

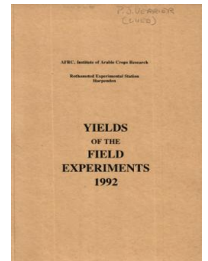
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Yields of the Field Experiments 1992

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92/R/CS/380 Cover Crops and 15n - Forage Rape, Tumbledown, W. Rye, W. Barley, S. Barley, Fallow

Rothamsted Research

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92/R/CS/380

COVER CROPS AND 15N

Object: To assess how effectively cover crops take up nitrogen and to assess how much of that nitrogen is subsequently available to the following crop - Webbs.

Sponsors: P.R. Poulton, D.G. Christian, A.J. Macdonald.

The first year, forage rape, rye, tumbledown, w. and s. barley.

Design: 3 blocks of 5 plots split into 2.

Whole plot dimensions: 6.0 x 12.0.

Treatments: All combinations of:-

Whole plots

1. **LAND TRT** Cover crops, sown in autumn, tumbledown and fallow.
 All plots ploughed in spring and sown to s. barley:

FO RA SB	Forage rape
RYE SB	Rye
TUMDN SB	Tumbledown
FALLOWSB	Fallow

Sub plots

2. **N** Nitrogen fertilizer (kg N) to s. barley:

0
75

plus one extra treatment

Whole plot

1. **EXTRA**

W BARLEY W. barley sown in autumn, taken to maturity

Sub plot

2. **N EXTRA** Nitrogen fertilizer (kg N) to w. barley:

0
150

NOTE: The tumbledown fallow was given 50 kg of seed from the previous s. barley crop to ensure volunteers.

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Experimental diary:

15-Aug-91 : B : Straw baled.
21-Aug-91 : B : Dolomite at 5.0 t.
 : T : **LAND TRT** FO RA SB, RYE SB, TUMDN SB: Shallow cultivated
 twice with Bomford Dynadrive.
 : T : **LAND TRT** FO RA SB: Giant broadcast at 30 kg.
 : T : **LAND TRT** RYE SB: Halo broadcast at 180 kg.
 : T : **LAND TRT** TUMDN SB: S. barley (cv. Alexis) broadcast at
 50 kg.
 : T : **LAND TRT** FO RA SB, RYE SB, TUMDN SB: Harrowed and
 rolled.
12-Sep-91 : T : **LAND TRT** FO RA SB: Fusilade 5 at 1.0 l with Vassgro
 Spreader at 0.22 l in 220 l.
13-Sep-91 : T : **EXTRA** W BARLEY: Ploughed.
 : T : **EXTRA** W BARLEY: Rotary harrowed twice.
 EXTRA W BARLEY: Rotary harrowed, Magie drilled at
 144 kg, rolled.
19-Sep-91 : T : **LAND TRT** FALLOWSB: Ploughed and heavy spring-tine
 cultivated.
25-Sep-91 : T : **LAND TRT** FALLOWSB: Rolled.
14-Nov-91 : T : **LAND TRT** FO RA SB: Pilot at 0.075 l with Actipron at
 2.0 l in 220 l.
03-Dec-91 : T : **LAND TRT** FALLOWSB: Gramoxone 100 at 3.0 l in 220 l.
 : T : **EXTRA** W BARLEY: Stefes IPU at 2.5 l and Stomp 400 at
 3.3 l in 220 l.
03-Mar-92 : T : **LAND TRT** FO RA SB, RYE SB, TUMDN SB, FALLOWSB: Ploughed.
06-Mar-92 : T : **LAND TRT** FO RA SB, RYE SB, TUMDN SB, FALLOWSB: Rotary
 harrowed. Alexis, dressed Baytan, drilled at 146 kg.
09-Mar-92 : B : Rolled
24-Apr-92 : T : **N** 75: 27% N at 278 kg.
 : T : **N EXTRA** 150: as 27% N at 556 kg.
22-May-92 : T : **LAND TRT** FO RA SB, RYE SB, TUMDN SB, FALLOWSB: Duplosan
 New System CMPP at 2.0 l, Vindex at 1.0 l and Calixin
 at 0.70 l in 220 l.
30-Jul-92 : B : Hand harvested.

Previous crops: W. barley 1990, s. barley 1991.

NOTE: Main plots were labelled with 15N in autumn 1991. Recovery of 15N by
each level of **LAND TRT**, **EXTRA** W BARLEY and the subsequent s. barley
was measured.

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S. BARLEY

GRAIN TONNES/HECTARE

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

	N	0	75	Mean
LAND TRT				
FO RA SB		4.02	4.85	4.44
RYE SB		2.92	4.36	3.64
TUMDN SB		2.73	4.73	3.73
FALLOWSB		5.17	5.72	5.45
Mean		3.71	4.91	4.31

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

LAND TRT	N	LAND TRT
		N
	0.239	0.288
		0.472
Except when comparing means with the same level(s) of		
LAND TRT		0.576

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	6	0.293	6.8
BLOCK.WP.SP	8	0.705	16.3

EXTRA W BARLEY

N EXTRA	0	150	Mean
	3.79	6.05	4.92

GRAIN MEAN DM% 37.2

PLOT AREA HARVESTED 0.00008