

## Uniformity across the experiment

### Weight (mg)

	A	B	C	D	E	F
1	5.875	5.091	5.013	5.159	5.752	5.714
2	5.771	5.889	5.858	5.365	5.368	6.061
3	5.079	5.883	5.724	5.825	5.544	5.831
4	6.012	5.702	5.758	5.759	5.831	5.674
5	5.961	5.947	5.243	5.915	6.009	5.219

There are no significant differences in weight between either the blocks or the columns of this design, and a test of the differences between the treatments assigned to the plots does not detect any significant differences.

### %N

	A	B	C	D	E	F
1	0.49	0.47	0.578	0.62	0.53	0.52
2	0.57	0.6	0.52	0.56	0.55	0.53
3	0.62	0.64	0.54	0.61	0.53	0.55
4	0.56	0.56	0.57	0.51	0.53	0.58
5	0.58	0.6	0.53	0.57	0.53	0.62

There are no significant differences in %N between either the blocks or the columns of this design, and a test of the differences between the treatments assigned to the plots does not detect any significant differences.

### %C

	A	B	C	D	E	F
1	5.8	6.72	7.65	8.4	7.36	6.71
2	7.3	8.9	7.17	7.75	7.7	7.12
3	7.97	9.73	7.58	8.28	7.26	7.71
4	8.02	7.65	7.2	7	6.8	7.73
5	7.66	8.07	7.48	7.51	7.01	9.07

There are no significant differences in %C between either the blocks or the columns of this design, and a test of the differences between the treatments assigned to the plots does not detect any significant differences.

### C:N ratio

	A	B	C	D	E	F
1	11.77	14.29	13.48	13.52	13.79	12.88
2	12.79	14.87	13.82	13.93	13.91	13.5
3	12.9	15.21	13.91	13.5	13.65	13.97
4	14.26	13.59	12.62	13.77	12.94	13.41
5	13.24	13.45	14.13	13.13	13.23	14.74

There are no significant differences in C:N ratio between either the blocks or the columns of this design, and a test of the differences between the treatments assigned to the plots does not detect any significant differences.

### Ca (meq/100g)

	A	B	C	D	E	F
1	2.01	1.95	2.67	1.4	0.69	0.86
2	2.1	3.22	3.19	3.6	2.63	2.29
3	3	3.41	2.18	3.37	3	2.41
4	2.96	1.67	1.11	1.49	1.01	1.23
5	3.32	2.58	3.41	5.07	3.86	3.12

There are significant differences between the blocks of the experiment, with blocks 5 and 2 having significantly lower mean Ca values (1.597 and 1.578 respectively) than blocks 4, 3 and 1 (2.838, 2.895 and 3.560 respectively). There are no significant differences between the values of Ca for the columns of this design. The difference between the treatments assigned to the plots of the experiment would not be detected as significant but the block differences are significant.

### Na (meq/100g)

	A	B	C	D	E	F
1	0.15	0.13	0.14	0.12	0.13	0.12
2	0.14	0.14	0.14	0.14	0.14	0.12
3	0.15	0.18	0.13	0.15	0.14	0.14
4	0.15	0.14	0.13	0.13	0.12	0.12
5	0.15	0.14	0.16	0.16	0.14	0.17

There are significant differences between the blocks of the experiment, with blocks 5, 4 and 2 having significantly lower mean Na values (0.132, 0.137 and 0.132 respectively) than blocks 3 and 1 (0.148 and 0.153 respectively). There are no significant differences between the values of Na for the columns of this design. The difference between the treatments

assigned to the plots of the experiment would not be detected as significant but the block differences are significant.

**K (meq/100g)**

	A	B	C	D	E	F
1	0.49	0.68	0.77	0.89	0.85	0.78
2	0.58	0.58	0.71	0.8	0.65	0.76
3	0.51	0.63	0.59	0.61	0.72	0.76
4	0.61	0.65	0.58	0.62	0.62	0.81
5	0.59	0.67	0.65	0.83	0.71	0.68

There are significant differences between the columns of the experiment, with columns A and B having significantly lower mean K values (0.556 and 0.642 respectively) than columns C, D, E and F (0.660, 0.750, 0.710 and 0.758 respectively). There are no significant differences between the values of K for the blocks of this design. The difference between the treatments assigned to the plots of the experiment would not be detected as significant and the block differences are also not significant.

**Mg (meq/100g)**

	A	B	C	D	E	F
1	1.16	1.09	1.56	1.08	0.64	0.68
2	1.16	1.91	1.76	2.05	1.54	1.28
3	1.75	2.11	1.25	1.85	1.58	1.2
4	1.59	0.95	0.67	0.75	0.58	0.8
5	1.66	1.51	2.14	2.89	2.21	1.88

There are significant differences between the blocks of the experiment, with blocks 5 and 2 having significantly lower mean Mg values (1.035 and 0.890 respectively) than blocks 4, 3 and 1 (1.617, 1.623 and 2.048 respectively). There are no significant differences between the values of Mg for the columns of this design. The difference between the treatments assigned to the plots of the experiment would not be detected as significant but the block differences are significant.

**% Moisture Loss**

	A	B	C	D	E	F
1	4.04	4.4	4.51	4.65	4.9	4.12
2	4.36	5.25	4.82	5.14	4.95	4.38
3	3.69	6.54	5.2	5.11	4.54	4.53
4	5.15	4.9	4.46	4.74	4.29	4.61
5	4.72	4.94	5.05	4.6	4.69	5.19

There are no significant differences in % moisture loss between either the blocks or the columns of this design, and a test of the differences between the treatments assigned to the plots does not detect any significant differences.

**% Loss on Ignition**

	A	B	C	D	E	F
1	13.62	14.94	15.89	16.4	17.31	14.91
2	15.38	18.84	17.32	18.26	18.07	15.92
3	17.13	19.66	15.62	18.49	16.95	16.48
4	17.56	17.96	15.33	15.92	14.6	17.09
5	15.99	17.07	17.71	16.34	16.42	20.1

There are no significant differences in % loss on ignition between either the blocks or the columns of this design, and a test of the differences between the treatments assigned to the plots does not detect any significant differences.

**pH (H<sub>2</sub>O)**

	A	B	C	D	E	F
1	4.75	4.47	4.6	4.5	4.49	4.41
2	4.74	4.62	4.68	4.55	4.6	4.43
3	4.76	4.65	4.58	4.76	4.75	4.76
4	4.82	4.53	4.59	4.47	4.45	4.45
5	4.75	4.7	4.93	4.95	4.77	4.73

There are significant differences between both the blocks and the columns of the design, with blocks 5 and 2 having significantly lower pH values (4.537 and 4.552 respectively) than blocks 4, 3 and 1 (4.603, 4.710 and 4.805 respectively). Column A of the design has the highest mean pH value (4.764) and column F the lowest (4.556), with columns 2, 3, 4 and 5 intermediate (4.594, 4.676, 4.646 and 4.612 respectively). Analysis of the differences between the treatments assigned to the plots does not detect any significance, but the block differences remain as significant.

**pH (CaCl<sub>2</sub>)**

A	B	C	D	E	F
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<b>1</b>	4.16	3.98	4.03	3.81	3.78	3.78
<b>2</b>	4.11	3.98	4	4	3.95	3.92
<b>3</b>	4.12	4.06	3.95	4.08	4.07	3.95
<b>4</b>	4.05	3.88	3.91	3.96	3.84	3.64
<b>5</b>	3.96	3.76	3.94	4.14	3.7	3.53

There are significant differences between the mean pH values for both the blocks and the columns, with blocks 1 and 2 having significantly lower pH values (3.838 and 3.880 respectively) than blocks 5, 4 and 3 (3.923, 3.993 and 4.035 respectively). Column E and F had mean pH values of 3.764 and 3.868 respectively and columns A, B, D and D had values of 4.080, 3.928, 3.966 and 3.998 respectively. Nevertheless, analysis of the differences between the treatments assigned to the plots does not detect any significance for either the treatment or block means.

Thus, preliminary tests of the uniformity of the soil variables does not suggest any initial differences in the treatments assigned to the plots, but there are initial detectable differences between the blocks for Ca, Na, Mg, pH (H<sub>2</sub>O) and pH (CaCl<sub>2</sub>). The randomised block design uses the blocks of the design to reduce the effects of site differences, apparently effectively in this case. However, the error term in the analysis of a randomised block design is essentially a measure of the interaction between blocks and treatments. If, therefore, any of the processes to be investigated in this programme are likely to interact with Ca, Na, Mg or pH, the effectiveness of the design may be reduced for those processes.