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92/W/CS/381 N Uptake and Cover Crops - Linseed

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92/W/CS/381

N UPTAKE AND COVER CROPS

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

Sponsor: D.G. Christian.

The first year, forage rape, rye and linseed.

Design: 3 blocks of 5 plots plus a single replicate of 3 extra plots, split into 2.

Whole plot dimensions: 9.0 x 12.0.

Treatments: All combinations of:-

Whole plots

1. **LANDTRT** Land treatments over winter, ploughed and conventionally drilled to linseed in spring:

FO RA LN	Forage rape
RYE LN	Rye
TUMDN LN	Tumbledown plus w. barley
FALLW LN	Fallow
STUBL LN	Stubble

Sub plots

2. **N** Nitrogen fertilizer (kg N) in spring to linseed:

0
75

plus three extra unreplicated treatments, direct drilled to linseed in spring and split for N:

1. **EXTRA**

EX FR LN	Forage rape
EX RY LN	Rye
EX TD LN	Tumbledown plus w. barley

NOTE: W. barley seed from previous crop was drilled into TUMDN LN plots to ensure volunteers.

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Experimental diary:

- 19-Aug-91 : T : **LANDTRT** FO RA LN, RYE LN and TUMDN LN and **EXTRA**: Disc harrowed to 5 cm depth.
: T : **LANDTRT** FO RA LN and **EXTRA** EX FR LN: Ember drilled at 30 kg.
: T : **LANDTRT** TUMDN LN and **EXTRA** EX TD LN: Magie drilled at 50 kg.
: T : **LANDTRT** RYE LN and **EXTRA** EX RY LN: Amando drilled at 180 kg.
- 20-Aug-91 : T : **LANDTRT** FO RA LN, RYE LN, TUMDN LN and **EXTRA**: Harrowed and rolled.
- 12-Sep-91 : T : **LANDTRT** FO RA LN and FALLW LN and **EXTRA** EX FR LN: Pilot at 0.15 l in 200 l.
- 08-Oct-91 : T : **LANDTRT** FALLW LN: Ploughed.
- 01-Apr-92 : T : **EXTRA**: Gramoxone 100 at 4.0 l in 200 l.
- 13-Apr-92 : T : **EXTRA**: Antares, dressed Prelude 20LF, direct drilled at 52 kg.
: T : **LANDTRT**: FO RA LN, RYE LN, TUMBDN LN, STUBL LN: Ploughed.
- 14-Apr-92 : T : **LANDTRT**: Rotary cultivated with crumbler attached. Antares, dressed Prelude 20LF, drilled at 52 kg.
- 22-Apr-92 : B : Harrowed lightly.
- 18-May-92 : T : **N**: 75. Applied as 27% N.
- 08-Jun-92 : B : Ally at 0.03 kg in 200 l.
- 29-Aug-92 : B : Reglone at 3.0 l with Vassgro Spreader at 0.30 l in 300 l.
- 29-Sep-92 : B : Combine harvested.

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

NOTE: Plant samples of cover crops were taken for growth analysis in autumn and spring. Linseed was sampled for growth analysis and disease incidence.

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GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

	N	0	75	Mean
LANDTRT				
FO RA LN		0.77	1.12	0.94
RYE LN		0.77	1.34	1.06
TUMDN LN		0.54	1.08	0.81
FALLW LN		0.70	1.15	0.92
STUBL LN		0.89	1.23	1.06

Mean 0.73 1.18 0.96

	N	0	75	Mean
EXTRA				
EX FR LN		0.70	1.51	1.10
EX RY LN		0.81	1.47	1.14
EX TD LN		0.91	1.17	1.04

Mean 0.80 1.38 1.09

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

	LANDTRT	N	LANDTRT
	0.166	0.078	0.207
Except when comparing means with the same level(s) of			
LANDTRT			0.175

NOTE: Do not use SED for comparisons involving **EXTRA**

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	8	0.204	21.2
BLOCK.WP.SP	10	0.214	22.4

GRAIN MEAN DM% 85.9

SUB PLOT AREA HARVESTED 0.00082