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

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Object: To compare different treatments of land temporarily withdrawn from arable cropping and to study their effects on nitrate leaching and on subsequent wheat crops - Woburn, Horsepool.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

For previous years see 89-90/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[89] | Land treatment in 1989, after s. wheat 1988 (all treatments ploughed in autumn 1989 and 1990 before w. wheat in 1990 and 1991): |
| 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 RES | Residues of nitrogen fertilizer to w. wheat in 1990 (kg N): |
| (0) | |
| (37) | |
| (56) | |
| (73) | |
| (92) | |
| (110) | |
| (128) | |

NOTE: An additional fallow sub plot was present, systematically arranged on one side of each whole plot.

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Standard applications:

W. wheat: Manures: 'Nitram' at 580 kg. Weedkillers: Diclofop at 1.1 kg applied with the insecticide in 220 l. Diflufenican at 0.10 kg and isoproturon at 1.0 kg in 220 l. Fluroxypyr at 0.20 kg with bromoxynil at 0.34 kg and clopyralid at 0.07 kg in 200 l. Fungicides: Fenpropimorph at 0.38 kg in 210 l, and on a second occasion with chlorothalonil at 0.49 kg and flutriafol at 0.078 kg in 300 l. Insecticide: Deltamethrin at 5.0 g.
Fallow: Weedkiller: Linuron at 1.5 kg with paraquat at 0.6 kg ion in 210 l.

Seed: W. wheat: Mercia, sown at 150 kg.

Cultivations, etc.:-

W. wheat: Straw chopped on plots: 8 Aug, 1990. Ploughed: 14 Sept. Rotary harrowed with crumbler attached, seed sown: 26 Sept. Diclofop and insecticide applied: 27 Nov. Diflufenican and isoproturon applied: 5 Dec. Fluroxypyr, bromoxynil and clopyralid applied: 12 Apr, 1991. N applied: 17 Apr. Fenpropimorph applied: 24 Apr. Fenpropimorph, chlorothalonil and flutriafol applied: 20 June. Combine harvested: 20 Aug.
Fallow: Weedkiller applied: 20 May. Rotary cultivated: 15 July.

NOTE: Amounts of soil nitrogen were measured in autumn and spring on CA RA and WT plots. Assessments of plant cover were made in autumn. Plant samples were taken to assess diseases.

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GRAIN TONNES/HECTARE

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

	N RES	(0)	(37)	(56)	(73)	(92)	(110)	(128)	Mean
LAND TRT[89]									
CA WW		6.30	5.54	6.21	5.61	5.72	5.58	5.72	5.81
CA RA		7.77	7.90	8.01	7.41	8.15	7.40	7.46	7.73
SA CA FA		6.44	6.53	7.00	6.58	6.85	7.43	7.43	6.89
CA CS		4.28	5.51	5.78	5.67	6.01	6.78	6.38	5.77
SA CS		4.27	5.48	5.03	5.44	6.26	6.29	6.13	5.56
WT		4.32	5.66	4.06	4.44	5.21	6.08	6.02	5.11
WT CS TS		4.60	5.13	5.68	6.16	5.57	6.09	6.11	5.62
Mean		5.43	5.96	5.97	5.90	6.25	6.52	6.46	6.07

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

	LAND TRT[89]	N RES	LAND TRT[89]	N RES
	0.629	0.198		0.794
Except when comparing means with the same level(s) of				
LAND TRT[89]				0.524

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	12	0.770	12.7
BLOCK.WP.SP	84	0.641	10.6

GRAIN MEAN DM% 87.8

SUB PLOT AREA HARVESTED 0.00199