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79/W/CS/181 Green Manure - Barley, Potatoes

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79/W/CS/181

GREEN MANURE

Object: To study the effects of a green manure sown at different dates and interactions with fertiliser nitrogen on the following crop - Woburn Great Hill III, Lansome III.

Sponsors: G.V. Dyke, G.E.G. Mattingly.

The fourth year, barley and potatoes.

For previous years see 76-78/W/CS/181.

Design: 3 series, each a single replicate of 24 plots.

Whole plot dimensions: 4.26 x 6.10.

Treatments:

Series I (barley 1979 after barley 1977 & 1978), Series II (potatoes 1979 after potatoes 1977, barley 1978): All combinations of:-

1. TREFOIL(768) Trefoil to barley in 1976 and 1978:

NONE	None
US	Undersown in spring
US+SS	Undersown in spring, sown into stubble after harvest
OS/SS	Oversown in July before harvest and/or sown into stubble after harvest

2. N Amounts of nitrogen fertiliser (kg N) cumulative in 1977 and 1979 (given basal N at 63 kg in 1978):

Series I to Barley	Series II to Potatoes	Series I to Barley	Series II to Potatoes
0	0	0	0
50	100	50 to seedbed	100 to seedbed
100	200	100 to seedbed	200 to seedbed
150	300	150 to seedbed	300 to seedbed
50+50	100+100	50 to seedbed + 50 in May	100 to seedbed + 100 in June
100+50	200+100	100 to seedbed + 50 in May	200 to seedbed + 100 in June

Series IV (barley): All combinations of:-

1. TREFOIL(768) Trefoil to barley in 1976, 1977, 1978 and 1979 (only US in 1979):

NONE	None
US	Undersown in spring
US+SS	Undersown in spring and sown into stubble after harvest
OS/SS	Oversown in July and/or sown into stubble after harvest

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2. N Amounts of nitrogen fertiliser (kg N):

	1977, 1978 & 1979	1976
0	0	(0)
50	50 to seedbed	(30)
100	100 to seedbed	(60)
150	150 to seedbed	(90)
50+50	50 to seedbed + 50 in May	(120)
100+50	100 to seedbed + 50 in May	(150)

NOTES: (1) N to Series IV in 1976 was all applied to the seedbed.
(2) Series III has been abandoned.
(3) English common trefoil, inoculated with Rhizobium, at 26 kg, undersown in spring: 5 June, 1979.

Standard applications:

Barley, Great Hill III, Series I & Lansome III, Series IV: Manures: (0:20:20) at 300 kg, combine drilled. Weedkillers: Bromoxynil with ioxynil ('Oxytril CM' at 2.1 kg in 250 l).

Potatoes, Great Hill III, Series IV: Manures: (0:14:28) at 1280 kg. Weedkillers: Linuron at 1.0 kg plus paraquat at 0.28 kg ion in 250 l. Fungicide: Mancozeb at 1.3 kg in 250 l on six occasions with insecticide on the first two. Insecticide: Pirimicarb at 0.14 kg on two occasions with fungicide. Haulm desiccant: Undiluted BOV at 170 l.

Seed: Barley: Porthos, dressed with ethirimol, sown at 160 kg.
Potatoes: Pentland Crown.

Cultivations, etc.:-

Barley, Great Hill III, Series I: Ploughed: 3 Apr, 1979. Spring-tine cultivated with crumbler attached: 19 Apr. Seed sown: 30 Apr. Seedbed N applied: 2 May. Weedkiller applied: 4 June. Late N applied: 25 June. Combine harvested: 28 Aug.

Barley, Lansome III, Series IV: Ploughed: 6 Mar, 1979. Spring-tine cultivated with crumbler attached: 21 Apr. Seedbed N applied: 27 Apr. Seed sown: 30 Apr. Weedkiller applied: 4 June. Late N applied: 25 June. Combine harvested: 28 Aug.

Potatoes, Great Hill III, Series II: Ploughed: 3 Apr, 1979. Spring-tine cultivated with crumbler attached: 19 Apr. PK applied: 7 May. Seedbed N applied, rotary cultivated, potatoes planted: 9 May. Weedkillers applied: 25 May. Rotary ridged: 19 June. Late N applied: 25 June. Fungicide applied: 26 June, 10 July, 23 July, 8 Aug, 25 Aug, 6 Sept. Insecticide applied: 26 June, 10 July. Haulm mechanically destroyed, haulm desiccant applied: 24 Sept. Lifted: 19 Oct.

NOTE: Samples of trefoil and weeds were dug in March, before ploughing, on Series I & IV for the determination of dry matter and N.

79/W/CS/181 BARLEY SERIES I

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

N	0	50	100	150	50+50	100+50	MEAN
TREFOIL(768)							
NONE	1.02	3.07	3.39	3.84	3.20	5.22	3.29
US	0.91	2.68	3.78	3.39	3.29	3.49	2.92
US+SS	1.36	2.56	5.04	4.05	4.04	3.67	3.45
OS/SS	1.41	2.73	3.67	3.27	3.47	3.55	3.02
MEAN	1.18	2.76	3.97	3.63	3.50	3.98	3.17

GRAIN MEAN DM% 84.1

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

N	0	50	100	150	50+50	100+50	MEAN
TREFOIL(768)							
NONE	0.53	1.56	2.20	2.56	1.48	3.46	1.96
US	0.48	1.32	2.68	1.69	1.73	2.39	1.71
US+SS	0.53	1.25	3.27	3.17	2.19	2.49	2.15
OS/SS	0.58	1.61	2.55	1.95	1.87	2.22	1.80
MEAN	0.53	1.43	2.68	2.34	1.82	2.64	1.91

STRAW MEAN DM% 87.8 PLOT AREA HARVESTED 0.00173

79/W/CS/181 BARLEY SERIES IV

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

N	0	50	100	150	50+50	100+50	MEAN
TREFOIL(768)							
NONE	0.11	2.10	2.22	2.45	1.67	3.19	1.96
US	0.17	1.50	2.28	2.90	1.66	2.71	1.87
US+SS	0.28	1.45	2.89	3.06	2.33	1.90	1.98
OS/SS	0.17	1.55	2.28	2.46	1.28	2.34	1.68
MEAN	0.18	1.65	2.42	2.72	1.74	2.53	1.87

GRAIN MEAN DM% 82.0

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

N	0	50	100	150	50+50	100+50	MEAN
TREFOIL(768)							
NONE	0.10	1.05	1.47	1.72	1.11	1.93	1.23
US	0.05	0.96	1.43	1.97	1.05	1.64	1.18
US+SS	0.15	0.94	1.78	1.63	1.34	1.86	1.28
OS/SS	0.16	0.94	1.55	1.69	0.98	1.64	1.16
MEAN	0.12	0.97	1.56	1.75	1.12	1.76	1.21

STRAW MEAN DM% 86.0 PLOT AREA HARVESTED 0.00173

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POTATOES SERIES II

TOTAL TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

N	0	100	200	300	100+100	200+100	MEAN
TREFOIL(768)							
NONE	9.5	20.0	20.5	38.4	19.5	18.2	21.0
US	8.9	27.6	25.3	35.6	24.1	17.1	23.1
US+SS	4.5	15.6	20.1	18.0	23.4	24.1	17.6
OS/SS	5.7	19.0	29.1	25.8	15.5	29.3	20.7
MEAN	7.1	20.5	23.7	29.5	20.6	22.2	20.6

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

***** TABLES OF MEANS *****

N	0	100	200	300	100+100	200+100	MEAN
TREFOIL(768)							
NONE	89.0	94.2	94.9	97.9	89.9	96.2	93.7
US	80.5	93.7	94.5	98.1	90.0	94.6	91.9
US+SS	61.5	93.3	96.6	91.0	92.1	93.3	88.0
OS/SS	85.7	95.8	94.0	94.2	88.1	94.5	92.0
MEAN	79.2	94.3	95.0	95.3	90.0	94.6	91.4

PLOT AREA HARVESTED 0.00087