

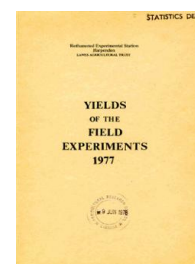
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Rothamsted Research

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77/R/WW/6

WINTER WHEAT

RATES AND TIMES OF N AND K

Object: To study the effects of a range of rates and times of applying nitrogen and of forms of potassium on the nutrient uptake, protein quality and yield of two varieties of winter wheat - Fosters West.

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Design: 3 randomised blocks of 2 plots split into 18.

Whole plot dimensions: 5.64 x 46.0.

Treatments: All combinations of:-

Whole plots

1. VARIETY Varieties:

CAPPELLE
FLINOR

Sub plots

2. N S L Rates, forms and times of applying nitrogen fertiliser (kg N):

'Nitro-Chalk' in spring (20 Apr)	Urea spray at G.S.11.1 (19 July)
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120 30	120	+	30
120 60	120	+	60
120 90	120	+	90

3. K FORM Form of potassium fertiliser added to urea spray (at a 10:1 N:K atom ratio - urea dressings modified where KNO₃ used to maintain correct total N):

NONE	None
KNO ₃	Potassium nitrate
K ₂ SO ₄	Potassium sulphate

plus all combinations of:-

Whole plots

1. VARIETY Varieties:

CAPPELLE
FLINOR

77/R/WW/6

Sub plots

2. N S Rates of 'Nitro-Chalk' in spring (20 Apr) (kg N):

0
30
60
90
120 (duplicated)
150
180
210

Basal applications: Manures: (0:20:20) at 310 kg, combine drilled. Weedkillers: Paraquat at 0.56 kg ion in 220 l, applied in autumn. Ioxynil at 0.53 kg with mecoprop at 1.6 kg in 220 l, applied in spring. Insecticide: Pirimicarb at 0.14 kg in 280 l.

Seed: Varieties sown at 200 kg.

Cultivations, etc.: Deep-tine cultivated: 25 Aug, 1976, 3 Sept. Autumn weedkiller applied: 27 Oct. Heavy spring-tine cultivated: 20 Nov. Sown: 24 Nov. Spring weedkillers applied: 23 May, 1977. Insecticide applied: 15 July. Combine harvested: 6 Sept. Previous crops: Winter barley 1975, winter oats 1976.

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	N S L	K FORM	N S	VARIETY N S L	
SED	0.161	0.161	0.278 0.241	0.227*	MIN REP MAX-MIN
TABLE	VARIETY K FORM	N S L K FORM	VARIETY N S	VARIETY N S L K FORM	
SED	0.277*	0.278	0.394* 0.341*	0.394*	MIN REP MAX-MIN

* WITHIN THE SAME LEVEL OF VARIETY ONLY

N S
MAX-MIN 120 V ANY OF REMAINDER
MIN REP ANY OF REMAINDER

***** STRATUM STANDARD ERRORS OF COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP.SP	70	0.482	9.2

GRAIN MEAN DM% 79.3
SUB PLOT AREA HARVESTED 0.00073

77/R/WW/6

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

UREA SPRAYS APPLIED

N S L	120 30	120 60	120 90	MEAN
VARIETY				
CAPPELLE	5.57	5.50	5.56	5.54
FLINOR	5.30	5.19	5.37	5.29
MEAN	5.43	5.35	5.47	5.41
K FORM	NONE	KNO3	K2SO4	MEAN
VARIETY				
CAPPELLE	5.62	5.73	5.28	5.54
FLINOR	5.50	5.03	5.34	5.29
MEAN	5.56	5.38	5.31	5.41
K FORM	NONE	KNO3	K2SO4	MEAN
N S L				
120 30	5.49	5.54	5.27	5.43
120 60	5.50	5.40	5.14	5.35
120 90	5.69	5.20	5.51	5.47
MEAN	5.56	5.38	5.31	5.41
VARIETY	K FORM	NONE	KNO3	K2SO4
N S L				
CAPPELLE	120 30	5.45	6.04	5.21
	120 60	5.59	5.71	5.19
	120 90	5.83	5.42	5.43
FLINOR	120 30	5.54	5.03	5.33
	120 60	5.41	5.08	5.09
	120 90	5.54	4.97	5.59

UREA SPRAYS NOT APPLIED

VARIETY	CAPPELLE	FLINOR	MEAN
N S			
0	3.00	2.97	2.98
30	3.34	3.79	3.56
60	4.36	4.49	4.43
90	5.68	4.77	5.23
120	5.97	5.41	5.69
150	5.68	5.74	5.71
180	6.72	5.76	6.24
210	5.57	5.74	5.66
MEAN	5.14	4.90	5.02

GRAND MEAN 5.22