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80/W/CS/253 Late N

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80/W/CS/253

LATE N

Object: To study the effects of a range of fertilisers that release nitrogen later in the growing season than traditional forms on the growth and yield of potatoes - Woburn Lansome III.

Sponsors: F.V. Widdowson, A. Penny, T.M. Addiscott.

The first year, potatoes.

Design: 3 randomised blocks of 16 plots.

Whole plot dimensions: 4.27 x 13.1.

Treatments: All combinations of:-

1. N FORM Forms of nitrogen fertiliser:
 - AQ U Aqueous urea, injected before planting
 - AQ U+CS2 Aqueous urea + carbon disulphide at 10 kg, injected before planting
 - AQ U+NIT Aqueous urea + nitrapyrin at 1 kg, injected before planting
 - NC E 'Nitro-Chalk', all to the seedbed
 - NC E+L 'Nitro-Chalk', half to the seedbed, half in June
 - IBDU Isobutylidene diurea, all to the seedbed
2. N RATE Rates of nitrogen fertiliser (kg N):
 - 200
 - 300

plus four extra treatments all given 'Nitro-Chalk':

EXTRA

- NC E100 At 100 kg N, all to the seedbed
- NC E400 At 400 kg N, all to the seedbed
- NC EL100 At 100 kg N, half to the seedbed, half in June
- NC EL400 At 400 kg N, half to the seedbed, half in June

NOTE: Aqueous fertilisers were injected on 17 Apr, 1980. IBDU and seedbed 'Nitro-Chalk' were applied on 18 Apr. Late 'Nitro-Chalk' was applied on 10 June.

Basal applications: Manures: FYM at 50 t, (0:14:28) at 1880 kg. Weedkiller: Linuron at 1.1 kg in 280 l. Fungicide: Mancozeb at 1.3 kg in 300 l on five occasions with insecticide on the first, third, fourth and fifth occasions. Insecticide: Pirimicarb at 0.14 kg. Haulm desiccant: undiluted BOV at 170 l.

Seed: Pentland Crown.

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Cultivations, etc.:— Subsoiled, tines 160 cm apart and 40 cm deep: 12 Aug, 1979. FYM applied, ploughed: 21 Aug. PK applied: 12 Apr, 1980. Heavy spring-tine cultivated: 14 Apr. Spring-tine cultivated with crumbler attached: 17 Apr. Rotary cultivated, potatoes planted: 21 Apr. Weedkiller applied: 15 May. Earthed up: 12 June. Fungicide applied: 18 June, 3 July, 22 July, 8 Aug, 22 Aug. Insecticide applied: 18 June, 22 July, 8 Aug, 22 Aug. Haulm mechanically destroyed: 19 Sept. Haulm desiccant applied: 23 Sept. Lifted: 13 Oct. Previous crops: Barley 1978, grass ley 1979.

NOTE: Dry matter of tubers and haulm and numbers of tubers were assessed on several occasions during the season. Nitrogen contents of tubers were measured.

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TOTAL TUBERS TONNES/HECTARE

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

	200	300	MEAN
N RATE			
N FORM			
AQ U	62.9	75.9	69.4
AQ U+CS2	65.4	67.3	66.3
AQ U+NIT	64.5	73.6	69.0
NC E	67.4	76.9	72.2
NC E+L	70.4	75.3	72.8
IBDU	71.1	73.1	72.1
MEAN	67.0	73.7	70.3

EXTRA	NC E100	NC E400	NC EL100	NC EL400	MEAN
	54.4	71.2	63.3	78.3	66.8

GRAND MEAN 69.4

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

TABLE	EXTRA	N FORM	N RATE	N FORM N RATE & EXTRA

SED	3.53	2.50	1.44	3.53

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

STRATUM	DF	SE	CV%
BLOCK.WP	30	4.32	6.2

PERCENTAGE WARE 4.44 CM (1.75 INCH) RIDDLE

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

	200	300	MEAN
N RATE			
N FORM			
AQ U	91.1	94.9	93.0
AQ U+CS2	92.7	91.7	92.2
AQ U+NIT	92.8	94.0	93.4
NC E	92.1	92.7	92.4
NC E+L	94.2	93.9	94.0
IBDU	94.7	94.3	94.5
MEAN	92.9	93.6	93.3

EXTRA	NC E100	NC E400	NC EL100	NC EL400	MEAN
	90.0	92.3	92.8	95.0	92.5

GRAND MEAN 93.1

PLOT AREA HARVESTED 0.00260