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90/W/CS/336 Set-aside Study - W. Wheat

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90/W/CS/336

SET-ASIDE STUDY

Object: To compare different treatments of land temporarily withdrawn from arable cropping and to study their effects on nitrate leaching and on subsequent wheat crops - Woburn Horsepool.

Sponsors: R.D. Prew, E.T.G. Bacon, M.V. Hewitt, D.P. Yeoman, J.F. Jenkyn, R.J. Gutteridge, W. Powell, J. Ashby.

Associate sponsors: D.L.O. Smith, I. Shield.

The second year, w. wheat.

For first year see 89/W/CS/336.

Design: 3 randomised blocks of 7 plots split into 7 sub plots.

Whole plot dimensions: 10.0 x 24.0.

Treatments: All combinations of:-

Whole plots

- | | |
|--------------------|---|
| 1. LAND TRT | Land treatment in 1989, after s. wheat 1988 (all treatments ploughed in autumn 1989 before w. wheat): |
| CA WW | Cultivated in autumn, sown to w. wheat |
| CA RA | Cultivated in autumn, sown to ryegrass in autumn, topped in spring |
| SA CA FA | Straw chopped and spread in autumn, cultivated in autumn, sown to forage rape in autumn, topped in spring |
| CA CS | Cultivated in autumn, cultivated in spring |
| SA CS | Straw chopped and spread in autumn, cultivated in spring |
| WT | Weeds topped |
| WT CS TS | Weeds topped, cultivated in spring, trefoil sown in spring, topped |

Sub plots

- | | |
|-------------|--|
| 2. N | Nitrogen fertilizer (kg N) as 'Nitro-Chalk': |
| 0 | |
| 37 | |
| 56 | |
| 73 | |
| 92 | |
| 110 | |
| 128 | |

- NOTES:** (1) An additional fallow sub plot was present, systematically arranged on one side of each whole plot.
(2) Rates of N shown were those used in error for the intended N scale of 0, 80, 120, 160, 200, 240, 280.

90/W/CS/336

Standard applications: W. wheat: Weedkillers: Isoproturon at 2.1 kg with isoxaben at 75 g in 220 l. Isoproturon at 2.1 kg with fluroxypyr at 0.15 kg in 220 l. Fungicides: Propiconazole at 0.12 kg with chlorothalonil at 0.50 kg in 300 l. Insecticide: Deltamethrin at 6.2 g in 220 l.

Seed: W. wheat: Mercia, sown at 170 kg.

Cultivations, etc.:- Straw chopped on CA WW plots: 21 Aug, 1989. Ploughed: 31 Aug. Rolled: 1 Sept. Rotary cultivated with crumbler attached: 28 Sept. Seed sown: 29 Sept. Isoproturon and isoxaben applied: 11 Dec. Insecticide applied: 23 Feb, 1990. N applied: 27 Mar. Isoproturon and fluroxypyr applied: 24 Apr. Fungicides applied: 22 May. Fallow rotary cultivated: 12 June. Wheat combine harvested: 8 Aug.

NOTE: Amounts of soil and plant dry matter were measured in autumn, spring and summer. Assessments of plant cover were made in autumn and spring.

GRAIN TONNES/HECTARE

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

NITROGEN	0	37	56	73	92	110	128	Mean
LAND TRT								
CA WW	3.34	4.72	5.50	5.11	5.94	6.21	6.26	5.30
CA RA	3.13	5.24	5.80	5.06	5.54	6.13	6.56	5.35
SA CA FA	4.51	5.90	6.59	6.20	6.70	6.24	6.30	6.06
CA CS	5.65	6.91	7.10	7.58	7.93	8.09	8.51	7.40
SA CS	5.27	6.84	7.05	7.47	7.77	7.33	7.87	7.08
WT	3.67	5.93	6.63	6.84	6.98	7.09	7.15	6.33
WT CS TS	5.04	5.64	5.70	5.93	6.39	6.32	6.51	5.93
Mean	4.37	5.88	6.34	6.31	6.75	6.77	7.02	6.21

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

	LAND TRT	NITROGEN	LAND TRT NITROGEN
	0.671	0.171	0.791
Except when comparing means with the same level(s) of			
LAND TRT			0.452

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	12	0.822	13.2
BLOCK.WP.SP	84	0.553	8.9

GRAIN MEAN DM% 89.6

SUB PLOT AREA HARVESTED 0.00199