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98/W/CS/427 Contaminated Sludge Cake - Grass

Rothamsted Research

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98/W/CS/427

CONTAMINATED SLUDGE CAKE

Object: To test the effect of zinc, copper or cadmium enriched sewage sludges on soil microbial activity and agricultural productivity - Woburn, Butt Close West.

Sponsors: S.P. McGrath, A. Chaudri.

The fourth year, grass.

Design: 3 randomised blocks of 23 plots.

Whole plot dimensions: 6.0 x 8.0.

Treatments:

SLUDGE

T1	None (duplicated)
T2	Uncontaminated, digested low rate (quadruplicated)
T3	Uncontaminated, undigested low rate (duplicated)
T4	Zinc 150
T5	Zinc 250
T6	Zinc 350
T7	Zinc 450
T8	Copper 50
T9	Copper 100
T10	Copper 150
T11	Copper 200
T12	Cadmium 1
T13	Cadmium 2
T14	Cadmium 3
T15	Cadmium 4
T16	Uncontaminated, digested low rate + nitrogen (duplicated)
T17	Uncontaminated, undigested low rate + nitrogen (duplicated)
T18	Zinc 15 kg per annum
T19	Copper 7.5 kg per annum
T20	Cadmium 0.15 kg per annum

Experimental diary:

26-Jun-97 : T : Sludges applied as treatment.
29-Jul-97 : B : Mechanical spade cultivated.
03-Sep-97 : B : Rolled.
10-Sep-97 : B : Gallup at 6.0 l in 200 l.
18-Sep-97 : B : Rotary harrowed, Atalja Italian Ryegrass, drilled at 40 kg.
22-Sep-97 : B : Rolled.
31-Mar-98 : B : Muriate of potash at 120 kg. 34.5% N at 261 kg.
07-Apr-98 : T : **SLUDGE** T1, T19, T20: Triple superphosphate at 64 kg.
07-Apr-98 : T : **SLUDGE** T1, T16, T17, T18, T19, T20: 27% N at 222 kg.
09-May-98 : B : Legumex Extra at 7.0 l in 200 l.
02-Jul-98 : B : Cut.
09-Sep-98 : B : Cut, no yields

98/W/CS/427

NOTE: Soils were sampled in spring and the grass in summer for chemical analysis.

1ST CUT (2/7/98) DRY MATTER TONNES/HECTARE

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

SLUDGE

T1	4.90
T2	6.13
T3	6.22
T4	6.14
T5	6.41
T6	6.80
T7	6.69
T8	6.71
T9	5.95
T10	6.68
T11	6.18
T12	6.17
T13	7.00
T14	6.37
T15	6.03
T16	5.64
T17	5.78
T18	5.56
T19	5.24
T20	5.73

Mean 6.04

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

SLUDGE

0.596 min.rep
0.516 max-min
0.421 max.rep

SLUDGE

max.rep T1 v T2 or T16
max-min T1 or T2 or T16 v any of the remainder
min.rep Any of the remainder

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	47	0.730	12.1
1ST CUT MEAN DM%	20.2		
PLOT AREA HARVESTED	0.00081		