - equal weights
Constant	factor	Included in prediction
Site	factor	Ignored

Response variate: pH_Ca

Predictions

Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20
	4.767	4.597	4.628	4.685	4.773

Standard errors

Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20
	0.1064	0.1064	0.1064	0.1064	0.1064

Approximate average SED = 0.03372 (calculated on variance scale)

386.....

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+Constant+Site.Type

* Model terms excluded for prediction: Site

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Averaged over - equal weights
Depth	factor	Classifies predictions
Type	factor	Classifies predictions
Constant	factor	Included in prediction
Site	factor	Averaged over - equal weights

Response variate: pH_Ca

Predictions

Depth Type	a0-2.5	b2.5-5	c5-10	d10-15	e15-20
Reserve	4.792	4.685	4.720	4.758	4.850
Paddock	4.742	4.508	4.537	4.612	4.697

Standard errors

Depth Type	a0-2.5	b2.5-5	c5-10	d10-15	e15-20
Reserve	0.1300	0.1300	0.1300	0.1300	0.1300
Paddock	0.1300	0.1300	0.1300	0.1300	0.1300

Approximate average SED = 0.09702 (calculated on variance scale)

387

388

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389 For Which = 2...3; "for Net NH4 and NO3 "
390   Tabulate [Class = Texture,Depth,Type; p=m] Vbles[Which]
391   TRELLIS [GR=Site;   PEN=Type; TITLE= Title[Which]] X=MidPoint; Y= Vbles[Which]; METHOD=Mean
392   TRELLIS [GR=Texture; PEN=Type; TITLE= Title[Which]] X=MidPoint; Y= Vbles[Which]; METHOD=Mean
393   TRELLIS [           PEN=Type; TITLE= Title[Which]] X=MidPoint; Y= Vbles[Which]; METHOD=Mean
394
395 BLOCK Site/Type
396 TREAT Texture*Type*Depth
397 COVAR Vbles[1]
398 ANOVA [P=aov,info,means,cova; Uprint=aov,info,means; Cprint=aov,info,means;\
399       FPROB=yes; PSE=diff,lsd; LSDLEVEL=5] Vbles[Which]
400 APLOT [RMETHOD=simple] fitted,normal,halfnormal,histogram
401
402 Factor [levels=12; values=5(1...12)] Plots
403
404 VCOMP [Fixed= Texture * Type * Depth] Random= Site/Type + Plots.Depth
405 VSTRU [Term= Plots.Depth; coordinates=MidPoint] Model=Power; Factor=Depth; Het=*
406 REML [P=dev,mod,comp,wald,mon; MAXCYCLE=80; METHOD= AI] Vbles[Which]; res=res
407
408 VCOMP [Fixed= pH_Ca + Texture * Type * Depth] Random= Site/Type + Plots.Depth
409 VSTRU [Term= Plots.Depth; coordinates=MidPoint] Model=Power; Factor=Depth; Het=*
410 REML [P=dev,mod,comp,wald,mon; MAXCYCLE=80; METHOD=AI] Vbles[Which]; res=res
411
412 "VPRED [P=desc,pred,se,aved] CLASSIFY= Mid   ; LEVELS=!(2.5,7.5,15,25,35,45); PARALLEL="
413 VPRED [P=desc,pred,se,aved] CLASSIFY= Texture   ; LEVELS=*; PARALLEL=*
414 VPRED [P=desc,pred,se,aved] CLASSIFY= Type     ; LEVELS=*; PARALLEL=*
415 VPRED [P=desc,pred,se,aved] CLASSIFY= Depth    ; LEVELS=*; PARALLEL=*
416
417 EndFor

```

		Mean	
	Type	Reserve	Paddock
Texture	Depth		
40 201 205	a0-2.5	4.03	-20.30
	b2.5-5	4.47	-2.43
	c5-10	-6.23	-6.07
	d10-15	-7.37	-11.77
	e15-20	-11.20	-12.40
41 61 63	a0-2.5	7.27	-33.07
	b2.5-5	7.67	-39.00
	c5-10	4.33	-30.03
	d10-15	-0.17	-35.90
	e15-20	-4.70	-22.80

417.....

***** Analysis of variance *****

Variate: Net_NH4

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Site stratum					
Texture	1	892.4	892.4	0.41	0.555
Residual	4	8620.0	2155.0	1.94	
Site.Type stratum					
Type	1	6733.1	6733.1	6.06	0.069
Type.Texture	1	2878.7	2878.7	2.59	0.183
Residual	4	4440.9	1110.2	4.61	
Site.Type.*Units* stratum					
Depth	4	320.9	80.2	0.33	0.854
Type.Depth	4	919.9	230.0	0.95	0.445
Texture.Depth	4	371.9	93.0	0.39	0.817
Type.Texture.Depth	4	344.3	86.1	0.36	0.837
Residual	32	7706.6	240.8		
Total	59	33228.7			

* MESSAGE: the following units have large residuals.

Site 40.00	Type Paddock	*units* 1	-41.6	s.e. 11.3
Site 40.00	Type Paddock	*units* 4	27.1	s.e. 11.3
Site 205.00	Type Paddock	*units* 1	44.1	s.e. 11.3

***** Tables of means *****

Variate: Net_NH4

Grand mean -10.8

Type	Reserve	Paddock						
	-0.2	-21.4						
Texture	40 201 205	41 61 63						
	-6.9	-14.6						
Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20			
	-10.5	-7.3	-9.5	-13.8	-12.8			
Type	Texture	40 201 205	41 61 63					
Reserve		-3.3	2.9					
Paddock		-10.6	-32.2					
Type	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20		
Reserve		5.7	6.1	-0.9	-3.8	-7.9		
Paddock		-26.7	-20.7	-18.1	-23.8	-17.6		
Texture	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20		
40 201 205		-8.1	1.0	-6.2	-9.6	-11.8		
41 61 63		-12.9	-15.7	-12.8	-18.0	-13.7		
Type	Texture	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20	
Reserve	40 201 205		4.0	4.5	-6.2	-7.4	-11.2	
	41 61 63		7.3	7.7	4.3	-0.2	-4.7	
Paddock	40 201 205		-20.3	-2.4	-6.1	-11.8	-12.4	
	41 61 63		-33.1	-39.0	-30.0	-35.9	-22.8	

*** Standard errors of differences of means ***

Table	Type	Texture	Depth	Type	Type	Texture
rep.	30	30	12	Texture	Depth	Depth
s.e.d.	8.60	11.99	6.34	15	6	6
d.f.	4	4	32	7.26	12.75	14.42
Except when comparing means with the same level(s) of						
Type					8.96	
d.f.					32	
Texture				12.17		8.96
d.f.				4		32

Table	Type
	Texture
	Depth
rep.	3

s.e.d. 18.60
d.f. 17.01
Except when comparing means with the same level(s) of
Texture 16.63
d.f. 12.75
Type.Texture 12.67
d.f. 32
Texture.Depth 16.63
d.f. 12.75

*** Least significant differences of means (5% level) ***

Table	Type	Texture	Depth	Type Texture	Type Depth	Texture Depth
rep.	30	30	12	15	6	6
l.s.d.	23.89	33.28	12.91	34.64	25.45	33.13
d.f.	4	4	32	7.26	12.75	8.17
Except when comparing means with the same level(s) of					18.25	
Type					32	
d.f.						
Texture				33.78		18.25
d.f.				4		32

Table	Type Texture Depth
rep.	3
l.s.d.	39.25
d.f.	17.01
Except when comparing means with the same level(s) of	
Texture	35.99
d.f.	12.75
Type.Texture	25.81
d.f.	32
Texture.Depth	35.99
d.f.	12.75

417.....

***** Analysis of variance (adjusted for covariate) *****

Variate: Net_NH4
Covariate: pH_Ca

Source of variation	d.f.	s.s.	m.s.	v.r.	cov.ef.	F pr.
Site stratum						
Texture	1	2199.6	2199.6	1.16	0.88	0.361
Covariate	1	2908.8	2908.8	1.53		0.304
Residual	3	5711.2	1903.7	2.08	1.13	
Site.Type stratum						
Type	1	10943.8	10943.8	11.93	0.54	0.041
Type.Texture	1	342.6	342.6	0.37	0.64	0.584
Covariate	1	1688.8	1688.8	1.84		0.268
Residual	3	2752.1	917.4	7.38	1.21	
Site.Type.*Units* stratum						
Depth	4	1451.1	362.8	2.92	0.80	0.037
Type.Depth	4	586.1	146.5	1.18	0.97	0.339
Texture.Depth	4	307.5	76.9	0.62	0.96	0.653
Type.Texture.Depth	4	59.4	14.8	0.12	0.99	0.975
Covariate	1	3854.4	3854.4	31.02		<.001
Residual	31	3852.2	124.3		1.94	
Total	59	33228.7				

* MESSAGE: the following units have large residuals.

Site 40.00	Type Paddock	*units* 1	-23.4	s.e. 8.0
Site 40.00	Type Paddock	*units* 4	20.9	s.e. 8.0
Site 201.00	Type Reserve	*units* 5	17.6	s.e. 8.0

***** Covariate regressions *****

Variate: Net_NH4

Covariate	coefficient	s.e.
Site stratum		
pH_Ca	-34.	27.5
Site.Type stratum		
pH_Ca	-68.	50.5
Site.Type.*Units* stratum		
pH_Ca	-113.	20.2
Combined estimates		
pH_Ca	-92.	16.8

***** Tables of means (adjusted for covariate) *****

Variate: Net_NH4
Covariate: pH_Ca

Grand mean -10.8

Type	Reserve	Paddock					
	4.7	-26.2					
Texture	40	201	205	41	61	63	
		-4.3			-17.2		
Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20		
	-1.9	-17.8	-16.4	-14.4	-3.4		
Type	Texture	40	201	205	41	61	63
Reserve			8.2		1.2		
Paddock			-16.8		-35.7		
Type	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20	
Reserve		14.0	2.4	-0.7	0.8	6.9	
Paddock		-17.7	-38.0	-32.2	-29.5	-13.7	
Texture	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20	
40	201	205	41	61	63		
		0.7	-10.6	-11.1	-6.2	5.6	
		-4.4	-25.0	-21.8	-22.5	-12.4	

Type	Texture	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20
Reserve	40 201 205		15.2	5.1	1.6	5.7	13.1
	41 61 63		12.7	-0.4	-3.0	-4.1	0.7
Paddock	40 201 205		-13.9	-26.4	-23.7	-18.1	-1.8
	41 61 63		-21.6	-49.7	-40.7	-40.9	-25.6

*** Standard errors of differences of means ***

Table	Type	Texture	Depth	Type	Type	Texture
				Texture	Depth	Depth
rep.	30	30	12	15	6	6
s.e.d.	10.61	12.03	5.09	16.86	10.71	13.54
d.f.	3	3	31	5.35	6.93	4.74
Except when comparing means with the same level(s) of						
Type					7.10	
d.f.					31	
Texture				13.60		6.89
d.f.				3		31

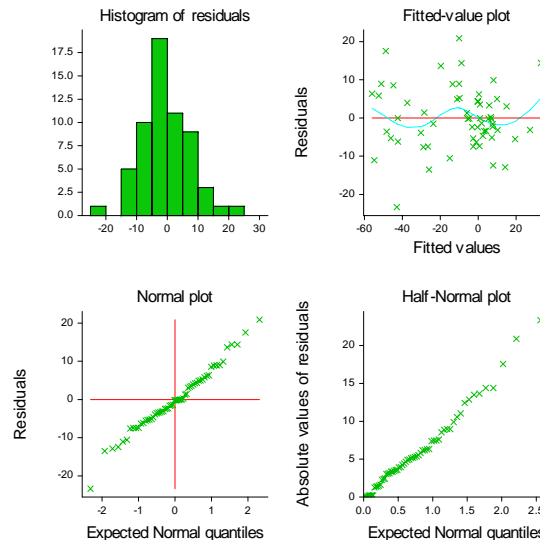
Table	Type
	Texture
	Depth
rep.	3
s.e.d.	17.10
d.f.	9.57
Except when comparing means with the same level(s) of	
Texture	14.73
d.f.	6.93
Type.Texture	9.76
d.f.	31
Texture.Depth	14.73
d.f.	6.93

*** Least significant differences of means (5% level) ***

Table	Type	Texture	Depth	Type	Type	Texture
				Texture	Depth	Depth
rep.	30	30	12	15	6	6
l.s.d.	33.75	38.29	10.38	42.51	25.38	35.38
d.f.	3	3	31	5.35	6.93	4.74
Except when comparing means with the same level(s) of						
Type					14.48	
d.f.					31	
Texture				43.27		14.04
d.f.				3		31

Table	Type
	Texture
	Depth
rep.	3
l.s.d.	38.34
d.f.	9.57
Except when comparing means with the same level(s) of	
Texture	34.89
d.f.	6.93
Type.Texture	19.91
d.f.	31
Texture.Depth	34.89
d.f.	6.93

Net_NH4



417.....

***** REML Variance Components Analysis *****

Response Variate : Net_NH4

Fixed model : Constant+Type+Depth+Texture+Type.Depth+Type.Texture+Depth.Texture+Type.Depth.Texture
Random model : Site+Site.Type+Plots.Depth

Number of units : 60

* Plots.Depth used as residual term with covariance structure as below

* Sparse algorithm with AI optimisation

*** Covariance structures defined for random model ***

Covariance structures defined within terms:

Term	Factor	Model	Order	Nrows
Plots.Depth	Plots	Identity	1	12
	Depth	Power - city block distance	1	5

*** Convergence monitoring ***

Cycle	Deviance	Current	variance	parameters:	gammas,	sigma2,	others
0	*	1.00000	1.00000	1.00000	0.0500000		
1	296.802	0.685565	0.892357	224.604	0.904100		
2	290.341	0.0685565	0.0892357	381.542	0.868748		
3	288.823	0.168118	0.0110669	383.570	0.909804		
4	287.904	0.208271	1.10669E-03	457.753	0.908319		
5	287.894	0.211123	7.43235E-04	450.782	0.908138		
6	287.894	0.211240	7.70030E-04	450.056	0.908112		
7	287.894	0.211251	7.59370E-04	449.967	0.908110		

*** Estimated Variance Components ***

Random term	Component	S.e.
Site	95.1	181.5
Site.Type	0.3	331.3

*** Residual variance model ***

Term	Factor	Model(order)	Parameter	Estimate	S.e.
Plots.Depth			Sigma2	450.0	359.6
	Plots	Identity	-	-	-
	Depth	Power(1)	phi_1	0.9081	0.0884

*** Deviance: -2*Log-Likelihood ***

Deviance	d.f.
287.89	36

Note: deviance omits constants which depend on fixed model fitted.

*** Wald tests for fixed effects ***

Fixed term	Wald statistic	d.f.	Wald/d.f.	Chi-sq prob
------------	----------------	------	-----------	-------------

* Sequentially adding terms to fixed model

Type	4.97	1	4.97	0.026
Depth	1.41	4	0.35	0.842
Texture	0.20	1	0.20	0.651
Type.Depth	3.11	4	0.78	0.539
Type.Texture	1.50	1	1.50	0.221
Depth.Texture	3.34	4	0.84	0.502
Type.Depth.Texture	2.59	4	0.65	0.629

* Dropping individual terms from full fixed model

Type.Depth.Texture	2.59	4	0.65	0.629
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* Message: chi-square distribution for Wald tests is an asymptotic approximation (i.e. for large samples) and underestimates the probabilities in other cases.

***** REML Variance Components Analysis *****

Response Variate : Net_NH4

Fixed model : Constant+pH_Ca+Type+Depth+Texture+Type.Depth+Type.Texture+Depth.Texture+Type.Depth.Texture
 Random model : Site+Site.Type+Plots.Depth

Number of units : 60

* Plots.Depth used as residual term with covariance structure as below

* Sparse algorithm with AI optimisation
 * All covariates centred

*** Covariance structures defined for random model ***

Covariance structures defined within terms:

Term	Factor	Model	Order	Nrows
Plots.Depth	Plots	Identity	1	12
	Depth	Power - city block distance	1	5

** Convergence monitoring **

Cycle	Deviance	Current	variance	parameters:	gammas,	sigma2,	others
0	*	1.00000	1.00000	1.00000	0.0500000		
1	270.310	1.23681	0.982008	136.492	0.904100		
2	269.234	2.33662	0.698533	257.813	0.828324		
3	266.992	1.66765	0.541923	173.201	0.788495		
4	266.570	1.61946	0.537227	163.287	0.790119		
5	266.569	1.61855	0.537848	164.266	0.789650		
6	266.569	1.61754	0.537511	164.109	0.789726		
7	266.569	1.61756	0.537558	164.148	0.789709		

*** Estimated Variance Components ***

Random term	Component	S.e.
Site	265.5	271.2
Site.Type	88.2	118.3

*** Residual variance model ***

Term	Factor	Model(order)	Parameter	Estimate	S.e.
Plots.Depth			Sigma2	164.1	75.3
	Plots	Identity	-	-	-
	Depth	Power(1)	phi_1	0.7897	0.1473

*** Deviance: -2*Log-Likelihood ***

Deviance	d.f.
266.57	35

Note: deviance omits constants which depend on fixed model fitted.

*** Wald tests for fixed effects ***

Fixed term	Wald statistic	d.f.	Wald/d.f.	Chi-sq prob
------------	----------------	------	-----------	-------------

* Sequentially adding terms to fixed model

pH_Ca	16.12	1	16.12	<0.001
Type	15.28	1	15.28	<0.001
Depth	8.59	4	2.15	0.072
Texture	1.90	1	1.90	0.168
Type.Depth	3.88	4	0.97	0.422
Type.Texture	0.19	1	0.19	0.663
Depth.Texture	2.60	4	0.65	0.627
Type.Depth.Texture	1.22	4	0.30	0.875

* Dropping individual terms from full fixed model

Type.Depth.Texture	1.22	4	0.30	0.875
pH_Ca	22.18	1	22.18	<0.001

* Message: chi-square distribution for Wald tests is an asymptotic approximation (i.e. for large samples) and underestimates the probabilities in other cases.

417.....

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+pH_Ca+Constant

* Model terms excluded for prediction: Site+Site.Type

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Classifies predictions
Depth	factor	Averaged over - equal weights
Type	factor	Averaged over - equal weights
pH_Ca	variate	Fixed value - variate mean: 4.690
Constant	factor	Included in prediction
Site	factor	Ignored

Response variate: Net_NH4

Predictions

Texture	40	201	205	41	61	63
			-0.36			-21.21

Standard errors

Texture	40	201	205	41	61	63
			10.74			10.74

Approximate average SED = 15.32 (calculated on variance scale)

417.....

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+pH_Ca+Constant+Site.Type

* Model terms excluded for prediction: Site

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Averaged over - equal weights
Depth	factor	Averaged over - equal weights
Type	factor	Classifies predictions
pH_Ca	variate	Fixed value - variate mean: 4.690
Constant	factor	Included in prediction
Site	factor	Averaged over - equal weights

Response variate: Net_NH4

Predictions

Type	Reserve	Paddock
	5.89	-27.46

Standard errors

Type	Reserve	Paddock
	7.491	7.491

Approximate average SED = 5.204 (calculated on variance scale)

417.....

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+pH_Ca+Constant

* Model terms excluded for prediction: Site+Site.Type

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Averaged over - equal weights
Depth	factor	Classifies predictions
Type	factor	Averaged over - equal weights
pH_Ca	variate	Fixed value - variate mean: 4.690
Constant	factor	Included in prediction
Site	factor	Ignored

Response variate: Net_NH4

Predictions

Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20
	-3.95	-15.32	-14.78	-14.23	-5.63

Standard errors

Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20
	8.199	8.256	8.157	8.080	8.221

Approximate average SED = 5.064 (calculated on variance scale)

		Mean	
	Type	Reserve	Paddock
Texture	Depth		
40 201 205	a0-2.5	7.83	29.07
	b2.5-5	9.20	-1.63
	c5-10	11.20	-7.90
	d10-15	8.73	14.20
	e15-20	11.87	13.60
41 61 63	a0-2.5	-3.10	37.93
	b2.5-5	-3.30	40.53
	c5-10	1.57	30.27
	d10-15	2.30	38.50
	e15-20	1.70	22.88

417.....

***** Analysis of variance *****

Variate: Net_NO3

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Site stratum					
Texture	1	801.9	801.9	0.37	0.578
Residual	4	8767.2	2191.8	2.93	
Site.Type stratum					
Type	1	4307.0	4307.0	5.75	0.075
Type.Texture	1	4460.9	4460.9	5.95	0.071
Residual	4	2997.3	749.3	6.44	
Site.Type.*Units* stratum					
Depth	4	645.9	161.5	1.39	0.261
Type.Depth	4	1182.7	295.7	2.54	0.059
Texture.Depth	4	712.0	178.0	1.53	0.217
Type.Texture.Depth	4	780.3	195.1	1.68	0.180
Residual	32	3725.5	116.4		
Total	59	28380.7			

* MESSAGE: the following units have large residuals.

Site 40.00	Type Paddock	*units* 1	33.5	s.e. 7.9
Site 205.00	Type Paddock	*units* 1	-20.2	s.e. 7.9

***** Tables of means *****

Variate: Net_NO3

Grand mean 13.3

Type	Reserve	Paddock						
	4.8	21.7						
Texture	40	201	205	41	61	63		
		9.6			16.9			
Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20			
	17.9	11.2	8.8	15.9	12.5			
Type	Texture	40	201	205	41	61	63	
Reserve				9.8			-0.2	
Paddock				9.5			34.0	
Type	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20		
Reserve		2.4	2.9	6.4	5.5	6.8		
Paddock		33.5	19.4	11.2	26.3	18.2		
Texture	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20		
40	201	205	18.4	3.8	1.7	11.5	12.7	
41	61	63	17.4	18.6	15.9	20.4	12.3	
Type	Texture	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20	
Reserve	40	201	205	7.8	9.2	11.2	8.7	11.9
		41	61	63	-3.1	-3.3	1.6	2.3
Paddock	40	201	205	29.1	-1.6	-7.9	14.2	13.6
		41	61	63	37.9	40.5	30.3	38.5
								22.9

*** Standard errors of differences of means ***

Table	Type	Texture	Depth	Type	Type	Texture
				Texture	Depth	Depth
rep.	30	30	12	15	6	6
s.e.d.	7.07	12.09	4.40	14.00	9.00	13.31
d.f.	4	4	32	6.45	10.03	5.85
Except when comparing means with the same level(s) of						
Type					6.23	
d.f.					32	
Texture				10.00		6.23
d.f.				4		32

Table	Type
	Texture
	Depth
rep.	3
s.e.d.	16.07

d.f. 10.96
 Except when comparing means with the same level(s) of
 Texture 12.73
 d.f. 10.03
 Type.Texture 8.81
 d.f. 32
 Texture.Depth 12.73
 d.f. 10.03

*** Least significant differences of means (5% level) ***

Table	Type	Texture	Depth	Type Texture	Type Depth	Texture Depth
rep.	30	30	12	15	6	6
l.s.d.	19.62	33.56	8.97	33.69	20.04	32.78
d.f.	4	4	32	6.45	10.03	5.85
Except when comparing means with the same level(s) of						
Type					12.69	
d.f.					32	
Texture				27.75		12.69
d.f.				4		32

Table	Type Texture Depth
rep.	3
l.s.d.	35.38
d.f.	10.96
Except when comparing means with the same level(s) of	
Texture	28.35
d.f.	10.03
Type.Texture	17.95
d.f.	32
Texture.Depth	28.35
d.f.	10.03

417.....

***** Analysis of variance (adjusted for covariate) *****

Variate: Net_NO3
Covariate: pH_Ca

Source of variation	d.f.	s.s.	m.s.	v.r.	cov.ef.	F pr.
Site stratum						
Texture	1	2098.38	2098.38	1.10	0.88	0.372
Covariate	1	3022.04	3022.04	1.58		0.298
Residual	3	5745.19	1915.06	2.16	1.14	
Site.Type stratum						
Type	1	7274.87	7274.87	8.22	0.54	0.064
Type.Texture	1	1808.53	1808.53	2.04	0.64	0.248
Covariate	1	342.90	342.90	0.39		0.578
Residual	3	2654.44	884.81	10.17	0.85	
Site.Type.*Units* stratum						
Depth	4	693.42	173.36	1.99	0.80	0.120
Type.Depth	4	580.21	145.05	1.67	0.97	0.183
Texture.Depth	4	558.98	139.75	1.61	0.96	0.197
Type.Texture.Depth	4	477.38	119.35	1.37	0.99	0.266
Covariate	1	1029.43	1029.43	11.84		0.002
Residual	31	2696.09	86.97		1.34	
Total	59	28380.75				

* MESSAGE: the following units have large residuals.

Site 40.00 Type Paddock *units* 1 24.0 s.e. 6.7
Site 201.00 Type Paddock *units* 1 -19.2 s.e. 6.7

***** Covariate regressions *****

Variate: Net_NO3

Covariate	coefficient	s.e.
Site stratum		
pH_Ca	35.	27.6
Site.Type stratum		
pH_Ca	31.	49.6
Site.Type.*Units* stratum		
pH_Ca	58.	16.9
Combined estimates		
pH_Ca	49.	13.5

***** Tables of means (adjusted for covariate) *****

Variate: Net_NO3
Covariate: pH_Ca

Grand mean 13.3

Type	Reserve	Paddock					
	2.6	23.9					
Texture	40 201 205	41 61 63					
	7.0	19.6					
Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20		
	13.5	16.6	12.4	16.2	7.7		
Type	Texture	40 201 205	41 61 63				
Reserve			3.1	2.1			
Paddock			10.8	37.1			
Type	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20	
Reserve		-1.6	5.2	6.6	3.5	-0.6	
Paddock		28.5	28.1	18.2	29.0	15.9	
Texture	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20	
40 201 205		12.6	8.5	2.9	8.4	2.4	
41 61 63		14.4	24.8	21.9	24.0	12.9	
Type	Texture	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20
Reserve	40 201 205		1.3	8.1	6.4	1.3	-1.4
Paddock	41 61 63		-4.5	2.2	6.7	5.7	0.3
	40 201 205		23.9	8.9	-0.7	15.6	6.3

*** Standard errors of differences of means ***

Table	Type	Texture	Depth	Type Texture	Type Depth	Texture Depth
rep.	30	30	12	15	6	6
s.e.d.	10.42	12.07	4.26	16.80	10.00	13.14
d.f.	3	3	31	5.28	5.74	4.18

Except when comparing means with the same level(s) of

Type					5.94	
d.f.					31	
Texture				13.35		5.76
d.f.				3		31

Table	Type Texture Depth
-------	--------------------------

rep.	3
s.e.d.	16.37
d.f.	8.15

Except when comparing means with the same level(s) of

Texture	13.75
d.f.	5.74
Type.Texture	8.17
d.f.	31
Texture.Depth	13.75
d.f.	5.74

*** Least significant differences of means (5% level) ***

Table	Type	Texture	Depth	Type Texture	Type Depth	Texture Depth
rep.	30	30	12	15	6	6
l.s.d.	33.15	38.40	8.68	42.48	24.75	35.89
d.f.	3	3	31	5.28	5.74	4.18

Except when comparing means with the same level(s) of

Type					12.12	
d.f.					31	
Texture				42.49		11.75
d.f.				3		31

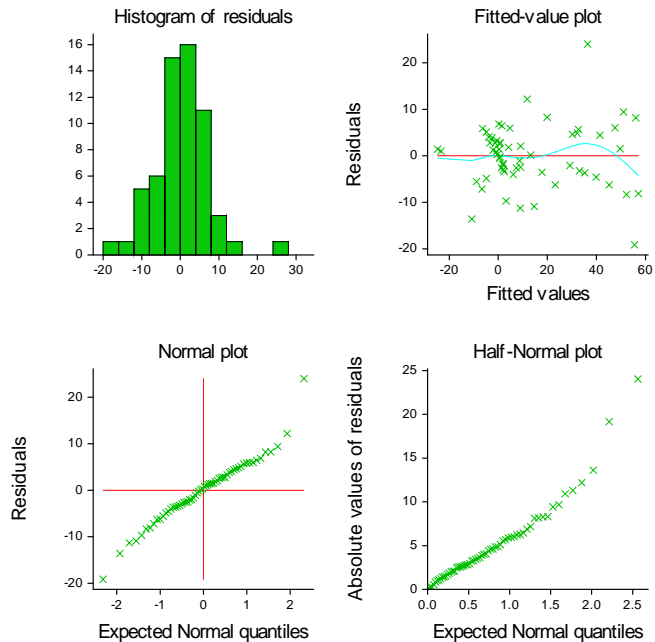
Table	Type Texture Depth
-------	--------------------------

rep.	3
l.s.d.	37.63
d.f.	8.15

Except when comparing means with the same level(s) of

Texture	34.02
d.f.	5.74
Type.Texture	16.65
d.f.	31
Texture.Depth	34.02
d.f.	5.74

Net_NO3



417.....

**** REML Variance Components Analysis ****

Response Variate : Net_NO3

Fixed model : Constant+Type+Depth+Texture+Type.Depth+Type.Texture+Depth.Texture+Type.Depth.Texture
Random model : Site+Site.Type+Plots.Depth

Number of units : 60

* Plots.Depth used as residual term with covariance structure as below

* Sparse algorithm with AI optimisation

*** Covariance structures defined for random model ***

Covariance structures defined within terms:

Term	Factor	Model	Order	Nrows
Plots.Depth	Plots	Identity	1	12
	Depth	Power - city block distance	1	5

*** Convergence monitoring ***

Cycle	Deviance	Current	variance	parameters:	gammas,	sigma2,	others
0	*	1.00000	1.00000	1.00000	0.0500000		
1	271.499	1.06729	1.02546	119.317	0.904100		
2	271.925	0.885741	0.102546	232.150	0.828121		
3	269.457	1.00803	0.373720	183.603	0.806686		
4	269.018	1.00453	0.505536	161.917	0.797209		
5	268.975	1.00906	0.535196	155.313	0.792940		
6	268.973	1.01432	0.542027	153.271	0.791007		
7	268.973	1.01679	0.544943	152.489	0.790137		
8	268.973	1.01790	0.546252	152.145	0.789748		
9	268.973	1.01839	0.546837	151.992	0.789574		
10	268.973	1.01861	0.547098	151.924	0.789496		

*** Estimated Variance Components ***

Random term	Component	S.e.
Site	154.8	165.6
Site.Type	83.1	106.0

*** Residual variance model ***

Term	Factor	Model(order)	Parameter	Estimate	S.e.
Plots.Depth			Sigma2	151.9	63.4
	Plots	Identity	-	-	-
	Depth	Power(1)	phi_1	0.7895	0.1300

*** Deviance: -2*Log-Likelihood ***

Deviance	d.f.
268.97	36

Note: deviance omits constants which depend on fixed model fitted.

*** Wald tests for fixed effects ***

Fixed term	Wald statistic	d.f.	Wald/d.f.	Chi-sq prob
------------	----------------	------	-----------	-------------

* Sequentially adding terms to fixed model

Type	6.53	1	6.53	0.011
Depth	7.05	4	1.76	0.133
Texture	0.22	1	0.22	0.642
Type.Depth	11.57	4	2.89	0.021
Type.Texture	5.23	1	5.23	0.022
Depth.Texture	7.28	4	1.82	0.122
Type.Depth.Texture	8.15	4	2.04	0.086

* Dropping individual terms from full fixed model

Type.Depth.Texture	8.15	4	2.04	0.086
--------------------	------	---	------	-------

* Message: chi-square distribution for Wald tests is an asymptotic approximation (i.e. for large samples) and underestimates the probabilities in other cases.

***** REML Variance Components Analysis *****

Response Variate : Net_NO3

Fixed model : Constant+pH_Ca+Type+Depth+Texture+Type.Depth+Type.Texture+Depth.Texture+Type.Depth.Texture
 Random model : Site+Site.Type+Plots.Depth

Number of units : 60

* Plots.Depth used as residual term with covariance structure as below

* Sparse algorithm with AI optimisation
 * All covariates centred

*** Covariance structures defined for random model ***

Covariance structures defined within terms:

Term	Factor	Model	Order	Nrows
Plots.Depth	Plots	Identity	1	12
	Depth	Power - city block distance	1	5

*** Convergence monitoring ***

Cycle	Deviance	Current	variance	parameters: gammas,	sigma2,	others
0	*	1.00000	1.00000	1.00000	0.0500000	
1	254.781	1.00926	1.03084	91.6601	0.936685	
2	262.403	1.39621	0.879244	285.847	0.884825	
3	258.434	1.15251	1.06866	175.390	0.805196	
4	255.833	1.07522	1.19866	124.206	0.684464	
5	254.492	1.05577	1.24928	99.9955	0.601079	
6	254.236	1.05169	1.27553	93.7336	0.558647	
7	254.202	1.05200	1.28720	91.8208	0.545025	
8	254.199	1.05236	1.29089	91.2926	0.542066	
9	254.199	1.05245	1.29169	91.1735	0.541515	
10	254.199	1.05247	1.29184	91.1505	0.541416	

*** Estimated Variance Components ***

Random term	Component	S.e.
Site	95.93	132.09
Site.Type	117.75	100.60

*** Residual variance model ***

Term	Factor	Model(order)	Parameter	Estimate	S.e.
Plots.Depth			Sigma2	91.15	26.17
	Plots	Identity	-	-	-
	Depth	Power(1)	phi_1	0.5414	0.3171

*** Deviance: -2*Log-Likelihood ***

Deviance	d.f.
254.20	35

Note: deviance omits constants which depend on fixed model fitted.

*** Wald tests for fixed effects ***

Fixed term	Wald statistic	d.f.	Wald/d.f.	Chi-sq prob
------------	----------------	------	-----------	-------------

* Sequentially adding terms to fixed model

pH_Ca	20.42	1	20.42	<0.001
Type	11.78	1	11.78	<0.001
Depth	6.58	4	1.64	0.160
Texture	2.59	1	2.59	0.108
Type.Depth	7.11	4	1.78	0.130
Type.Texture	2.36	1	2.36	0.124
Depth.Texture	6.76	4	1.69	0.149
Type.Depth.Texture	6.47	4	1.62	0.167

* Dropping individual terms from full fixed model

Type.Depth.Texture	6.47	4	1.62	0.167
pH_Ca	11.91	1	11.91	<0.001

* Message: chi-square distribution for Wald tests is an asymptotic approximation (i.e. for large samples) and underestimates the probabilities in other cases.

417.....

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+pH_Ca+Constant
* Model terms excluded for prediction: Site+Site.Type

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Classifies predictions
Depth	factor	Averaged over - equal weights
Type	factor	Averaged over - equal weights
pH_Ca	variate	Fixed value - variate mean: 4.690
Constant	factor	Included in prediction
Site	factor	Ignored

Response variate: Net_NO3

Predictions

Texture	40	201	205	41	61	63
		5.94			20.60	

Standard errors

Texture	40	201	205	41	61	63
		7.504			7.504	

Approximate average SED = 10.72 (calculated on variance scale)

417.....

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+pH_Ca+Constant+Site.Type
* Model terms excluded for prediction: Site

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Averaged over - equal weights
Depth	factor	Averaged over - equal weights
Type	factor	Classifies predictions
pH_Ca	variate	Fixed value - variate mean: 4.690
Constant	factor	Included in prediction
Site	factor	Averaged over - equal weights

Response variate: Net_NO3

Predictions

Type	Reserve	Paddock
	1.40	25.15

Standard errors

Type	Reserve	Paddock
	4.531	4.531

Approximate average SED = 3.322 (calculated on variance scale)

417.....

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+pH_Ca+Constant
* Model terms excluded for prediction: Site+Site.Type

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Averaged over - equal weights
Depth	factor	Classifies predictions
Type	factor	Averaged over - equal weights
pH_Ca	variate	Fixed value - variate mean: 4.690
Constant	factor	Included in prediction
Site	factor	Ignored

Response variate: Net_NO3

Predictions

Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20
	14.26	15.67	11.74	16.17	8.52

Standard errors

Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20
	5.876	5.923	5.842	5.779	5.894

Approximate average SED = 4.120 (calculated on variance scale)

418

```

419 For Which = 4...4; ">>> Inorganic has too small a Site variance component? <<<"
420   Tabulate [Class = Texture,Depth,Type; p=m] Vbles[Which]
421   TRELLIS [GR=Site; PEN=Type; TITLE= Title[Which]] X=MidPoint; Y= Vbles[Which]; METHOD=Mean
422   TRELLIS [GR=Texture; PEN=Type; TITLE= Title[Which]] X=MidPoint; Y= Vbles[Which]; METHOD=Mean
423   TRELLIS [ PEN=Type; TITLE= Title[Which]] X=MidPoint; Y= Vbles[Which]; METHOD=Mean
424
425 BLOCK Site/Type
426 TREAT Texture*Type*Depth
427 COVAR Vbles[1]
428 ANOVA [P=aov,info,means,cova; Uprint=aov,info,means; Cprint=aov,info,means;\
429   FPROB=yes; PSE=diff,lsd; LSDLEVEL=5] Vbles[Which]
430 APLOT [RMETHOD=simple] fitted,normal,halfnormal,histogram
431
432 Factor [levels=12; values=5(1...12)] Plots
433
434 VCOMP [Fixed= Texture * Type * Depth] Random= Site.Type + Plots.Depth
435 VSTRU [Term= Plots.Depth; coordinates=MidPoint] Model=Power; Factor=Depth; Het=*
436 REML [P=dev,mod,comp,wald,mon; MAXCYCLE=80; METHOD= AI] Vbles[Which]; res=res
437 VPRED [P=desc,pred,se,aved] CLASSIFY= Texture ; LEVELS=*; PARALLEL=*
438 VPRED [P=desc,pred,se,aved] CLASSIFY= Type ; LEVELS=*; PARALLEL=*
439 VPRED [P=desc,pred,se,aved] CLASSIFY= Depth ; LEVELS=*; PARALLEL=*
440
441 VCOMP [Fixed= pH_Ca + Texture * Type * Depth] Random= Site.Type + Plots.Depth
442 VSTRU [Term= Plots.Depth; coordinates=MidPoint] Model=Power; Factor=Depth; Het=*
443 REML [P=dev,mod,comp,wald,mon; MAXCYCLE=80; METHOD=AI] Vbles[Which]; res=res
444
445 "VPRED [P=desc,pred,se,aved] CLASSIFY= Mid ; LEVELS!=(2.5,7.5,15,25,35,45); PARALLEL=*"
446 VPRED [P=desc,pred,se,aved] CLASSIFY= Texture ; LEVELS=*; PARALLEL=*
447 VPRED [P=desc,pred,se,aved] CLASSIFY= Type ; LEVELS=*; PARALLEL=*
448 VPRED [P=desc,pred,se,aved] CLASSIFY= Depth ; LEVELS=*; PARALLEL=*
449
450 EndFor

```

		Mean	
	Type	Reserve	Paddock
Texture	Depth		
40 201 205	a0-2.5	11.867	8.800
	b2.5-5	13.633	-4.100
	c5-10	4.967	-14.000
	d10-15	1.367	2.433
	e15-20	0.667	1.200
41 61 63	a0-2.5	4.100	4.833
	b2.5-5	4.333	1.533
	c5-10	5.900	0.200
	d10-15	2.133	2.567
	e15-20	-3.000	0.067

450.....

***** Analysis of variance *****

Variate: Inorganic

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Site stratum					
Texture	1	2.60	2.60	0.13	0.740
Residual	4	82.29	20.57	0.13	
Site.Type stratum					
Type	1	270.09	270.09	1.76	0.255
Type.Texture	1	172.38	172.38	1.12	0.349
Residual	4	613.12	153.28	1.91	
Site.Type.*Units* stratum					
Depth	4	528.95	132.24	1.65	0.187
Type.Depth	4	517.95	129.49	1.61	0.195
Texture.Depth	4	300.38	75.10	0.93	0.456
Type.Texture.Depth	4	142.82	35.70	0.44	0.776
Residual	32	2570.87	80.34		
Total	59	5201.45			

* MESSAGE: the following units have large residuals.

Site 201.00	Type Paddock	*units* 1	-15.8	s.e. 6.5
Site 205.00	Type Paddock	*units* 1	23.9	s.e. 6.5

***** Tables of means *****

Variate: Inorganic

Grand mean 2.5

Type	Reserve	Paddock						
	4.6	0.4						
Texture	40	201	205	41	61	63		
		2.7			2.3			
Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20			
	7.4	3.8	-0.7	2.1	-0.3			
Type	Texture	40	201	205	41	61	63	
Reserve				6.5		2.7		
Paddock				-1.1		1.8		
Type	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20		
Reserve		8.0	9.0	5.4	1.8	-1.2		
Paddock		6.8	-1.3	-6.9	2.5	0.6		
Texture	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20		
40	201	205						
		10.3	4.8	-4.5	1.9	0.9		
41	61	63						
		4.5	2.9	3.1	2.3	-1.5		
Type	Texture	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20	
Reserve	40	201	205	11.9	13.6	5.0	1.4	0.7
		41	61	63	4.1	4.3	5.9	2.1
Paddock	40	201	205	8.8	-4.1	-14.0	2.4	1.2
		41	61	63	4.8	1.5	0.2	2.6

*** Standard errors of differences of means ***

Table	Type	Texture	Depth	Type Texture	Type Depth	Texture Depth
rep.	30	30	12	15	6	6
s.e.d.	3.20	1.17	3.66	3.40	5.63	4.77
d.f.	4	4	32	5.05	24.75	35.08
Except when comparing means with the same level(s) of						
Type					5.17	
d.f.					32	
Texture				4.52		5.17
d.f.				4		32

Table	Type Texture Depth
rep.	3

s.e.d. 7.38
d.f. 35.30
Except when comparing means with the same level(s) of
Texture 7.96
d.f. 24.75
Type.Texture 7.32
d.f. 32
Texture.Depth 7.96
d.f. 24.75

*** Least significant differences of means (5% level) ***

Table	Type	Texture	Depth	Type Texture	Type Depth	Texture Depth
rep.	30	30	12	15	6	6
l.s.d.	8.88	3.25	7.45	8.72	11.59	9.69
d.f.	4	4	32	5.05	24.75	35.08
Except when comparing means with the same level(s) of					10.54	
Type					32	
d.f.						
Texture				12.55		10.54
d.f.				4		32

Table	Type Texture Depth
rep.	3
l.s.d.	14.97
d.f.	35.30
Except when comparing means with the same level(s) of	
Texture	16.39
d.f.	24.75
Type.Texture	14.91
d.f.	32
Texture.Depth	16.39
d.f.	24.75

450.....

***** Analysis of variance (adjusted for covariate) *****

Variate: Inorganic
Covariate: pH_Ca

Source of variation	d.f.	s.s.	m.s.	v.r.	cov.ef.	F pr.
Site stratum						
Texture	1	1.32	1.32	0.05	0.88	0.839
Covariate	1	1.06	1.06	0.04		0.856
Residual	3	81.23	27.08	0.80	0.76	
Site.Type stratum						
Type	1	374.10	374.10	11.00	0.54	0.045
Type.Texture	1	577.43	577.43	16.98	0.64	0.026
Covariate	1	511.12	511.12	15.03		0.030
Residual	3	102.00	34.00	0.63	4.51	
Site.Type.*Units* stratum						
Depth	4	824.00	206.00	3.82	0.80	0.012
Type.Depth	4	740.55	185.14	3.43	0.97	0.020
Texture.Depth	4	383.50	95.87	1.78	0.96	0.159
Type.Texture.Depth	4	267.98	67.00	1.24	0.99	0.314
Covariate	1	898.84	898.84	16.66		<.001
Residual	31	1672.02	53.94		1.49	
Total	59	5201.45				

* MESSAGE: the following units have large residuals.

Site 201.00 Type Reserve *units* 5 13.00 s.e. 5.28
Site 205.00 Type Paddock *units* 3 -11.44 s.e. 5.28

***** Covariate regressions *****

Variate: Inorganic

Covariate	coefficient	s.e.
Site stratum		
pH_Ca	0.7	3.28
Site.Type stratum		
pH_Ca	-37.7	9.71
Site.Type.*Units* stratum		
pH_Ca	-54.	13.3
Combined estimates		
pH_Ca	-37.2	7.05

***** Tables of means (adjusted for covariate) *****

Variate: Inorganic
Covariate: pH_Ca

Grand mean 2.47

Type	Reserve	Paddock				
	7.27	-2.32				
Texture 40 201 205 41 61 63						
	2.63	2.32				
Depth a0-2.5 b2.5-5 c5-10 d10-15 e15-20						
	11.57	-1.23	-4.09	1.85	4.27	
Type Texture 40 201 205 41 61 63						
Reserve		11.30	3.25			
Paddock		-6.03	1.39			
Type Depth a0-2.5 b2.5-5 c5-10 d10-15 e15-20						
Reserve		12.33	7.52	5.88	4.28	6.35
Paddock		10.82	-9.98	-14.05	-0.57	2.18
Texture Depth a0-2.5 b2.5-5 c5-10 d10-15 e15-20						
40 201 205		13.28	-2.17	-8.19	2.21	8.05
41 61 63		9.87	-0.28	0.02	1.49	0.49

Type	Texture	Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20
Reserve	40 201 205		16.55	13.24	8.02	6.96	11.70
	41 61 63		8.10	1.80	3.73	1.60	1.00
Paddock	40 201 205		10.00	-17.59	-24.41	-2.54	4.39
	41 61 63		11.64	-2.36	-3.70	1.39	-0.02

*** Standard errors of differences of means ***

Table	Type	Texture	Depth	Type	Type	Texture
				Texture	Depth	Depth
rep.	30	30	12	15	6	6
s.e.d.	2.042	1.435	3.353	2.481	4.502	4.305
d.f.	3	3	31	5.92	33.06	33.77
Except when comparing means with the same level(s) of						
Type					4.678	
d.f.					31	
Texture				2.617		4.537
d.f.				3		31

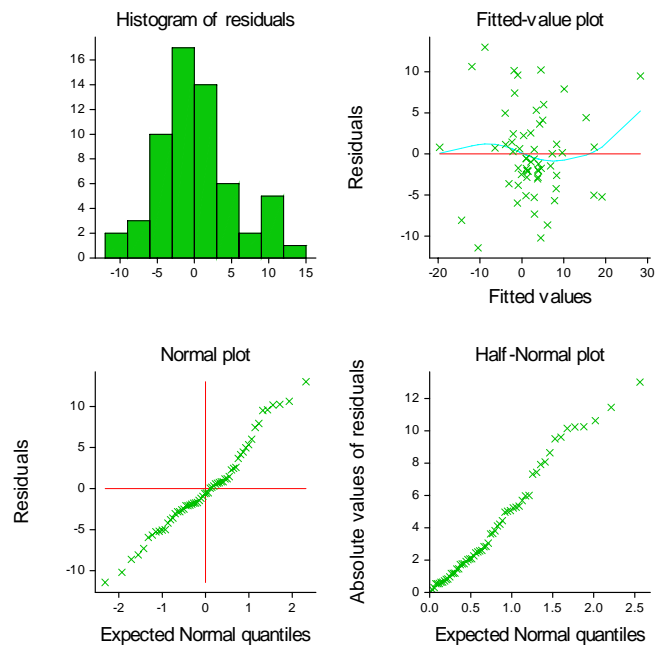
Table	Type
	Texture
	Depth
rep.	3
s.e.d.	6.146
d.f.	36.56
Except when comparing means with the same level(s) of	
Texture	6.189
d.f.	33.06
Type.Texture	6.431
d.f.	31
Texture.Depth	6.189
d.f.	33.06

*** Least significant differences of means (5% level) ***

Table	Type	Texture	Depth	Type	Type	Texture
				Texture	Depth	Depth
rep.	30	30	12	15	6	6
l.s.d.	6.498	4.566	6.838	6.089	9.159	8.751
d.f.	3	3	31	5.92	33.06	33.77
Except when comparing means with the same level(s) of						
Type					9.541	
d.f.					31	
Texture				8.330		9.253
d.f.				3		31

Table	Type
	Texture
	Depth
rep.	3
l.s.d.	12.457
d.f.	36.56
Except when comparing means with the same level(s) of	
Texture	12.590
d.f.	33.06
Type.Texture	13.116
d.f.	31
Texture.Depth	12.590
d.f.	33.06

Inorganic



***** REML Variance Components Analysis *****

Response Variate : Inorganic

Fixed model : Constant+Type+Depth+Texture+Type.Depth+Type.Texture+Depth.Texture+Type.Depth.Texture
 Random model : Site.Type+Plots.Depth

Number of units : 60

* Plots.Depth used as residual term with covariance structure as below

* Sparse algorithm with AI optimisation

*** Covariance structures defined for random model ***

Covariance structures defined within terms:

Term	Factor	Model	Order	Nrows
Plots.Depth	Plots	Identity	1	12
	Depth	Power - city block distance		
			1	5

*** Convergence monitoring ***

Cycle	Deviance	Current	variance parameters: gammas, sigma2, others		
0	*	1.00000	1.00000	0.0500000	
1	244.595	0.531511	67.1716	0.702919	
2	243.349	0.0531511	80.8067	0.576140	
3	237.651	5.31511E-03	79.0590	0.522151	
4	237.200	-0.0128995	80.3323	0.556392	
5	237.093	-0.0644977	81.7610	0.592569	
6	236.924	-0.0720291	86.1207	0.598247	
7	236.921	-0.0713412	86.9067	0.596703	
8	236.921	-0.0715368	86.8215	0.597199	
9	236.921	-0.0714740	86.8463	0.597037	

*** Estimated Variance Components ***

Random term	Component	S.e.
Site.Type	-6.21	13.14

*** Residual variance model ***

Term	Factor	Model(order)	Parameter	Estimate	S.e.
Plots.Depth			Sigma2	86.85	24.82
	Plots	Identity	-	-	-
	Depth	Power(1)	phi_1	0.5970	0.2268

*** Deviance: -2*Log-Likelihood ***

Deviance	d.f.
236.92	37

Note: deviance omits constants which depend on fixed model fitted.

*** Wald tests for fixed effects ***

Fixed term	Wald statistic	d.f.	Wald/d.f.	Chi-sq prob
------------	----------------	------	-----------	-------------

* Sequentially adding terms to fixed model

Type	2.80	1	2.80	0.094
Depth	6.00	4	1.50	0.199
Texture	0.03	1	0.03	0.863
Type.Depth	6.11	4	1.53	0.191
Type.Texture	1.92	1	1.92	0.166
Depth.Texture	3.54	4	0.89	0.472
Type.Depth.Texture	1.73	4	0.43	0.785

* Dropping individual terms from full fixed model

Type.Depth.Texture	1.73	4	0.43	0.785
--------------------	------	---	------	-------

* Message: chi-square distribution for Wald tests is an asymptotic approximation (i.e. for large samples) and underestimates the probabilities in other cases.

450.....

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+Constant
* Model terms excluded for prediction: Site.Type

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Classifies predictions
Depth	factor	Averaged over - equal weights
Type	factor	Averaged over - equal weights
Constant	factor	Included in prediction
Site	factor	Ignored

Response variate: Inorganic

Predictions

Texture	40	201	205	41	61	63
			2.683			2.267

Standard errors

Texture	40	201	205	41	61	63
			1.610			1.610

Approximate average SED = 2.277 (calculated on variance scale)

450.....

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+Constant+Site.Type

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Averaged over - equal weights
Depth	factor	Averaged over - equal weights
Type	factor	Classifies predictions
Constant	factor	Included in prediction
Site	factor	Averaged over - equal weights

Response variate: Inorganic

Predictions

Type	Reserve	Paddock
	4.597	0.353

Standard errors

Type	Reserve	Paddock
	1.904	1.904

Approximate average SED = 2.693 (calculated on variance scale)

450.....

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+Constant
* Model terms excluded for prediction: Site.Type

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Averaged over - equal weights
Depth	factor	Classifies predictions
Type	factor	Averaged over - equal weights

Constant	factor	Included in prediction		
Site	factor	Ignored		

Response variate: Inorganic

Predictions

Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20
	7.400	3.850	-0.733	2.125	-0.267

Standard errors

Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20
	2.592	2.592	2.592	2.592	2.592

Approximate average SED = 3.682 (calculated on variance scale)

50.....

***** REML Variance Components Analysis *****

Response Variate : Inorganic

Fixed model : Constant+pH_Ca+Type+Depth+Texture+Type.Depth+Type.Texture+Depth.Texture+Type.Depth.Texture
Random model : Site.Type+Plots.Depth

Number of units : 60

* Plots.Depth used as residual term with covariance structure as below

* Sparse algorithm with AI optimisation
* All covariates centred

*** Covariance structures defined for random model ***

Covariance structures defined within terms:

Term	Factor	Model	Order	Nrows
Plots.Depth	Plots	Identity	1	12
	Depth	Power - city block distance	1	5

*** Convergence monitoring ***

Cycle	Deviance	Current	variance	parameters: gammas, sigma2, others
0	*	1.00000	1.00000	0.0500000
1	233.191	0.633200	57.6653	5.00000E-03
2	232.381	0.0633200	60.4949	0.899600
3	241.614	0.949800	161.091	0.573355
11	230.719	0.0127844	75.7908	0.533908
12	230.719	0.0128345	75.8075	0.533675

*** Estimated Variance Components ***

Random term	Component	S.e.
Site.Type	0.97	14.42

*** Residual variance model ***

Term	Factor	Model(order)	Parameter	Estimate	S.e.
Plots.Depth			Sigma2	75.81	21.75
	Plots	Identity	-	-	-
	Depth	Power(1)	phi_1	0.5337	0.3058

*** Deviance: -2*Log-Likelihood ***

Deviance	d.f.
230.72	36

Note: deviance omits constants which depend on fixed model fitted.

*** Wald tests for fixed effects ***

Fixed term	Wald statistic	d.f.	Wald/d.f.	Chi-sq prob
* Sequentially adding terms to fixed model				
pH_Ca	0.15	1	0.15	0.696
Type	3.01	1	3.01	0.083
Depth	7.32	4	1.83	0.120
Texture	0.25	1	0.25	0.617
Type.Depth	7.40	4	1.85	0.116
Type.Texture	2.75	1	2.75	0.097
Depth.Texture	4.00	4	1.00	0.406
Type.Depth.Texture	2.19	4	0.55	0.702
* Dropping individual terms from full fixed model				
Type.Depth.Texture	2.19	4	0.55	0.702
pH_Ca	3.23	1	3.23	0.072

* Message: chi-square distribution for Wald tests is an asymptotic approximation (i.e. for large samples) and underestimates the probabilities in other cases.

450.....

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+pH_Ca+Constant

* Model terms excluded for prediction: Site.Type

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Classifies predictions
Depth	factor	Averaged over - equal weights
Type	factor	Averaged over - equal weights
pH_Ca	variate	Fixed value - variate mean: 4.690
Constant	factor	Included in prediction
Site	factor	Ignored

Response variate: Inorganic

Predictions

Texture	40	201	205	41	61	63
		3.420		1.530		

Standard errors

Texture	40	201	205	41	61	63
		1.810		1.810		

Approximate average SED = 2.625 (calculated on variance scale)

450.....

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+pH_Ca+Constant+Site.Type

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Averaged over - equal weights
Depth	factor	Averaged over - equal weights
Type	factor	Classifies predictions
pH_Ca	variate	Fixed value - variate mean: 4.690
Constant	factor	Included in prediction
Site	factor	Averaged over - equal weights

Response variate: Inorganic

Predictions

Type	Reserve	Paddock
	5.279	-0.329

Standard errors

Type	Reserve	Paddock
	1.758	1.758

Approximate average SED = 2.544 (calculated on variance scale)

450.....

*** Predictions from REML analysis ***

* Model terms included for prediction: Type.Depth.Texture+Depth.Texture+Type.Texture+Type.Depth+Texture+Depth+Type+pH_Ca+Constant

* Model terms excluded for prediction: Site.Type

* Status of model variables in prediction:

Variable	Type	Status
Texture	factor	Averaged over - equal weights
Depth	factor	Classifies predictions
Type	factor	Averaged over - equal weights
pH_Ca	variate	Fixed value - variate mean: 4.690
Constant	factor	Included in prediction
Site	factor	Ignored

Response variate: Inorganic

Predictions

Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20
	8.137	2.953	-1.326	2.077	0.535

Standard errors

Depth	a0-2.5	b2.5-5	c5-10	d10-15	e15-20
	2.562	2.578	2.551	2.530	2.568

Approximate average SED = 3.531 (calculated on variance scale)

451

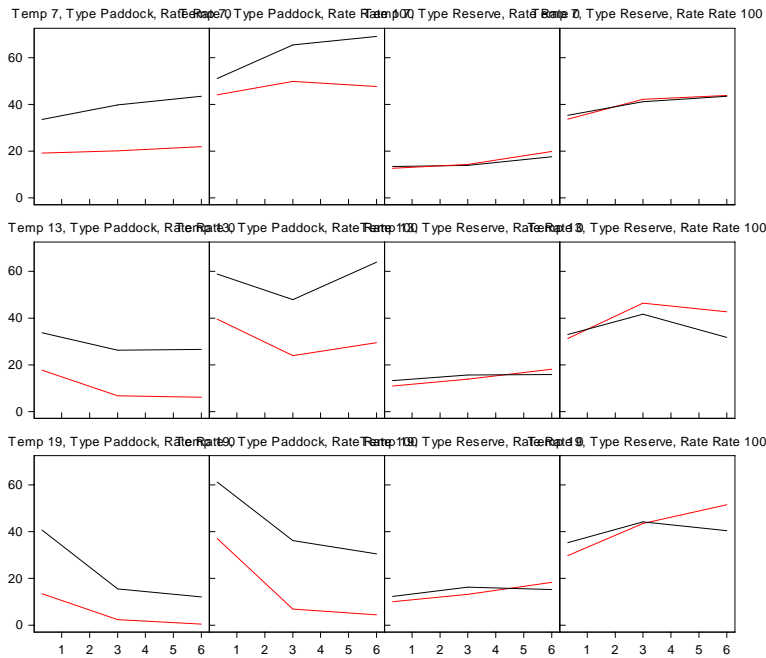
Management Area	Soil ID	Sample No.	Can No.	Weight Can (g)	Weight Can+ Wet Soil (g)	WeightWet Soil (g)	Weight Can + Oven Dry Soil (g)	WeightOven Dry Soil (g)	Moisture Loss (g)	Field Moisture (%)
Reserve	41 R 1 2	R1	1.1	53.15	80.33	27.18	73.78	20.63	6.55	31.75
	41 R 2 2	R2	1.2	54.75	85.28	30.53	77.94	23.19	7.34	31.65
Paddock	41 P 1 2	P1	1.3	49.37	75.56	26.19	68.92	19.55	6.64	33.96
	41 P 2 2	P2	1.4	51.34	79.46	28.12	72.42	21.08	7.04	33.40

GenStat Eighth Edition
 GenStat Procedure Library Release PL16

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58 OUTPUT [width=110] 1
59
60
61 "}}}}}}}}}}}}}}}} Amonium NH4 {{{{{{
62 "=====
63 TRELIS [GR= Temp,Type,Rate; PEN=Transect; TITLE= 'NH4';Nrows=3; Ncolumns=4] \
64 X= Water; Y= NH4; METHOD= mean
65
66 BLOCK Temp,Type,Transect
67 TREAT Temp*Type*Rate*Moisture
68 ANOVA [PR=aov,info,means; FACT=32; FPROB=yes; PSE=diff,lsd; LSDLEVEL=5] NH4
Analysis of variance
    
```

NH4



Variate: NH4

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Temp.Type.Transect stratum					
Temp	2	1265.59	632.80	1.01	0.419
Type	1	406.89	406.89	0.65	0.452
Temp.Type	2	1233.02	616.51	0.98	0.428
Residual	6	3768.09	628.01	38.80	
Temp.Type.Transect.*Units* stratum					
Rate	1	9631.79	9631.79	595.06	<.001
Moisture	2	27.14	13.57	0.84	0.442
Temp.Rate	2	47.94	23.97	1.48	0.244
Type.Rate	1	47.43	47.43	2.93	0.097
Temp.Moisture	4	601.81	150.45	9.30	<.001
Type.Moisture	2	936.12	468.06	28.92	<.001
Rate.Moisture	2	23.24	11.62	0.72	0.496
Temp.Type.Rate	2	143.27	71.63	4.43	0.021
Temp.Type.Moisture	4	906.23	226.56	14.00	<.001
Temp.Rate.Moisture	4	33.13	8.28	0.51	0.728
Type.Rate.Moisture	2	77.73	38.86	2.40	0.108
Temp.Type.Rate.Moisture	4	135.56	33.89	2.09	0.106
Residual	30	485.58	16.19		
Total	71	19770.56			

Message: the following units have large residuals.

Temp 13. Type Paddock Transect 1 *units* 6 6.08 s.e. 2.60
 Temp 13. Type Paddock Transect 2 *units* 6 -6.08 s.e. 2.60

Tables of means

Variate: NH4

Grand mean 29.52

Temp	7.	13.	19.		
	34.90	28.99	24.67		
Type	Paddock	Reserve			
	31.89	27.14			
Rate	Rate 0	Rate 100			
	17.95	41.08			
Moisture	Dry	Moist	Wet		
	30.08	28.66	29.81		
Temp	Type	Paddock	Reserve		
7.		42.14	27.66		
13.		31.75	26.22		
19.		21.79	27.54		
Temp	Rate	Rate 0	Rate 100		
7.		22.52	47.27		
13.		17.11	40.86		
19.		14.22	35.12		
Type	Rate	Rate 0	Rate 100		
Paddock		21.14	42.65		
Reserve		14.76	39.52		
TempMoisture	Dry	Moist	Wet		
7.		30.42	35.85	38.42	
13.		29.78	27.84	29.34	
19.		30.03	22.30	21.68	
TypeMoisture	Dry	Moist	Wet		
Paddock		37.55	28.44	29.69	
Reserve		22.60	28.88	29.94	
RateMoisture	Dry	Moist	Wet		
Rate 0		19.29	16.53	18.03	
Rate 100		40.87	40.79	41.59	
Temp	Type	Paddock	Reserve		
	Rate	Rate 0	Rate 100	Rate 0	Rate 100
7.		29.70	54.58	15.35	39.96
13.		19.58	43.93	14.64	37.80
19.		14.15	29.44	14.29	40.79

Type Paddock		Reserve					
TempMoisture	Dry	Moist	Wet	Dry	Moist	Wet	
7.	37.02	43.82	45.57	23.83	27.88	31.27	
13.	37.47	26.25	31.55	22.10	29.44	27.12	
19.	38.17	15.26	11.95	21.88	29.33	31.42	

Rate Rate 0		Rate 100				
TempMoisture	Dry	Moist	Wet	Dry	Moist	Wet
7.	19.77	22.02	25.78	41.08	49.68	51.05
13.	18.92	15.68	16.72	40.65	40.00	41.95
19.	19.18	11.89	11.59	40.87	32.70	31.78

Rate Rate 0		Rate 100				
TypeMoisture	Dry	Moist	Wet	Dry	Moist	Wet
Paddock	26.43	18.49	18.50	48.68	38.39	40.88
Reserve	12.15	14.57	17.57	33.05	43.20	42.31

Rate Rate 0		Rate 100					
Temp	TypeMoisture	Dry	Moist	Wet	Dry	Moist	Wet
7.	Paddock	26.42	29.93	32.74	47.63	57.71	58.39
	Reserve	13.12	14.12	18.82	34.53	41.64	43.70
13.	Paddock	25.75	16.57	16.41	49.19	35.92	46.69
	Reserve	12.09	14.80	17.04	32.11	44.08	37.21
19.	Paddock	27.12	8.97	6.35	49.22	21.55	17.55
	Reserve	11.24	14.81	16.83	32.52	43.86	46.00

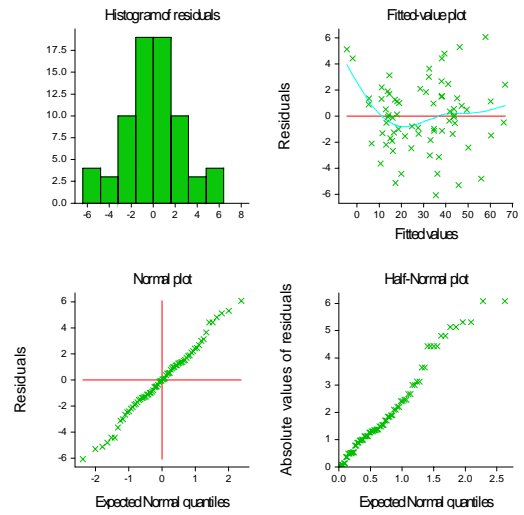
Standard errors of differences of means

Table	Temp	Type	Rate	Moisture	Temp	Temp
					Type	Rate
rep.	24	36	36	24	12	12
s.e.d.	7.234	5.907	0.948	1.161	10.231	7.327
d.f.	6	6	30	30	6	6.31
Except when comparing means with the same level(s) of						
Temp						1.642
d.f.						30
Table	Type	Temp	Type	Rate	Temp	Temp
	Rate	Moisture	Moisture	Moisture	Type	Type
					Rate	Moisture
rep.	18	8	12	12	6	4
s.e.d.	5.982	7.418	6.057	1.642	10.362	10.491
d.f.	6.31	6.63	6.63	30	6.31	6.63
Except when comparing means with the same level(s) of						
Temp		2.012				
d.f.		30				
Type	1.341		1.642			
d.f.	30		30			
Temp.Type					2.323	2.845
d.f.					30	30
Table	Temp	Type	Temp			
	Rate	Rate	Type			
	Moisture	Moisture	Rate			
			Moisture			
rep.	4	6	2			
s.e.d.	7.686	6.276	10.870			
d.f.	7.62	7.62	7.62			
Except when comparing means with the same level(s) of						
Temp	2.845					
d.f.	30					
Type		2.323				
d.f.		30				
Temp.Type			4.023			
d.f.			30			
Temp.Rate	2.845					
d.f.	30					
Type.Rate		2.323				
d.f.		30				
Temp.Moisture	2.845					
d.f.	30					
Type.Moisture		2.323				
d.f.		30				
Temp.Type.Rate			4.023			
d.f.			30			
Temp.Type.Moisture				4.023		
d.f.				30		

Least significant differences of means (5% level)

Table	Temp	Type	Rate	Moisture	Temp	Temp
rep.	24	36	36	24	12	12
l.s.d.	17.702	14.453	1.937	2.372	25.034	17.715
d.f.	6	6	30	30	6	6.31
Except when comparing means with the same level(s) of						
Temp						3.354
d.f.						30
Table	Type	Temp	Type	Rate	Temp	Temp
rep.	18	8	12	12	6	4
l.s.d.	14.464	17.741	14.486	3.354	25.053	25.090
d.f.	6.31	6.63	6.63	30	6.31	6.63
Except when comparing means with the same level(s) of						
Temp		4.108				
d.f.		30				
Type	2.739		3.354			
d.f.	30		30			
Temp.Type					4.744	5.810
d.f.					30	30
Table	Temp	Type	Temp	Temp	Temp	Temp
rep.	4	6	2			
l.s.d.	17.879	14.598	25.285			
d.f.	7.62	7.62	7.62			
Except when comparing means with the same level(s) of						
Temp	5.810					
d.f.	30					
Type		4.744				
d.f.		30				
Temp.Type			8.216			
d.f.			30			
Temp.Rate	5.810					
d.f.	30					
Type.Rate		4.744				
d.f.		30				
Temp.Moisture	5.810					
d.f.	30					
Type.Moisture		4.744				
d.f.		30				
Temp.Type.Rate			8.216			
d.f.			30			
Temp.Type.Moisture				8.216		
d.f.				30		

NH4

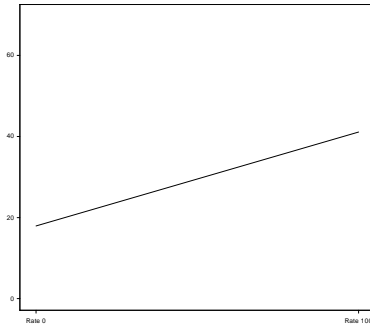


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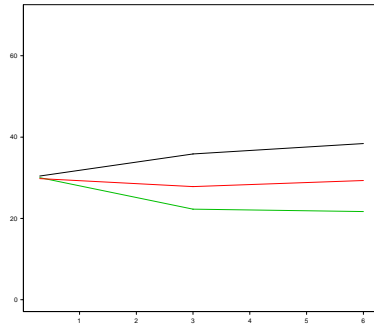
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70
71 TRELIS [TITLE= 'NH4'] X= Rate; Y= NH4; METHOD= mean
72 TRELIS [PEN=Temp; TITLE= 'NH4'] X= Water; Y= NH4; METHOD= mean
73 TRELIS [PEN=Type; TITLE= 'NH4'] X= Water; Y= NH4; METHOD= mean
74 TRELIS [Gr = Type; PEN=Rate; TITLE= 'NH4'] X= Temp; Y= NH4; METHOD= mean
75 TRELIS [Gr = Type; PEN=Moisture; TITLE= 'NH4'] X= Temp; Y= NH4; METHOD= mean
76 TRELIS [Gr = Type; PEN=Temp; TITLE= 'NH4'] X= Water; Y= NH4; METHOD= mean
77 TRELIS [GR= Temp,Type; PEN=Rate; TITLE= 'NH4'] X= Water; Y= NH4; METHOD= mean
78

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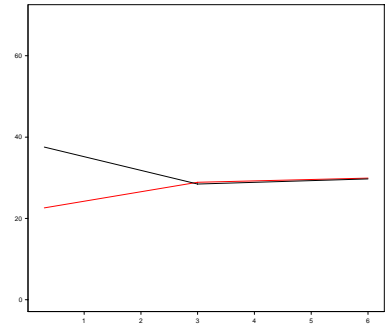
NH4



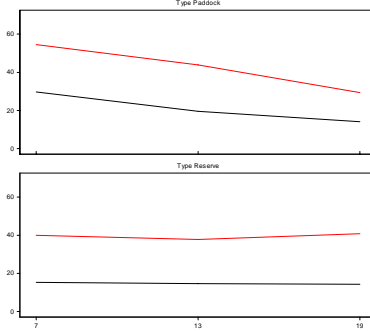
NH4



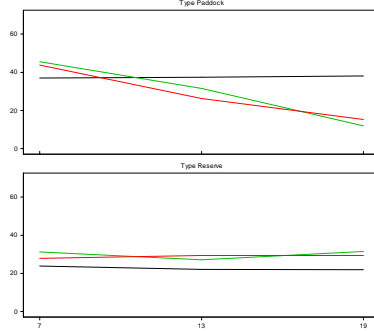
NH4



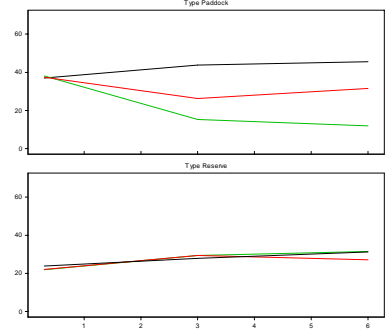
NH4



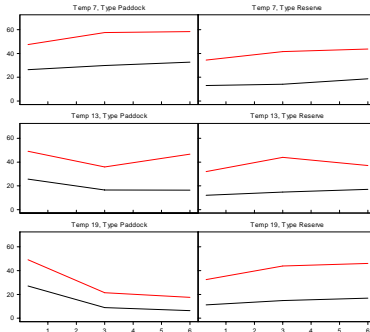
NH4



NH4



NH4

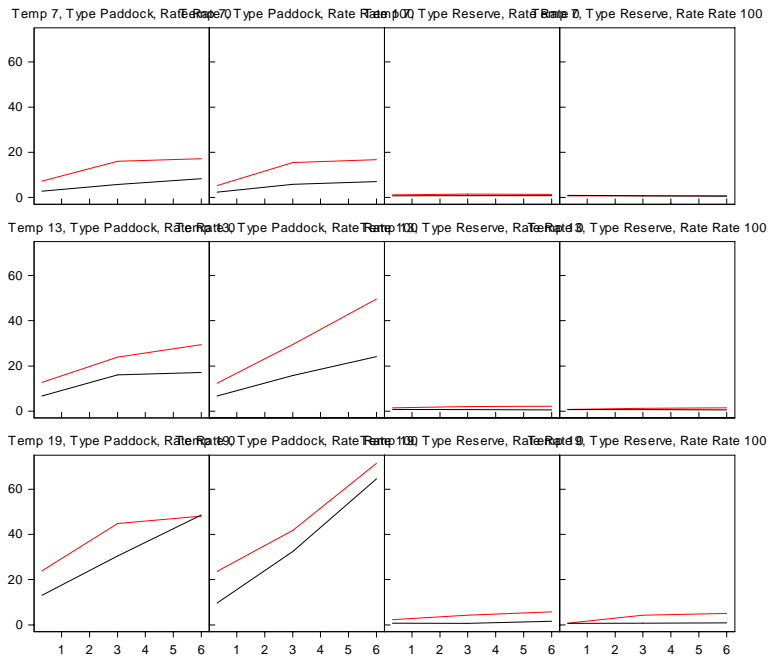


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73 "}}}}}}}}}}}}}} Nitrate NO3 {{{{{{{{{{{{{{{{{{{{{{{{{
74 "=====
75 TRELIS [GR= Temp,Type,Rate; PEN=Transect; TITLE= 'NO3';Nrows=3; Ncolumns=4] \
76 X= Water; Y= NO3; METHOD= mean
77

```

NO3




```

78 BLOCK Temp.Type.Transect
79 TREAT Temp*Type*Rate*Moisture
80 ANOVA [PR=acov,info,means; FACT=32; FPROB=yes; PSE=diff,lsd; LSDLEVEL=5] NO3

```

Analysis of variance

Variate: NO3

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Temp.Type.Transect stratum					
Temp	2	2721.128	1360.564	9.35	0.014
Type	1	7898.779	7898.779	54.29	<.001
Temp.Type	2	2228.751	1114.376	7.66	0.022
Residual	6	872.910	145.485	17.53	
Temp.Type.Transect.*Units* stratum					
Rate	1	41.542	41.542	5.01	0.033
Moisture	2	1703.239	851.620	102.64	<.001
Temp.Rate	2	39.042	19.521	2.35	0.112
Type.Rate	1	66.068	66.068	7.96	0.008
Temp.Moisture	4	626.197	156.549	18.87	<.001
Type.Moisture	2	1476.488	738.244	88.97	<.001
Rate.Moisture	2	121.271	60.636	7.31	0.003
Temp.Type.Rate	2	41.687	20.843	2.51	0.098
Temp.Type.Moisture	4	475.738	118.934	14.33	<.001
Temp.Rate.Moisture	4	74.096	18.524	2.23	0.089
Type.Rate.Moisture	2	127.075	63.538	7.66	0.002
Temp.Type.Rate.Moisture	4	75.999	19.000	2.29	0.083
Residual	30	248.921	8.297		
Total	71	18838.930			

Message: the following units have large residuals.

Temp 13. Type Paddock Transect 1 *units* 6	-6.84 s.e.	1.86
Temp 13. Type Paddock Transect 2 *units* 6	6.84 s.e.	1.86
Temp 19. Type Paddock Transect 1 *units* 3	4.83 s.e.	1.86
Temp 19. Type Paddock Transect 2 *units* 3	-4.83 s.e.	1.86

Tables of means

Variate: NO3

Grand mean 11.94

Temp	7.	13.	19.
	5.07	10.76	19.99
Type Paddock Reserve	22.41	1.47	
Rate Rate 0Rate 100	11.18	12.70	
Moisture	Dry	Moist	Wet
	5.79	12.36	17.68
Temp	Type Paddock Reserve		
7.	9.20	0.94	
13.	20.38	1.14	
19.	37.67	2.32	
Temp	Rate Rate 0Rate 100		
7.	5.35	4.79	
13.	9.53	11.99	
19.	18.66	21.32	
Type Paddock Reserve	Rate Rate 0Rate 100		
	20.70	24.13	
	1.67	1.27	
TempMoisture	Dry	Moist	Wet
7.	2.69	5.87	6.65
13.	5.34	11.27	15.67
19.	9.34	19.92	30.72
TypeMoisture	Dry	Moist	Wet
Paddock	10.56	23.16	33.53
Reserve	1.02	1.55	1.83
RateMoisture	Dry	Moist	Wet
Rate 0	6.17	12.27	15.11

Rate 100 5.40 12.44 20.25

Temp	Type Paddock		Reserve	
	Rate	Rate 0	Rate 0	Rate 100
7.	9.60	8.80	1.11	0.78
13.	17.72	23.04	1.34	0.95
19.	34.78	40.55	2.55	2.08

Temp	Type Paddock		Reserve				
	Moisture	Dry	Moist	Wet	Dry	Moist	Wet
7.	4.44	10.79	12.37	0.94	0.95	0.93	
13.	9.69	21.33	30.11	0.98	1.21	1.23	
19.	17.54	37.35	58.11	1.13	2.49	3.33	

Temp	Moisture	Rate 0		Rate 100			
		Dry	Moist	Wet	Dry	Moist	Wet
7.	3.03	6.05	6.98	2.36	5.69	6.32	
13.	5.50	10.72	12.36	5.17	11.83	18.98	
19.	9.99	20.03	25.97	8.68	19.81	35.46	

Type Paddock	Rate	Rate 0		Rate 100			
		Moisture	Dry	Moist	Wet	Dry	Moist
Paddock	11.10	22.86	28.13	10.02	23.45	38.93	
Reserve	1.24	1.68	2.08	0.79	1.43	1.58	

Temp	Type Paddock	Moisture	Rate 0		Rate 100			
			Dry	Moist	Wet	Dry	Moist	Wet
7.	Paddock	5.06	10.93	12.80	3.83	10.64	11.94	
	Reserve	0.99	1.17	1.17	0.89	0.74	0.71	
13.	Paddock	9.79	20.03	23.34	9.60	22.64	36.88	
	Reserve	1.20	1.42	1.39	0.76	1.01	1.07	
19.	Paddock	18.46	37.62	48.26	16.63	37.07	67.96	
	Reserve	1.53	2.44	3.69	0.73	2.55	2.97	

Standard errors of differences of means

Table	Temp	Type	Rate	Moisture	Temp	Temp
					Type	Rate
rep.	24	36	36	24	12	12
s.e.d.	3.482	2.843	0.679	0.832	4.924	3.580
d.f.	6	6	30	30	6	6.70

Except when comparing means with the same level(s) of

Temp	1.176
d.f.	30

Table	Type	Temp	Type	Rate	Temp	Temp
	Rate	Moisture	Moisture	Moisture	Type	Type
					Rate	Moisture
rep.	18	8	12	12	6	4
s.e.d.	2.923	3.675	3.001	1.176	5.063	5.197
d.f.	6.70	7.43	7.43	30	6.70	7.43

Except when comparing means with the same level(s) of

Temp	1.440
d.f.	30

Type	0.960	1.176
d.f.	30	30

Temp.Type	1.663	2.037
d.f.	30	30

Table	Temp	Type	Temp
	Rate	Rate	Type
	Moisture	Moisture	Rate
			Moisture
rep.	4	6	2
s.e.d.	3.947	3.223	5.582
d.f.	9.75	9.75	9.75

Except when comparing means with the same level(s) of

Temp	2.037
d.f.	30

Type	1.663
d.f.	30

Temp.Type	2.881
d.f.	30

Temp.Rate	2.037
d.f.	30

Type.Rate	1.663
d.f.	30

Temp.Moisture	2.037
d.f.	30

Type.Moisture	1.663
d.f.	30

Temp.Type.Rate	2.881
d.f.	30

Temp.Type.Moisture	2.881
d.f.	30

d.f.	30
------	----

Least significant differences of means (5% level)

Table	Temp	Type	Rate	Moisture	Temp	Temp
					Type	Rate
rep.	24	36	36	24	12	12
l.s.d.	8.520	6.956	1.387	1.698	12.049	8.543
d.f.	6	6	30	30	6	6.70

Except when comparing means with the same level(s) of

Table	Type	Temp	Type	Rate	Temp	Temp
	Rate	Moisture	Moisture	Moisture	Type	Type
rep.	18	8	12	12	6	4
l.s.d.	6.975	8.590	7.014	2.402	12.081	12.148
d.f.	6.70	7.43	7.43	30	6.70	7.43

Except when comparing means with the same level(s) of

Table	Type	Temp	Type	Rate	Temp	Temp
	Rate	Moisture	Moisture	Moisture	Type	Type
rep.	18	8	12	12	6	4
l.s.d.	6.975	8.590	7.014	2.402	12.081	12.148
d.f.	6.70	7.43	7.43	30	6.70	7.43

Except when comparing means with the same level(s) of

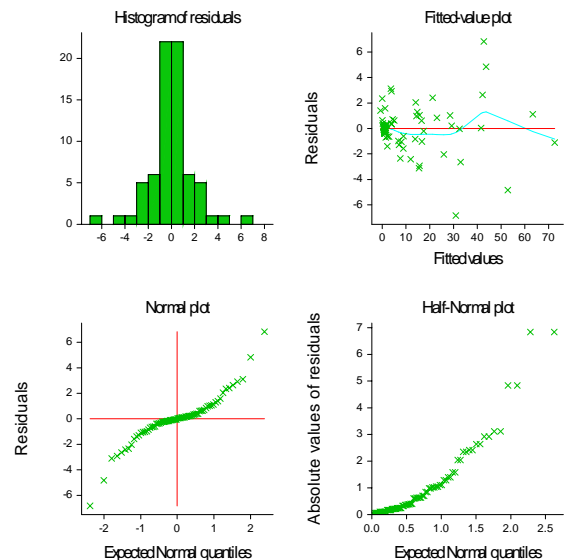
Table	Temp	Type	Temp	Temp
	Rate	Rate	Type	Type
	Moisture	Moisture	Rate	Rate
rep.	4	6	2	2
l.s.d.	8.826	7.206	12.481	12.481
d.f.	9.75	9.75	9.75	9.75

Except when comparing means with the same level(s) of

Temp	4.160			
d.f.	30			
Type		3.396		
d.f.		30		
Temp.Type			5.883	
d.f.			30	
Temp.Rate	4.160			
d.f.	30			
Type.Rate		3.396		
d.f.		30		
Temp.Moisture	4.160			
d.f.	30			
Type.Moisture		3.396		
d.f.		30		
Temp.Type.Rate			5.883	
d.f.			30	
Temp.Type.Moisture			5.883	
d.f.			30	

81 APLOT [RMETHOD=simple] fitted,normal,halfnormal,histogram
82

NO3



83 BLOCK Temp.Type.Transect
 84 TREAT Temp*Type*Rate*Moisture
 85 ANOVA [PR=aoV,info,means; FACT=32; FPROB=yes; PSE=diff,lsd; LSDLEVEL=5] log(NO3+1)

Analysis of variance

Variate: LOG((NO3+1))

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Temp.Type.Transect stratum					
Temp	2	9.01901	4.50950	4.70	0.059
Type	1	76.55133	76.55133	79.83	<.001
Temp.Type	2	2.88273	1.44136	1.50	0.296
Residual	6	5.75370	0.95895	28.51	
Temp.Type.Transect.*Units* stratum					
Rate	1	0.06673	0.06673	1.98	0.169
Moisture	2	5.19386	2.59693	77.21	<.001
Temp.Rate	2	0.05417	0.02709	0.81	0.456
Type.Rate	1	0.18809	0.18809	5.59	0.025
Temp.Moisture	4	0.47142	0.11785	3.50	0.018
Type.Moisture	2	2.15208	1.07604	31.99	<.001
Rate.Moisture	2	0.09541	0.04771	1.42	0.258
Temp.Type.Rate	2	0.05337	0.02668	0.79	0.462
Temp.Type.Moisture	4	0.10096	0.02524	0.75	0.566
Temp.Rate.Moisture	4	0.08189	0.02047	0.61	0.660
Type.Rate.Moisture	2	0.09900	0.04950	1.47	0.246
Temp.Type.Rate.Moisture	4	0.06718	0.01680	0.50	0.736
Residual	30	1.00904	0.03363		
Total	71	103.83996			

Message: the following units have large residuals.

Temp 19. Type Reserve Transect 1 *units* 4 0.405 s.e. 0.118
 Temp 19. Type Reserve Transect 2 *units* 4 -0.405 s.e. 0.118

Tables of means

Variate: LOG((NO3+1))

Grand mean 1.841

Temp	7.	13.	19.
	1.415	1.827	2.281
Type	Paddock	Reserve	
	2.872	0.810	
Rate	Rate 0	Rate 100	
	1.872	1.811	
Moisture	Dry	Moist	Wet
	1.476	1.933	2.114
Temp	Type	Paddock	Reserve
7.		2.175	0.655
13.		2.924	0.730
19.		3.518	1.045
Temp	Rate	Rate 0	Rate 100
7.		1.481	1.349
13.		1.826	1.828
19.		2.308	2.255
Type	Rate	Rate 0	Rate 100
Paddock		2.852	2.893
Reserve		0.892	0.728
TempMoisture	Dry	Moist	Wet
7.		1.143	1.514
13.		1.501	1.919
19.		1.784	2.367
TypeMoisture	Dry	Moist	Wet
Paddock		2.271	3.026
Reserve		0.680	0.841
RateMoisture	Dry	Moist	Wet
Rate 0		1.555	1.953
Rate 100		1.396	1.914

Temp	Type Paddock		Reserve	
	Rate	Rate 0	Rate 100	Rate 100
7.	2.226	2.124	0.736	0.574
13.	2.842	3.006	0.810	0.650
19.	3.487	3.549	1.129	0.961

Temp	Type Paddock		Reserve				
	Moisture	Dry	Moist	Wet	Dry	Moist	Wet
7.	1.627	2.370	2.527	0.659	0.658	0.648	
13.	2.331	3.073	3.367	0.670	0.765	0.755	
19.	2.856	3.634	4.065	0.712	1.100	1.323	

Temp	Rate		Rate 100				
	Moisture	Dry	Moist	Wet	Dry	Moist	Wet
7.	1.206	1.570	1.666	1.080	1.458	1.509	
13.	1.559	1.934	1.986	1.443	1.905	2.136	
19.	1.902	2.355	2.667	1.666	2.379	2.720	

Type Paddock	Rate		Rate 100				
	Moisture	Dry	Moist	Wet	Dry	Moist	Wet
Paddock	2.332	3.014	3.209	2.211	3.037	3.430	
Reserve	0.779	0.892	1.004	0.582	0.791	0.813	

Temp	Type	Rate		Rate 100				
		Moisture	Dry	Moist	Wet	Dry	Moist	Wet
7.	Paddock	1.729	2.377	2.571	1.525	2.362	2.484	
	Reserve	0.683	0.762	0.762	0.635	0.554	0.533	
13.	Paddock	2.339	3.029	3.159	2.324	3.118	3.575	
	Reserve	0.778	0.840	0.812	0.562	0.691	0.697	
19.	Paddock	2.928	3.636	3.897	2.783	3.632	4.232	
	Reserve	0.875	1.073	1.438	0.548	1.127	1.208	

Standard errors of differences of means

Table	Temp	Type	Rate	Moisture	Temp	Temp
rep.	24	36	36	24	Type	Rate
s.e.d.	0.2827	0.2308	0.0432	0.0529	12	12
d.f.	6	6	30	30	6	6.43

Except when comparing means with the same level(s) of
Temp
d.f. 0.0749
30

Table	Type	Temp	Type	Rate	Temp	Temp
rep.	Rate	Moisture	Moisture	Moisture	Type	Type
rep.	18	8	12	12	6	4
s.e.d.	0.2348	0.2924	0.2388	0.0749	0.4067	0.4136
d.f.	6.43	6.86	6.86	30	6.43	6.86

Except when comparing means with the same level(s) of
Temp
d.f. 0.0917
30

Type	0.0611		0.0749			
d.f.	30		30			
Temp.Type				0.1059	0.1297	
d.f.				30	30	

Table	Temp	Type	Temp
rep.	Rate	Rate	Type
rep.	4	6	2
s.e.d.	0.3065	0.2502	0.4334
d.f.	8.24	8.24	8.24

Except when comparing means with the same level(s) of
Temp
d.f. 0.1297
30

Type		0.1059	
d.f.		30	
Temp.Type			0.1834
d.f.			30

Temp.Rate	0.1297		
d.f.	30		
Type.Rate		0.1059	
d.f.		30	

Temp.Moisture	0.1297		
d.f.	30		
Type.Moisture		0.1059	
d.f.		30	

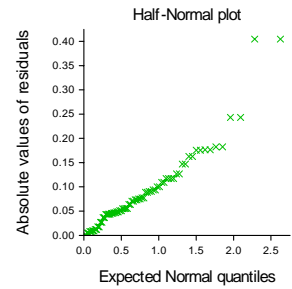
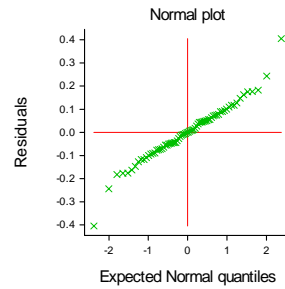
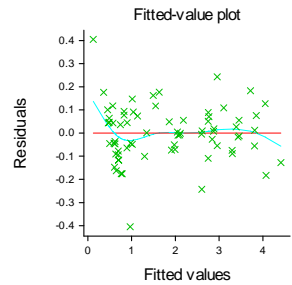
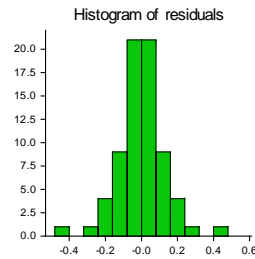
Temp.Type.Rate			0.1834
d.f.			30
Temp.Type.Moisture			0.1834
d.f.			30

Temp.Type.Moisture			0.1834
d.f.			30

d.f.			0.1834
			30

Least significant differences of means (5% level)

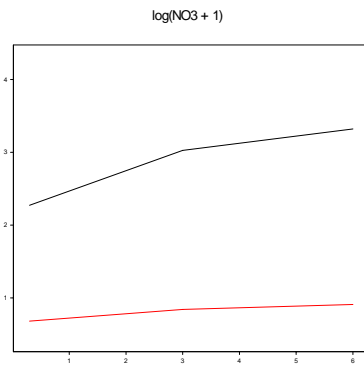
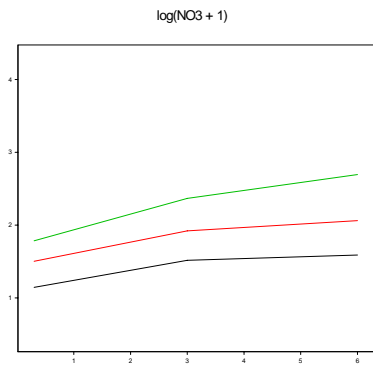
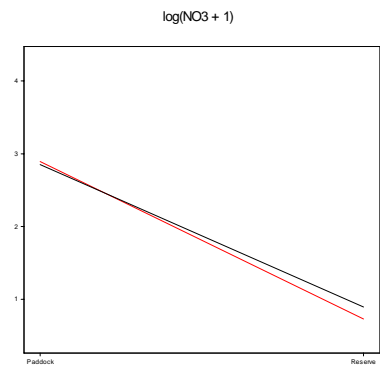
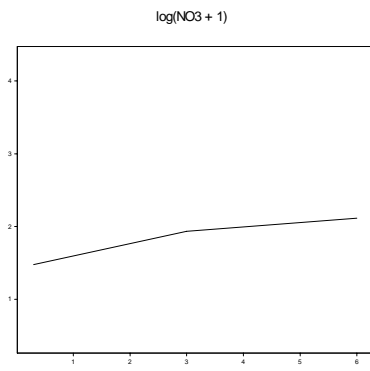
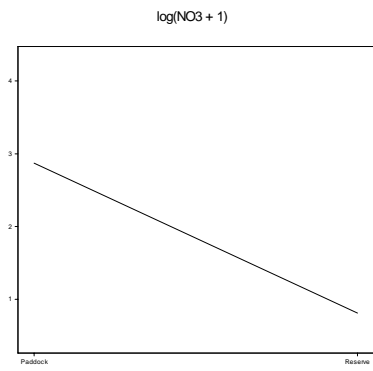
Table	Temp	Type	Rate	Moisture	Temp	Temp
					Type	Rate
rep.	24	36	36	24	12	12
l.s.d.	0.6917	0.5648	0.0883	0.1081	0.9782	0.6926
d.f.	6	6	30	30	6	6.43
Except when comparing means with the same level(s) of						0.1529
Temp						30
d.f.						30
Table	Type	Temp	Type	Rate	Temp	Temp
	Rate	Moisture	Moisture	Moisture	Type	Type
					Rate	Moisture
rep.	18	8	12	12	6	4
l.s.d.	0.5655	0.6943	0.5669	0.1529	0.9794	0.9819
d.f.	6.43	6.86	6.86	30	6.43	6.86
Except when comparing means with the same level(s) of						
Temp		0.1873				
d.f.		30				
Type	0.1248		0.1529			
d.f.	30		30			
Temp.Type					0.2162	0.2648
d.f.					30	30
Table	Temp	Type	Temp			
	Rate	Rate	Type			
	Moisture	Moisture	Rate			
			Moisture			
rep.	4	6	2			
l.s.d.	0.7032	0.5742	0.9945			
d.f.	8.24	8.24	8.24			
Except when comparing means with the same level(s) of						
Temp					0.2648	
d.f.					30	
Type		0.2162				
d.f.		30				
Temp.Type			0.3745			
d.f.			30			
Temp.Rate	0.2648					
d.f.	30					
Type.Rate		0.2162				
d.f.		30				
Temp.Moisture	0.2648					
d.f.	30					
Type.Moisture		0.2162				
d.f.		30				
Temp.Type.Rate			0.3745			
d.f.			30			
Temp.Type.Moisture				0.3745		
d.f.				30		



```

86 APLOTT [RMETHOD=simple]
fitted,normal,halfnormal,histogram
87
88 TRELIS [TITLE= 'log(NO3 + 1)'] X= Type; Y= log(NO3 +1); METHOD= mean
89 TRELIS [TITLE= 'log(NO3 + 1)'] X= Water; Y= log(NO3 +1); METHOD= mean
90 TRELIS [Pen=Rate; TITLE= 'log(NO3 + 1)'] X= Type; Y= log(NO3 +1); METHOD= mean
91 TRELIS [Pen=Temp; TITLE= 'log(NO3 + 1)'] X= Water; Y= log(NO3 +1); METHOD= mean
92 TRELIS [Pen=Type; TITLE= 'log(NO3 + 1)'] X= Water; Y= log(NO3 +1); METHOD= mean
93

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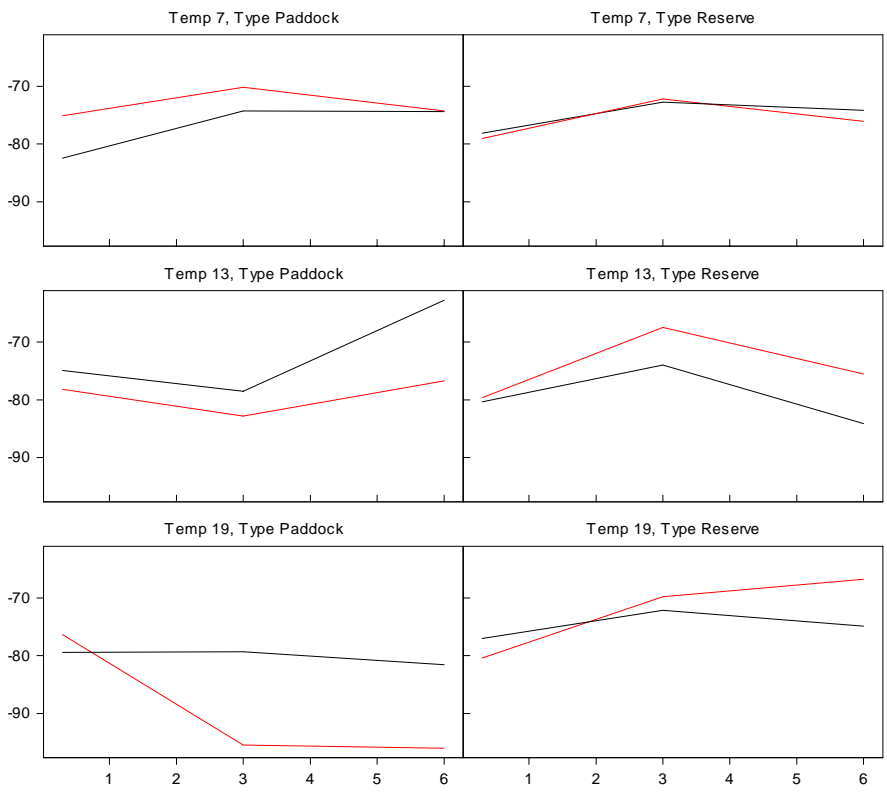


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65 "}}}}}}}}}}}}}}}} Amonium NH4 Loss Gain with 36 values {{{{{{
66 "=====
67 TRELIS [GR= Temp,Type; PEN=Transect; TITLE= 'NH4_LossGain';Nrows=3; Ncolumns=2] \
68 X= Water; Y= NH4_LossGain; METHOD= mean
69

```

NH4_LossGain




```

70 BLOCK Temp.Type.Transect
71 TREAT Temp*Type*Moisture
72 ANOVA [PR=aov,info,means; FACT=32; FPROB=yes; PSE=diff,lsd; LSDLEVEL=5] NH4_LossGain

```

Analysis of variance

Variate: NH4_LossGain

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Temp.Type.Transect stratum					
Temp	2	95.88	47.94	1.04	0.409
Type	1	94.87	94.87	2.06	0.201
Temp.Type	2	286.53	143.27	3.11	0.118
Residual	6	276.55	46.09	2.60	
Temp.Type.Transect.*Units* stratum					
Moisture	2	46.48	23.24	1.31	0.306
Temp.Moisture	4	66.26	16.57	0.93	0.477
Type.Moisture	2	155.45	77.73	4.38	0.037
Temp.Type.Moisture	4	271.12	67.78	3.82	0.032
Residual	12	212.83	17.74		
Total	35	1505.98			

Message: the following units have large residuals.

```

Temp 19. Type Paddock Transect 1 *units* 1 -6.13 s.e. 2.43
Temp 19. Type Paddock Transect 2 *units* 1 6.13 s.e. 2.43

```

Tables of means

Variate: NH4_LossGain

Grand mean -76.87

Temp	7.	13.	19.				
	-75.26	-76.24	-79.10				
Type	Paddock	Reserve					
	-78.49	-75.24					
Moisture	Dry	Moist	Wet				
	-78.42	-75.74	-76.44				
Temp	Type	Paddock	Reserve				
7.		-75.12	-75.39				
13.		-75.65	-76.84				
19.		-84.71	-73.50				
TempMoisture		Dry	Moist	Wet			
7.		-78.68	-72.35	-74.73			
13.		-78.27	-75.68	-74.78			
19.		-78.31	-79.18	-79.82			
TypeMoisture		Dry	Moist	Wet			
Paddock		-77.75	-80.10	-77.63			
Reserve		-79.10	-71.38	-75.26			
TempMoisture	Type	Paddock	Reserve				
7.		Dry	Moist	Wet	Dry	Moist	Wet
		-78.78	-72.22	-74.35	-78.58	-72.47	-75.12
13.		-76.56	-80.65	-69.73	-79.98	-70.72	-79.83
19.		-77.91	-87.42	-88.80	-78.72	-70.95	-70.84

Standard errors of differences of means

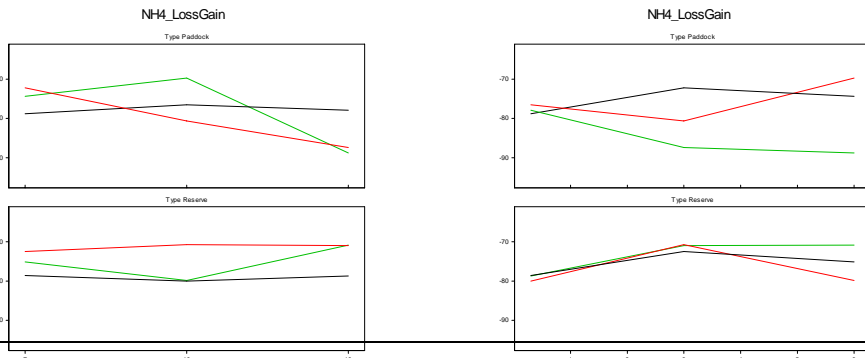
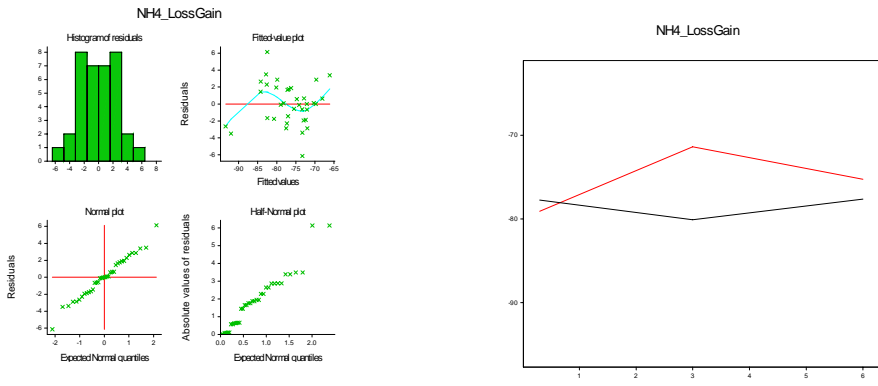
Table	Temp	Type	Moisture	Temp Type	Temp Moisture	Type Moisture
rep.	12	18	12	6	4	6
s.e.d.	2.772	2.263	1.719	3.920	3.687	3.010
d.f.	6	6	12	6	14.50	14.50
Except when comparing means with the same level(s) of						
Temp					2.978	
d.f.					12	
Type						2.431
d.f.						12
Table	Temp	Type	Moisture			
rep.	2					
s.e.d.	5.214					
d.f.	14.50					
Except when comparing means with the same level(s) of						
Temp.Type				4.211		
d.f.				12		

Least significant differences of means (5% level)

Table	Temp	Type	Moisture	Temp Type	Temp Moisture	Type Moisture
rep.	12	18	12	6	4	6
l.s.d.	6.782	5.537	3.746	9.591	7.883	6.436
d.f.	6	6	12	6	14.50	14.50
Except when comparing means with the same level(s) of						
Temp					6.488	
d.f.					12	
Type						5.298
d.f.						12
Table	Temp	Type	Moisture			
rep.	2					
l.s.d.	11.148					
d.f.	14.50					
Except when comparing means with the same level(s) of						
Temp.Type				9.176		
d.f.				12		

```

73 APLOT [RMETHOD=simple] fitted,normal,halfnormal,histogram
74
75 TRELLIS [PEN=Type; TITLE= 'NH4_LossGain'] X= Water; Y= NH4_LossGain; METHOD= mean
76 TRELLIS [Gr=Type;PEN=Moisture; TITLE= 'NH4_LossGain'] X= Temp; Y= NH4_LossGain; METHOD= mean
77 TRELLIS [Gr=Type;PEN=Temp; TITLE= 'NH4_LossGain'] X= Water; Y= NH4_LossGain; METHOD= mean
    
```

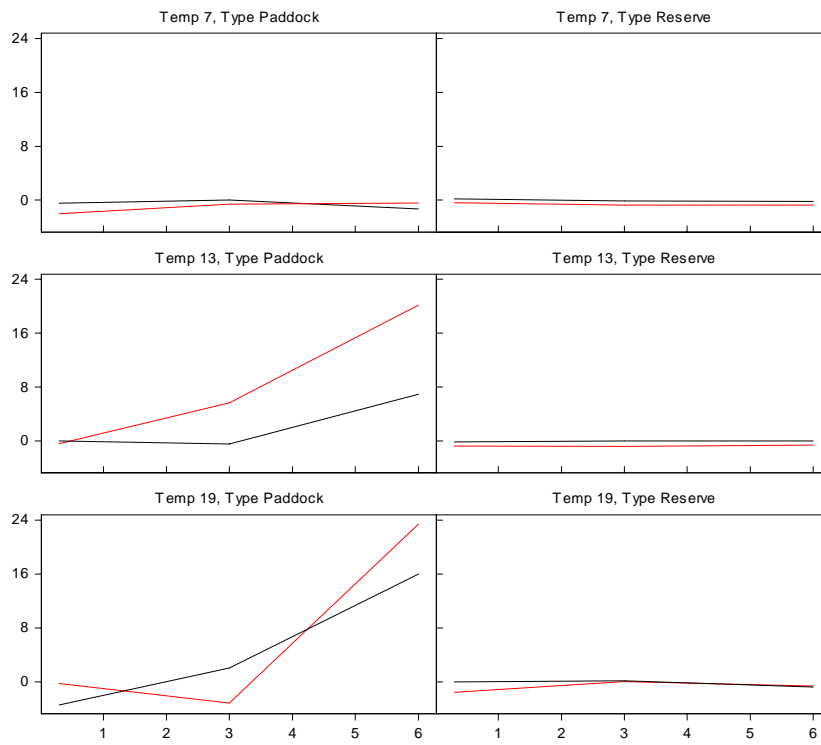


```

78 "}}}}}}}}}}}}}} NO3_LossGain Loss Gain with 36 values {{{{{{}}}}}}}}}}}}}}}}
79 "=====
80 TRELIS [GR= Temp,Type; PEN=Transect; TITLE= 'NO3_LossGain';Nrows=3; Ncolumns=2] \
81 X= Water; Y= NO3_LossGain; METHOD= mean
82

```

NO3_LossGain



```

83 BLOCK Temp.Type.Transect
84 TREAT Temp*Type*Moisture
85 ANOVA [PR=ao,info,means; FACT=32; FPROB=yes; PSE=diff,lsd; LSDLEVEL=5] NO3_LossGain

```

Analysis of variance

Variate: NO3_LossGain

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Temp.Type.Transect stratum					
Temp	2	78.084	39.042	3.51	0.098
Type	1	132.135	132.135	11.89	0.014
Temp.Type	2	83.374	41.687	3.75	0.088
Residual	6	66.659	11.110	1.48	
Temp.Type.Transect.*Units* stratum					
Moisture	2	242.542	121.271	16.13	<.001
Temp.Moisture	4	148.193	37.048	4.93	0.014
Type.Moisture	2	254.151	127.075	16.91	<.001
Temp.Type.Moisture	4	151.998	37.999	5.06	0.013
Residual	12	90.200	7.517		
Total	35	1247.336			

Message: the following units have large residuals.

Temp 13. Type Paddock Transect 1	-3.16	s.e.	1.36
Temp 13. Type Paddock Transect 2	3.16	s.e.	1.36
Temp 13. Type Paddock Transect 1 *units* 1	3.36	s.e.	1.58
Temp 13. Type Paddock Transect 1 *units* 3	-3.46	s.e.	1.58
Temp 13. Type Paddock Transect 2 *units* 1	-3.36	s.e.	1.58
Temp 13. Type Paddock Transect 2 *units* 3	3.46	s.e.	1.58
Temp 19. Type Paddock Transect 1 *units* 2	3.50	s.e.	1.58
Temp 19. Type Paddock Transect 2 *units* 2	-3.50	s.e.	1.58

Tables of means

Variate: NO3_LossGain

Grand mean 1.52

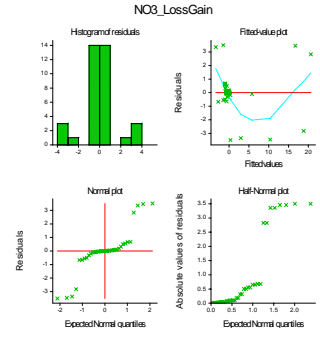
Temp	7.	13.	19.
	-0.56	2.47	2.65
Type Paddock Reserve	3.44	-0.40	
Moisture	Dry	Moist	Wet
	-0.77	0.18	5.15
Temp	Type Paddock Reserve		
7.		-0.79	-0.33
13.		5.32	-0.39
19.		5.77	-0.47
TempMoisture	Dry	Moist	Wet
7.	-0.67	-0.36	-0.66
13.	-0.32	1.10	6.62
19.	-1.32	-0.22	9.49
TypeMoisture	Dry	Moist	Wet
Paddock	-1.09	0.59	10.80
Reserve	-0.45	-0.24	-0.50
TempMoisture	Type Paddock Reserve		
7.	Dry	Moist	Wet
	-1.24	-0.28	-0.86
13.	-0.20	2.61	13.55
19.	-1.84	-0.55	19.71
			-0.80
			0.10
			-0.72

Standard errors of differences of means

Table	Temp	Type	Moisture	Temp Type	Temp Moisture	Type Moisture
rep.	12	18	12	6	4	6
s.e.d.	1.361	1.111	1.119	1.924	2.087	1.704
d.f.	6	6	12	6	17.34	17.34
Except when comparing means with the same level(s) of						
Temp				1.939		
d.f.				12		
Type						1.583
d.f.						12
Table	Temp					
	Type					
	Moisture					
rep.	2					
s.e.d.	2.952					
d.f.	17.34					
Except when comparing means with the same level(s) of						
Temp.Type	2.742					
d.f.	12					

Least significant differences of means (5% level)

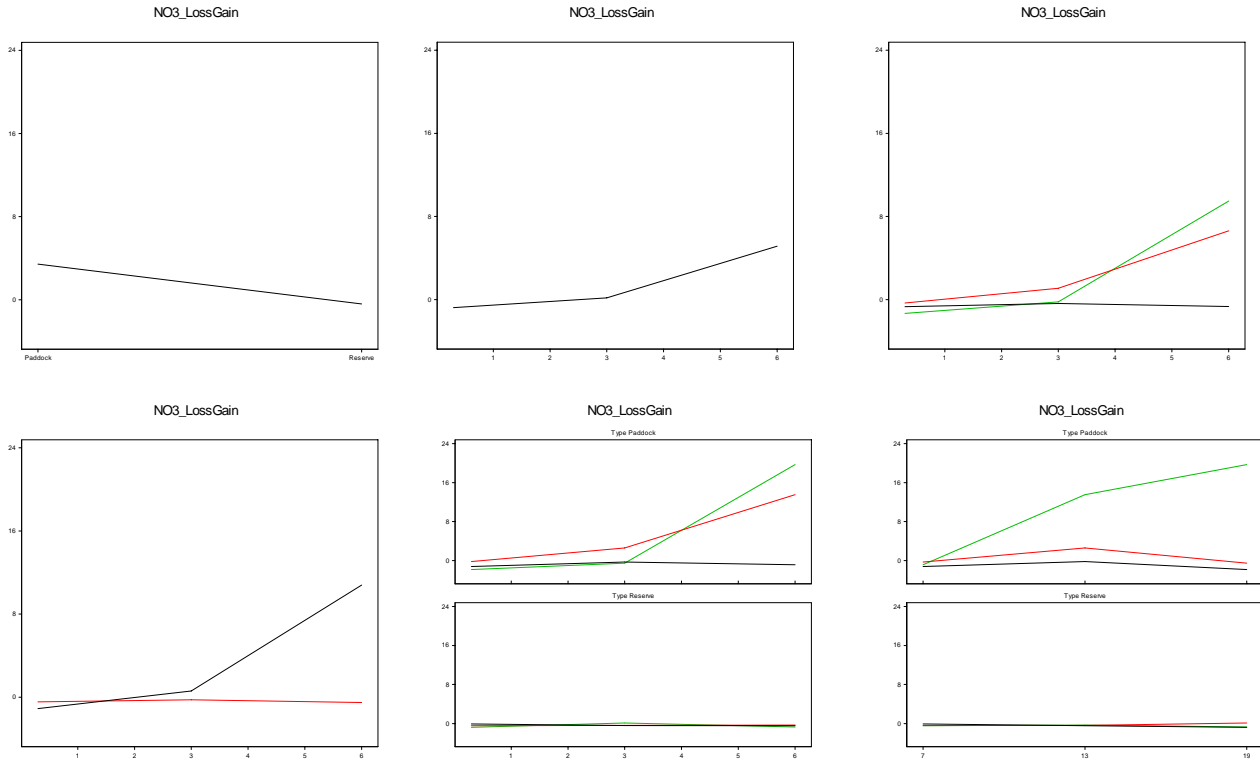
Table	Temp	Type	Moisture	Temp Type	Temp Moisture	Type Moisture
rep.	12	18	12	6	4	6
l.s.d.	3.330	2.719	2.439	4.709	4.397	3.590
d.f.	6	6	12	6	17.34	17.34
Except when comparing means with the same level(s) of						
Temp				4.224		
d.f.				12		
Type						3.449
d.f.						12
Table	Temp					
	Type					
	Moisture					
rep.	2					
l.s.d.	6.219					
d.f.	17.34					
Except when comparing means with the same level(s) of						
Temp.Type	5.974					
d.f.	12					



```

86  APLOT [RMETHOD=simple] fitted,normal,halfnormal,histogram
87
88  TRELLIS [TITLE= 'NO3_LossGain'] X= Type; Y= NO3_LossGain; METHOD= mean
89  TRELLIS [TITLE= 'NO3_LossGain'] X= Water; Y= NO3_LossGain; METHOD= mean
90  TRELLIS [Pen=Temp;TITLE= 'NO3_LossGain'] X= Water; Y= NO3_LossGain; METHOD= mean
91  TRELLIS [Pen=Type;TITLE= 'NO3_LossGain'] X= Water; Y= NO3_LossGain; METHOD= mean
94  TRELLIS [Gr=Type;Pen=Moisture;TITLE= 'NO3_LossGain'] X= Temp; Y= NO3_LossGain; METHOD= mean
95  TRELLIS [Gr=Type;Pen=Temp;TITLE= 'NO3_LossGain'] X= Water; Y= NO3_LossGain; METHOD= mean

```

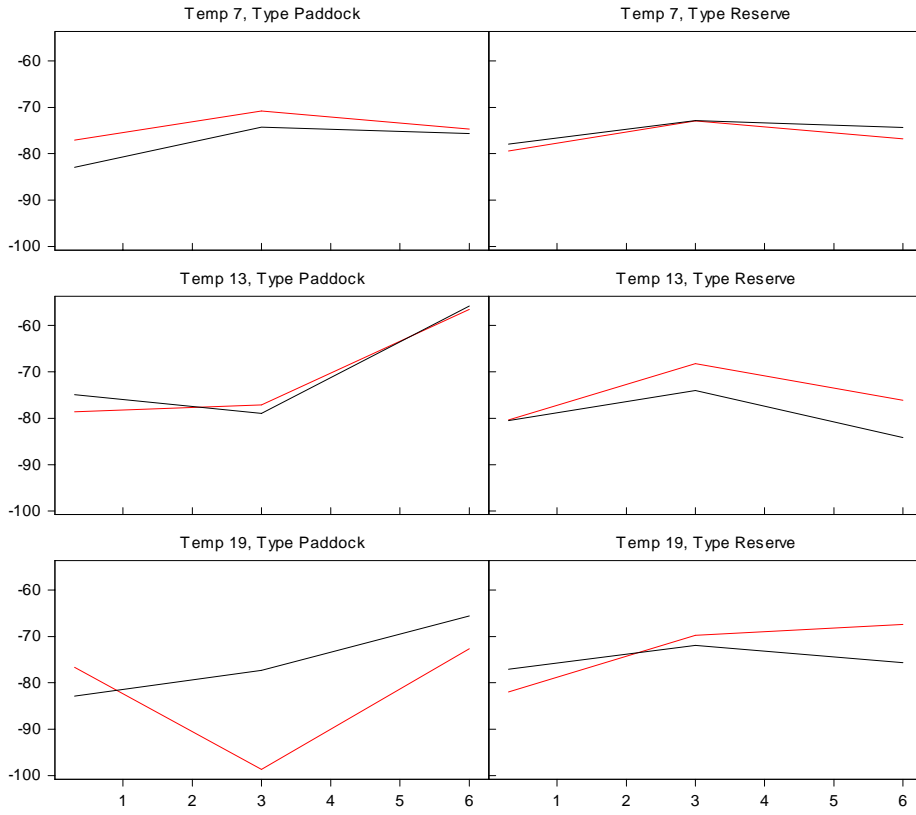


```

96 "}}}}}}}}}}}}}} Inorganic with 36 values {{{{{{
97 "=====
98 TRELIS [GR= Temp,Type; PEN=Transect; TITLE= 'Inorganic';Nrows=3; Ncolumns=2] \
99 X= Water; Y= Inorganic; METHOD= mean
100

```

Inorganic



```

101 BLOCK Temp.Type.Transect
102 TREAT Temp*Type*Moisture
103 ANOVA [PR=aov,info,means; FACT=32; FPROB=yes; PSE=diff,lsd; LSDLEVEL=5] Inorganic

```

Analysis of variance

Variate: Inorganic

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Temp.Type.Transect stratum					
Temp	2	46.85	23.43	1.00	0.421
Type	1	3.08	3.08	0.13	0.729
Temp.Type	2	214.11	107.05	4.59	0.062
Residual	6	139.99	23.33	1.06	
Temp.Type.Transect.*Units* stratum					
Moisture	2	375.04	187.52	8.48	0.005
Temp.Moisture	4	161.27	40.32	1.82	0.189
Type.Moisture	2	424.27	212.13	9.59	0.003
Temp.Type.Moisture	4	296.07	74.02	3.35	0.046
Residual	12	265.37	22.11		
Total	35	1926.04			

Message: the following units have large residuals.

Temp 19. Type Paddock Transect 1 *units* 1	-6.81	s.e.	2.72
Temp 19. Type Paddock Transect 1 *units* 2	7.00	s.e.	2.72
Temp 19. Type Paddock Transect 2 *units* 1	6.81	s.e.	2.72
Temp 19. Type Paddock Transect 2 *units* 2	-7.00	s.e.	2.72

Tables of means

Variate: Inorganic

Grand mean -75.35

Temp	7.	13.	19.				
	-75.82	-73.78	-76.45				
Type	Paddock	Reserve					
	-75.06	-75.64					
Moisture	Dry	Moist	Wet				
	-79.19	-75.56	-71.29				
Temp	Type	Paddock	Reserve				
7.		-75.91	-75.72				
13.		-70.32	-77.23				
19.		-78.93	-73.97				
TempMoisture	Dry	Moist	Wet				
7.	-79.35	-72.70	-75.39				
13.	-78.59	-74.58	-68.16				
19.	-79.63	-79.40	-70.33				
TypeMoisture	Dry	Moist	Wet				
Paddock	-78.84	-79.50	-66.83				
Reserve	-79.54	-71.62	-75.76				
Type	Paddock	Reserve					
TempMoisture	Dry	Moist	Wet	Dry	Moist	Wet	
7.	-80.02	-72.50	-75.21	-78.68	-72.91	-75.58	
13.	-76.75	-78.04	-56.18	-80.44	-71.12	-80.15	
19.	-79.74	-87.97	-69.10	-79.52	-70.84	-71.55	

Standard errors of differences of means

Table	Temp	Type	Moisture	Temp Type	Temp Moisture	Type Moisture
rep.	12	18	12	6	4	6
s.e.d.	1.972	1.610	1.920	2.789	3.356	2.740
d.f.	6	6	12	6	17.99	17.99

Except when comparing means with the same level(s) of
 Temp 3.325
 d.f. 12
 Type 2.715
 d.f. 12

Table	Temp Type Moisture
rep.	2
s.e.d.	4.746
d.f.	17.99

Except when comparing means with the same level(s) of
 Temp.Type 4.703
 d.f. 12

Least significant differences of means (5% level)

Table	Temp	Type	Moisture	Temp Type	Temp Moisture	Type Moisture
rep.	12	18	12	6	4	6
l.s.d.	4.825	3.940	4.183	6.824	7.050	5.756
d.f.	6	6	12	6	17.99	17.99

Except when comparing means with the same level(s) of
 Temp 7.245
 d.f. 12
 Type 5.916
 d.f. 12

Table	Temp Type Moisture
rep.	2
l.s.d.	9.970
d.f.	17.99

Except when comparing means with the same level(s) of
 Temp.Type 10.246
 d.f. 12

```

104 APLOT [RMETHOD=simple] fitted,normal,halfnormal,histogram
105
106 TRELLIS [TITLE= 'Inorganic'] X= Water; Y= Inorganic; METHOD= mean
107 TRELLIS [Pen=Type;TITLE= 'Inorganic'] X= Water; Y= Inorganic; METHOD= mean
108 TRELLIS [Gr=Type;Pen=Temp;TITLE= 'Inorganic'] X= Water; Y= Inorganic; METHOD= mean
109
    
```

