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Yields of the Field Experiments 1987

Full Table of Content

87/R/P/2 Seed Health Progeny - Potatoes

Rothamsted Research

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87/R/P/2

POTATOES

SEED HEALTH PROGENY

Object: To compare the health and yield of two varieties of potatoes grown once or twice for seed at Rothamsted under three sets of treatments with the same varieties grown to AA standard in Scotland in 1986 - Bones Close.

Sponsors: R.W. Gibson, G.A. Hide, R. Harrington.

Design: 4 randomised blocks of 28 plots.

Whole plot dimensions: 1.5 x 19.0.

Treatments: All combinations of:-

1. VARIETY	Varieties:
EDWARD	King Edward
PIPER	Maris Piper
2. ROTHGROW	Frequency of cropping at Rothamsted:
ONCE	In 1986 only from Scottish FS seed
TWICE	In 1985 and 1986, from Scottish FS seed in 1985
3. PATHCONT[86]	Pest and pathogen control in 1985, to ROTHGROW TWICE only, and in 1986 to ROTHGROW ONCE and TWICE (in addition to basals):
STANDARD	1985 and 1986: Plants with virus symptoms were removed in June.
ENHANCED	1985 and 1986: Seed treatment with tolclofos methyl at 0.24 kg and imazalil at 0.01 kg per tonne of tubers, applied by hydraulic and uncharged electrostatic sprayers respectively. Cypermethrin at 0.04 kg with 7.0 l oil in 500 l applied by hydraulic sprayer on 14 June, 1985, and on 13 and 19 June, 1986. Plants with virus symptoms were removed in June 1985 and 1986.
FULL	1985: As for ENHANCED 1985, plus:- The imazalil was applied by charged electrostatic sprayer. Cypermethrin at 0.04 kg with 7.0 l oil in 500 l was also applied on 28 June, 11 July, 26 July and (to HAULM D LATER plots only) 14 Aug. 1986: As for ENHANCED 1986, plus:- The imazalil was applied by charged electrostatic sprayer. Cypermethrin at 0.04 kg with oil at 7.0 l in 500 l was also applied on 3 July, 18 July, 1 Aug, 19 Aug and (to HAULM D LATER plots only) 4 Sept.

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4. HAULM D[86] Dates of destroying haulm and of lifting in 1985 to ROTHGROW TWICE only and in 1986 to ROTHGROW ONCE and TWICE:

EARLY	1985: Haulm mechanically destroyed, 12 Aug. Haulm desiccant applied 14 Aug and potatoes lifted 18 Sept. 1986: Haulm desiccant applied 29 Aug. Haulm mechanically destroyed 16 Sept and potatoes lifted 23 Sept.
LATER	1985: Haulm mechanically destroyed 4 Sept. Haulm desiccant applied 5 Sept and potatoes lifted 11 Oct. 1986: Haulm mechanically destroyed 25 Sept. Haulm desiccant applied 27 Sept and potatoes lifted 13 Oct.

plus two extra treatments:

SCOTS AA

KE SAA	King Edward Scottish AA seed bought in 1987 (duplicated)
MP SAA	Maris Piper Scottish AA seed bought in 1987 (duplicated)

NOTES: (1) Basal pest and pathogen control in 1985 (to ROTHGROW TWICE only) was phorate at 1.7 kg with the seed and mancozeb at 1.4 kg in 200 l on five occasions applied with pirimicarb at 0.14 kg on all but the first occasion.

(2) Basal pest and pathogen control in 1986 was phorate at 1.7 kg with the seed, mancozeb at 1.4 kg in 200 l on four occasions with pirimicarb at 0.14 kg on each occasion and (to HAULM D LATER plots only) fentin hydroxide at 0.28 kg in 200 l on two occasions applied with pirimicarb at 0.14 kg on the first.

Basal applications: Manures: FYM at 35 t. (0:18:36) at 690 kg. (10:10:15+4.5 Mg) at 1960 kg. Weedkillers: Linuron at 1.6 kg and paraquat at 0.50 kg ion in 500 l. Fungicides: Mancozeb at 1.4 kg in 200 l on four occasions, applied with the pirimicarb on the second occasion. Fentin hydroxide at 0.28 kg in 200 l on two occasions. Insecticide: Pirimicarb at 0.14 kg. Haulm desiccant: Diquat at 0.80 kg ion in 300 l.

Cultivations, etc.:- (0:18:36) applied: 28 Oct, 1986. FYM applied: 11 Nov. Ploughed: 21 Nov. (10:10:15+4.5 Mg) applied: 13 Apr, 1987. Rotary harrowed: 20 Apr. Potatoes planted by hand: 21 Apr. Rotary ridged: 27 Apr. Weedkillers applied: 8 May. Mancozeb applied: 24 June, 8 July, 28 July and 10 Aug. Pirimicarb applied: 8 July. Fentin hydroxide applied: 28 Aug, 9 Sept. Haulm desiccant applied: 21 Sept. Haulm mechanically destroyed: 26 Sept. Lifted: 29 Oct. Previous crops: S. barley 1985, w. beans 1986.

NOTE: Viruses were assessed during the season. Tuber samples were taken at harvest to assess storage diseases.

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87/R/P/2

TOTAL TUBERS TONNES/HECTARE

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

ROTHGROW	ONCE	TWICE	Mean
VARIETY			
EDWARD	76.4	77.9	77.1
PIPER	84.6	81.2	82.9
Mean	80.5	79.5	80.0

PATHCONT[86]	STANDARD	ENHANCED	FULL	Mean
VARIETY				
EDWARD	76.9	76.9	77.7	77.1
PIPER	83.3	82.2	83.0	82.9
Mean	80.1	79.5	80.4	80.0

PATHCONT[86]	STANDARD	ENHANCED	FULL	Mean
ROTHGROW				
ONCE	80.8	80.4	80.2	80.5
TWICE	79.4	78.7	80.5	79.5
Mean	80.1	79.5	80.4	80.0

HAULM D[86]	EARLY	LATER	Mean
VARIETY			
EDWARD	78.5	75.8	77.1
PIPER	83.3	82.4	82.9
Mean	80.9	79.1	80.0

HAULM D[86]	EARLY	LATER	Mean
ROTHGROW			
ONCE	81.4	79.5	80.5
TWICE	80.4	78.6	79.5
Mean	80.9	79.1	80.0

HAULM D[86]	EARLY	LATER	Mean
PATHCONT[86]			
STANDARD	81.3	78.9	80.1
ENHANCED	80.0	79.0	79.5
FULL	81.4	79.3	80.4
Mean	80.9	79.1	80.0

	PATHCONT[86]	STANDARD	ENHANCED	FULL
VARIETY	ROTHGROW			
EDWARD	ONCE	76.5	76.8	75.9
	TWICE	77.2	77.0	79.5
PIPER	ONCE	85.2	84.0	84.5
	TWICE	81.5	80.4	81.5

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87/R/P/2

TOTAL TUBERS TONNES/HECTARE

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

VARIETY	HAULM D[86] ROTHGROW	EARLY	LATER
EDWARD	ONCE	77.3	75.5
	TWICE	79.7	76.1
PIPER	ONCE	85.6	83.5
	TWICE	81.1	81.2

VARIETY	HAULM D[86] PATHCONT[86]	EARLY	LATER
EDWARD	STANDARD	80.2	73.5
	ENHANCED	77.1	76.7
	FULL	78.2	77.1
PIPER	STANDARD	82.3	84.3
	ENHANCED	83.0	81.3
	FULL	84.6	81.5

ROTHGROW	HAULM D[86] PATHCONT[86]	EARLY	LATER
ONCE	STANDARD	82.4	79.3
	ENHANCED	80.8	80.0
	FULL	81.1	79.3
TWICE	STANDARD	80.2	78.5
	ENHANCED	79.3	78.1
	FULL	81.7	79.3

VARIETY	ROTHGROW	HAULM D[86] PATHCONT[86]	EARLY	LATER
EDWARD	ONCE	STANDARD	80.1	72.9
		ENHANCED	75.9	77.7
		FULL	75.9	75.9
	TWICE	STANDARD	80.4	74.1
		ENHANCED	78.2	75.8
		FULL	80.6	78.4
PIPER	ONCE	STANDARD	84.6	85.7
		ENHANCED	85.7	82.3
		FULL	86.4	82.6
	TWICE	STANDARD	80.0	83.0
		ENHANCED	80.4	80.4
		FULL	82.8	80.3

SCOTS AA	KE SAA	MP SAA	Mean
	67.5	78.3	72.9

Grand mean 79.0

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87/R/P/2

TOTAL TUBERS TONNES/HECTARE

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

Table	VARIETY	ROTHGROW	PATHCONT[86]	HAULM D[86]
s.e.d.	0.71	0.71	0.87	0.71

Table	VARIETY ROTHGROW	VARIETY PATHCONT[86]	ROTHGROW PATHCONT[86]	VARIETY HAULM D[86]
s.e.d.	1.01	1.23	1.23	1.01

Table	ROTHGROW HAULM D[86]	PATHCONT[86] HAULM D[86]	VARIETY ROTHGROW PATHCONT[86]	VARIETY ROTHGROW HAULM D[86]
s.e.d.	1.01	1.23	1.74	1.42

Table	VARIETY PATHCONT[86] HAULM D[86]	ROTHGROW PATHCONT[86] HAULM D[86]	VARIETY ROTHGROW PATHCONT[86] HAULM D[86]	SCOTS AA
s.e.d.	1.74	1.74	2.46	1.74

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	83	3.48	4.4

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87/R/P/2

PERCENTAGE WARE 4.44 CM (1.75 INCH) RIDDLE

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

ROTHGROW VARIETY	ONCE	TWICE	Mean
EDWARD	81.9	81.3	81.6
PIPER	83.7	83.5	83.6
Mean	82.8	82.4	82.6

PATHCONT[86] VARIETY	STANDARD	ENHANCED	FULL	Mean
EDWARD	82.1	80.1	82.7	81.6
PIPER	83.6	82.5	84.6	83.6
Mean	82.8	81.3	83.6	82.6

PATHCONT[86] ROTHGROW	STANDARD	ENHANCED	FULL	Mean
ONCE	82.7	81.9	83.8	82.8
TWICE	83.0	80.7	83.4	82.4
Mean	82.8	81.3	83.6	82.6

HAULM D[86] VARIETY	EARLY	LATER	Mean
EDWARD	82.3	81.0	81.6
PIPER	83.5	83.7	83.6
Mean	82.9	82.3	82.6

HAULM D[86] ROTHGROW	EARLY	LATER	Mean
ONCE	83.5	82.1	82.8
TWICE	82.2	82.6	82.4
Mean	82.9	82.3	82.6

HAULM D[86] PATHCONT[86]	EARLY	LATER	Mean
STANDARD	83.8	81.9	82.8
ENHANCED	81.1	81.5	81.3
FULL	83.7	83.5	83.6
Mean	82.9	82.3	82.6

VARIETY	PATHCONT[86] ROTHGROW	STANDARD	ENHANCED	FULL
EDWARD	ONCE	82.3	81.1	82.3
	TWICE	81.8	79.1	83.1
PIPER	ONCE	83.0	82.6	85.4
	TWICE	84.2	82.4	83.8

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87/R/P/2

PERCENTAGE WARE 4.44 CM (1.75 INCH) RIDDLE

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

VARIETY	HAULM D[86] ROTHGROW	EARLY	LATER
EDWARD	ONCE	82.9	80.9
	TWICE	81.6	81.0
PIPER	ONCE	84.2	83.2
	TWICE	82.8	84.2

VARIETY	HAULM D[86] PATHCONT[86]	EARLY	LATER
EDWARD	STANDARD	84.0	80.1
	ENHANCED	79.9	80.3
	FULL	82.9	82.5
PIPER	STANDARD	83.5	83.7
	ENHANCED	82.3	82.8
	FULL	84.6	84.6

ROTHGROW	HAULM D[86] PATHCONT[86]	EARLY	LATER
ONCE	STANDARD	84.1	81.3
	ENHANCED	82.9	80.8
	FULL	83.5	84.1
TWICE	STANDARD	83.4	82.5
	ENHANCED	79.3	82.2
	FULL	83.9	83.0

VARIETY	ROTHGROW	HAULM D[86] PATHCONT[86]	EARLY	LATER
EDWARD	ONCE	STANDARD	84.2	80.5
		ENHANCED	82.1	80.2
		FULL	82.4	82.1
	TWICE	STANDARD	83.9	79.7
		ENHANCED	77.7	80.4
		FULL	83.3	82.8
PIPER	ONCE	STANDARD	84.1	82.0
		ENHANCED	83.8	81.5
		FULL	84.7	86.1
	TWICE	STANDARD	83.0	85.4
		ENHANCED	80.8	84.0
		FULL	84.5	83.1

SCOTS AA	KE SAA	MP SAA	Mean
	84.8	85.1	84.9

Grand mean 82.9

PLOT AREA HARVESTED 0.00286

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