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91/W/CS/346 Set-aside Study - W. Wheat

Rothamsted Research

Rothamsted Research (1992) *91/W/CS/346 Set-aside Study - W. Wheat* ; Yields Of The Field Experiments 1991, pp 91 - 92 - DOI: <https://doi.org/10.23637/ERADOC-1-46>

91/W/CS/346

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Object: To compare different treatments of land temporarily withdrawn from arable cropping and to study their effects on nitrate leaching and on subsequent wheat crops - Woburn, White Horse.

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, M.D. Helps.

The second year, w. wheat.

For first year see 90/W/CS/346.

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 1990, after w. wheat 1989 (all treatments ploughed autumn 1990 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 | |
| 80 | |
| 120 | |
| 160 | |
| 200 | |
| 240 | |
| 280 | |

NOTES: (1) An additional fallow sub plot was present, systematically arranged on one side of each whole plot.
(2) Some variation occurred in the method of N application. Statistical correction did not improve the response curve and the yield data are given as recorded.

91/W/CS/346

Standard applications: W. wheat: Weedkillers: Mecoprop at 1.6 kg with the insecticide 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.

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

Cultivations, etc.:-

W. wheat: Ploughed: 13 Sept, 1990. Rotary harrow with crumbler attached, seed sown: 25 Sept. Mecoprop and insecticide applied: 30 Nov. N treatments applied: 3 Apr, 1991. Fluroxypyr, bromoxynil and clopyralid applied: 12 Apr. Fenpropimorph applied: 24 Apr. Fenpropimorph, chlorothalonil and flutriafol applied: 20 June. Combine harvested: 21 Aug.

Fallow: Ploughed: 13 Sept, 1990. Rotary cultivated: 20 May, 1991 and 15 July.

NOTE: Amounts of soil nitrogen and plant dry matter were measured in autumn and spring. Assessments of plant cover were made in autumn, spring and summer. Plant samples were taken to assess diseases.

GRAIN TONNES/HECTARE

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

	N	0	80	120	160	200	240	280	Mean
LAND TRT									
CA WW	1.82	3.43	6.68	6.25	6.26	6.99	7.42	5.55	
CA RA	2.04	4.80	6.64	7.63	8.96	8.98	8.89	6.85	
SA CA FA	4.27	6.35	7.46	8.08	8.70	9.08	9.19	7.59	
CA CS	6.11	7.45	8.02	8.24	8.51	8.61	8.67	7.94	
SA CS	5.74	7.01	8.13	9.28	8.86	9.37	9.10	8.21	
WT	4.69	7.37	8.51	8.70	8.81	9.12	9.39	8.08	
WT CS TS	3.43	6.78	7.48	7.53	8.68	8.40	8.96	7.32	
Mean	4.01	6.17	7.56	7.96	8.40	8.65	8.80	7.36	

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

	LAND TRT	N	LAND TRT
			N
	0.472	0.290	0.852
Except when comparing means with the same level(s) of			
LAND TRT			0.766

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	12	0.579	7.9
BLOCK.WP.SP	84	0.939	12.7

GRAIN MEAN DM% 87.1

SUB PLOT AREA HARVESTED 0.00199