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## Yields of the Field Experiments 1978

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### 78/R/CS/223 Late N - Potatoes

#### Rothamsted Research

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78/R/CS/223

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 - Long Hoos III.

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

The first year, potatoes.

Design: 3 randomised blocks of 18 plots.

Whole plot dimensions: 9.14 x 4.27.

Treatments: All combinations of:-

1. N FORM                      Forms of nitrogen fertiliser:
  - AA                              Aqueous ammonia, injected before planting
  - AA+NITRA                      Aqueous ammonia + nitrapyrin at 1.1 kg, injected before planting
  - AA+STC                        Aqueous ammonia + sodium trithiocarbonate at 22 kg injected before planting.
  - AU                              Aqueous urea, injected before planting
  - AN E                             Ammonium nitrate, all to the seedbed
  - AN E+L                         Ammonium nitrate, half to the seedbed, half top-dressed
  - IBDU                            Isobutylidene diurea, medium granules all to the seedbed
2. N RATE(1)                 Rates of nitrogen fertiliser (kg N):
  - 200
  - 300

plus four extra treatments given ammonium nitrate, all to the seedbed (kg N):

- AN E 150
- AN E 250
- AN E 350
- AN E 400

NOTE: Aqueous fertilisers were injected on 9 May, 1978, IBDU and seedbed ammonium nitrate was applied on 10 May. Late ammonium nitrate was applied on 22 June.

Basal applications: Manures: (0:14:28) at 1.9 t. Weedkillers: Linuron at 1.1 kg with paraquat at 0.42 kg ion in 220 l. Fungicides: Mancozeb at 1.3 kg in 220 l on three occasions, with insecticide on the second and third occasions. Fentin acetate and maneb ('Fennite A' at 1.7 kg) in 220 l on two occasions. Insecticide: Pirimicarb at 0.14 kg in 220 l. Haulm desiccant: Undiluted BOV at 170 l. Irrigation: Total 50 mm.

Seed: Pentland Crown.

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Cultivations, etc.:— Ploughed: 21 Nov, 1977. Heavy spring-tine cultivated: 6 Apr, 1978. PK applied: 25 Apr. Spike rotary cultivated, potatoes planted: 11 May. Grubbed: 18 May. Weedkillers applied: 26 May. Grubbed and rotary ridged: 20 June. Mancozeb applied: 5 July. Mancozeb and pirimicarb applied twice: 18 July, 1 Aug. 'Fennite A' applied twice: 17 Aug, 8 Sept. Irrigation applied twice: 25 mm on 25 Aug and 25 mm on 13 Sept. BOV applied: 2 Oct. Pulverized: 18 Oct. Lifted: 19 Oct. Previous crops: Wheat 1976, W. oats 1977.

NOTE: Plots were assssed for dry matter of tubers and haulm, and for numbers of tubers on several occasions during the season. Samples of tubers were analysed for nitrogen percentages.

TOTAL TUBERS TONNES/HECTARE

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

N RATE(1) N FORM	200	300	MEAN
AA	44.0	53.0	48.5
AA+NITRA	46.3	53.2	49.7
AA+STC	46.4	52.9	49.6
AU	47.0	52.4	49.7
AN E	51.8	55.6	53.7
AN E+L	53.6	57.7	55.6
IBDU	41.8	45.6	43.7
MEAN	47.3	52.9	50.1
EXTRA			
AN E 150	41.7		
AN E 250	56.7		
AN E 350	59.7		
AN E 400	57.4		
MEAN	53.9		

GRAND MEAN 50.9

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

TABLE	EXTRA	N FORM	N RATE(1)	N FORM N RATE(1) & EXTRA
SED	2.65	1.88	1.00	2.65

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

STRATUM	DF	SE	CV%
BLOCK.WP	34	3.25	6.4

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PERCENTAGE WARE 4.44CM (1.75 INCH) RIDDLE

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

N RATE(1) N FORM	200	300	MEAN
AA	87.2	89.9	88.5
AA+NITRA	87.4	92.4	89.9
AA+STC	88.2	91.8	90.0
AU	89.3	91.6	90.5
AN E	90.5	92.7	91.6
AN E+L	90.9	91.3	91.1
IBDU	88.9	89.3	89.1
MEAN	88.9	91.3	90.1
EXTRA			
AN E 150	85.5		
AN E 250	92.3		
AN E 350	91.5		
AN E 400	91.6		
MEAN	90.2		

GRAND MEAN 90.1

PLOT AREA HARVESTED 0.00260