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Yields of the Field Experiments 1974

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Potatoes

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74/R/P/1 and 74/W/P/1

POTATOES

VARIETIES

Object: To study the yield and susceptibility to diseases of newer varieties of potatoes - Rothamsted (R) Pastures and Woburn (W) Lansome III.

Sponsors: J.R. Moffatt, G.A. Hide.

Design: Pastures (R): 3 randomised blocks of 7 plots
Lansome III (W): 3 randomised blocks of 5 plots

Whole plot dimensions: 2.85 x 15.2. Area harvested: 0.00217.

Treatments: Varieties:-

VARIETY

Desiree, Pastures (R) only
King Edward, Pastures (R) only
Maris Piper
Pentland Crown
Pentland Ivory
Stormont Enterprise
Ulster Lancer

Desiree
Edward
Piper
Crown
Ivory
Enterprise
Lancer

Basal applications:

Pastures (R): Manures: (13:13:20) at 1510 kg. Weedkillers: Linuron at 1.2 kg plus paraquat at 0.42 kg ion in 450 l. Fungicide and insecticide: Mancozeb at 1.3 kg plus demeton-s-methyl at 0.25 kg in 450 l. Fungicide: Mancozeb at 1.3 kg in 450 l.

Lansome III (W): Manures: (13:13:20) at 1880 kg. Weedkillers: Linuron at 1.2 kg plus paraquat at 0.28 kg ion in 280 l. Fungicide with insecticide: Mancozeb at 1.3 kg plus demeton-s-methyl at 0.25 kg in 450 l. Fungicide: Mancozeb at 1.3 kg in 450 l.

Cultivations, etc.:-

Pastures (R): Ploughed: 23 Nov, 1973. Spring-tine cultivated: 17 Apr, 1974. NPK applied: 24 Apr. Spike rotary cultivated, potatoes planted: 29 Apr. Weedkiller applied: 21 May. Grubbed: 19 June. Rotary ridged: 21 June. Fungicide with insecticide applied: 12 July. Fungicide applied: 2 Aug. Haulm mechanically destroyed: 10 Sept. Sprayed with undiluted BOV at 220 l: 16 Sept. Lifted: 25 Oct. Previous crops: Barley 1972, spring beans 1973.

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Lansome III (W): Subsoiled, tines 140 cm apart, 50 cm deep:
12-14 Nov, 1973. Ploughed: 14 Dec. Spring-tine cultivated:
10 Apr, 1974. NPK applied: 16 Apr. Rotary cultivated, potatoes
planted: 18 Apr. Weedkiller applied: 16 May. Rotary ridged:
11 June. Fungicide with insecticide applied: 18 July. Fungicide
applied: 7 Aug. Haulm mechanically destroyed: 12 Sept. Sprayed
with undiluted BOV at 170 l: 18 Sept. Lifted: 17 Oct. Previous
crops: Barley 1972, beans 1973.

NOTE: Tubers were graded into six sizes. Incidence of *Rhizoctonia solani*
and common scab on the produce was assessed.

Standard errors per plot. Total tubers, tonnes/hectare:

Pastures (R): 2.94 or 5.5% (12 d.f.)
Lansome III (W): 2.72 or 4.8% (8 d.f.)

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TABLES OF MEANS

PASTURES (R)

VARIETY							Mean
Desiree	Edward	Piper	Crown	Ivory	Entprise	Lancer	
TOTAL TUBERS: TONNES/HECTARE							
50.6	56.1	58.0	53.4	48.8	58.4	46.5	53.1

STANDARD ERROR OF DIFFERENCES

VARIETY

2.40

PERCENTAGE WARE: 4.44 CM (1.75 INCH) RIDDLE

86.3	88.1	90.8	95.7	94.2	88.9	92.8	90.9
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74/R/P/1 and 74/W/P/1

LANSOME III (W)

VARIETY					
Piper	Crown	Ivory	Enterprise	Lancer	Mean
TOTAL TUBERS: TONNES/HECTARE					
57.4	59.9	51.5	63.2	51.9	56.8

STANDARD ERRORS OF DIFFERENCES

VARIETY

2.22

PERCENTAGE WARE: 4.44 CM (1.75 INCH) RIDDLE

86.8	93.7	90.6	82.5	88.6	88.4
------	------	------	------	------	------

74/R/P/2 and 74/W/P/2

POTATOES

SEED STOCKS AND SEED TREATMENT

Object: To study the effects of treating tubers with systemic fungicides or a fumigant on tuber-borne diseases and yield of potatoes - Rothamsted (R) Pastures and Woburn (W) Lansome III.

Sponsors: G.A. Hide, F. Bell.

Design: 4 randomised blocks of 8 plots split into 4 (plus one extra block for sampling).

Whole plot dimensions: 5.69 x 9.53. Area harvested: 0.00135.

Treatments: All combinations of:-

Whole plots: 1. Varieties

VARIETY

King Edward, Pastures (R) only	Edward
Maris Piper, Lansome III (W) only	Piper
Majestic	Majestic
Pentland Crown	Crown
Record	Record

2. Seed health

HEALTH

ex FS, once-grown at Rothamsted in 1973	FS
ex VTSC, once-grown at Rothamsted in 1973	VTSC

Sub plots: 3. Fungicide to seed tubers

FUNGICIDE

None	None
Benomyl	Benomyl
Sec-butylamine	Secbutyl
Thiabendazole	Thiabend

Basal applications:

Pastures (R): Manures: (13:13:20) at 1510 kg. Weedkillers: Linuron at 1.2 kg plus paraquat at 0.42 kg ion in 450 l. Fungicide with insecticide: Mancozeb at 1.3 kg plus demeton-s-methyl at 0.25 kg in 450 l. Fungicide: Mancozeb at 1.3 kg in 450 l.

Lansome III (W): Manures: (13:13:20) at 1880 kg. Weedkillers: Linuron at 1.2 kg plus paraquat at 0.28 kg ion in 280 l. Fungicide with insecticide: Mancozeb at 1.3 kg plus demeton-s-methyl at 0.25 kg in 450 l. Fungicide: Mancozeb at 1.3 kg in 450 l.

74/R/P/2 and 74/W/P/2

Cultivations, etc.:-

Pastures (R): Ploughed: 23 Nov, 1973. Spring-tine cultivated: 17 Apr, 1974. NPK applied, spike rotary cultivated, potatoes planted: 24 Apr. Weedkiller applied: 21 May. Fungicide with insecticide applied: 12 July. Fungicide applied: 2 Aug. Haulm mechanically destroyed: 10 Sept. Sprayed with undiluted BOV at 220 l: 16 Sept. Lifted: 1 Nov. Previous crops: Barley 1972, spring beans 1973.

Lansome III (W): Subsoiled, tines 140 cm apart, 50 cm deep: 12-14 Nov, 1973. Ploughed: 14 Dec. Spring-tine cultivated: 10 Apr, 1974. NPK applied: 16 Apr. Rotary cultivated: 18 Apr. Potatoes planted: 19 Apr. Weedkiller applied: 16 May. Fungicide with insecticide applied: 18 July. Fungicide applied: 7 Aug. Haulm mechanically destroyed: 12 Sept. Sprayed with undiluted BOV at 170 l: 18 Sept. Lifted: 22 Oct. Previous crops: Barley 1972, beans 1973.

- NOTES: (1) Counts were made of plant and stem numbers after burning off and before lifting.
(2) Crop samples were taken on June 1, June 30 and Sept 4 for tuber weight, size and estimates of infection.
(3) At harvest tubers were graded into 6 sizes and assessments made of *Oospora*, *Rhizoctonia*, *Helminthosporium* and *Phoma* infection.

Standard errors per plot. Total tubers: tonnes/hectare:

Pastures (R).	Whole plot: 1.57 or 2.7% (21 d.f.)
	Sub plot: 3.85 or 6.8% (72 d.f.)
Lansome III (W).	Whole plot: 3.59 or 6.8% (21 d.f.)
	Sub plot: 4.22 or 8.0% (72 d.f.)

74/R/P/2 and 74/W/P/2

TABLES OF MEANS

PASTURES (R)

TOTAL TUBERS: TONNES/HECTARE

	FUNGICIDE				VARIETY				Mean
	None	Benomyl	Secbutyl	Thiabend	Edward	Majestic	Crown	Record	
HEALTH									
FS	54.5	54.7	54.6	55.1	54.2	57.1	61.5	46.2	54.7
VTSC	60.3	59.3	59.0	59.1	62.2	63.6	64.2	47.7	59.4
			FUNGICIDE						
			None		56.0	59.6	65.1	48.8	57.4
			Benomyl		59.2	61.0	62.9	44.9	57.0
			Secbutyl		59.6	61.6	60.9	45.0	56.8
			Thiabend		57.9	59.1	62.6	48.9	57.1
Mean					58.2	60.3	62.9	46.9	57.1
HEALTH			FS				VTSC		
FUNGICIDE		None	Benomyl	Secbutyl	Thiabend	None	Benomyl	Secbutyl	Thiabend
VARIETY									
Edward		53.9	57.1	55.0	50.6	58.1	61.3	64.2	65.1
Majestic		56.5	56.7	59.7	55.3	62.7	65.3	63.5	62.9
Crown		61.5	60.1	60.5	64.0	68.7	65.8	61.3	61.1
Record		46.0	45.0	43.2	50.5	51.7	44.8	46.8	47.4

STANDARD ERRORS OF DIFFERENCES

HEALTH	FUNGICIDE	VARIETY	HEALTH FUNGICIDE	HEALTH VARIETY	FUNGICIDE VARIETY	VARIETY HEALTH FUNGICIDE
0.55	0.96	0.78	1.30	1.11	1.84	2.61
Except when comparing means with same levels of						
HEALTH			1.36			
VARIETY					1.93	
VARIETY.HEALTH						2.73

74/R/P/2 and 74/W/P/2

PASTURES (R)

PERCENTAGE WARE: 4.44 CM (1.75 INCH) RIDDLE

	FUNGICIDE				VARIETY				Mean
	None	Benomyl	Secbutyl	Thiabend	Edward	Majestic	Crown	Record	
HEALTH									
FS	87.2	87.0	86.9	86.1	80.1	84.3	95.7	87.1	86.8
VTSC	86.9	86.6	87.2	86.8	79.3	82.4	95.7	90.1	86.9
			FUNGICIDE						
			None		81.7	83.4	95.4	87.5	87.0
			Benomyl		79.9	82.7	96.0	88.6	86.8
			Secbutyl		79.1	84.5	95.7	88.9	87.1
			Thiabend		78.2	82.7	95.7	89.3	86.5
Mean					79.7	83.3	95.7	88.6	86.8
HEALTH			FS				VTSC		
FUNGICIDE	None	Benomyl	Secbutyl	Thiabend	None	Benomyl	Secbutyl	Thiabend	
VARIETY									
Edward	83.7	81.1	77.7	77.8	79.8	78.7	80.4	78.5	
Majestic	83.9	85.0	86.0	82.3	83.0	80.4	83.0	83.0	
Crown	95.3	96.1	95.7	95.7	95.5	95.9	95.7	95.7	
Record	85.7	85.9	88.0	88.8	89.4	91.3	89.8	89.9	

74/R/P/2 and 74/W/P/2

LANSOME III (W)

TOTAL TUBERS: TONNES/HECTARE

	FUNGICIDE				VARIETY				
	None	Benomyl	Secbutyl	Thiabend	Piper	Majestic	Crown	Record	Mean
HEALTH									
FS	52.7	52.6	51.3	54.4	58.2	56.1	58.7	37.9	52.7
VTSC	52.5	54.6	52.1	52.7	57.9	59.2	53.5	41.2	53.0
	FUNGICIDE								
	None				56.4	58.1	54.7	41.0	52.6
	Benomyl				58.0	56.7	58.2	41.4	53.6
	Secbutyl				59.0	56.0	53.7	38.1	51.7
	Thiabend				58.9	59.8	57.8	37.8	53.6
Mean					58.1	57.7	56.1	39.6	52.8
HEALTH	FS				VTSC				
FUNGICIDE	None	Benomyl	Secbutyl	Thiabend	None	Benomyl	Secbutyl	Thiabend	
VARIETY									
Piper	57.8	58.0	57.5	59.7	55.1	58.1	60.5	58.1	
Majestic	55.2	53.0	56.7	59.7	61.1	60.4	55.4	59.9	
Crown	57.7	59.1	56.0	61.9	51.7	57.2	51.3	53.8	
Record	40.0	40.1	35.0	36.4	41.9	42.7	41.2	39.2	

STANDARD ERRORS OF DIFFERENCES

HEALTH	FUNGICIDE	VARIETY	HEALTH FUNGICIDE	HEALTH VARIETY	FUNGICIDE VARIETY	VARIETY HEALTH FUNGICIDE
1.27	1.05	1.80	1.81	2.54	2.56	3.62
Except when comparing means with same levels of						
HEALTH			1.49			
VARIETY					2.11	
VARIETY. HEALTH						2.98

74/R/P/3

POTATOES

SEED SOURCES

Object: To study yields and tuber-borne diseases of potato stocks freed from these diseases by the use of stem cuttings and to compare these with local once-grown and bought-in certified stocks - Pastures.

Sponsors: G.A. Hide, F. Bell.

Design: 4 randomised blocks of 24 plots.

Whole plot dimensions: 1.42 x 9.52. Area harvested: 0.00135.

Treatments: Sources of King Edward seed tubers:

SEEDSRCE

Healthy (ex Scotland VTSC), two plots per block

Healthy

Healthier (once-grown at Rothamsted from ex-

Scotland VTSC) two plots per block

Healthy +

Ten different certified stocks

Cert/1-Cert/10

Ten different once-grown stocks

OG/1-OG/10

Basal applications: Manures: (13:13:20) at 1510 kg. Weedkillers: Linuron at 1.2 kg plus paraquat at 0.42 kg ion in 450 l. Fungicide: Mancozeb at 1.3 kg in 450 l on two occasions. Insecticide: Demeton-s-methyl at 0.25 kg with mancozeb on the first occasion.

Cultivations, etc.: Ploughed: 23 Nov, 1973. Spring-tine cultivated: 17 Apr, 1974. NPK applied: 24 Apr. Spiked rotary cultivated, potatoes machine planted: 29 Apr. Weedkiller applied: 21 May. Grubbed: 19 June. Rotary ridged: 21 June. Fungicide applied: 12 July, 2 Aug. Insecticide applied: 12 July. Haulm mechanically destroyed: 10 Sept. Sprayed with undiluted BOV at 220 l: 16 Sept. Lifted: 24 Oct. Previous crops: Barley 1972, spring beans 1973.

NOTE: Counts were made of plant and stem numbers after burning off and before lifting. Tubers were graded into 6 sizes and assessments made of Oospora, Rhizoctonia, Helminthosporium and Phoma infection.

Standard error per plot.

Total tubers: tonnes/hectare: 3.54 or 6.3% (71 d.f.)

74/R/P/3

TABLES OF MEANS

SEEDSRCE	TOTAL TUBERS: TONNES/HECTARE	PERCENTAGE WARE 4.44 CM (1.75 INCH) RIDDLE
Healthy	60.3	84.8
Healthy +	56.2	79.5
Cert/1	61.6	80.7
Cert/2	58.2	82.5
Cert/3	53.3	83.2
Cert/4	54.4	81.5
Cert/5	56.9	87.3
Cert/6	59.0	84.0
Cert/7	61.8	85.8
Cert/8	61.2	87.2
Cert/9	49.1	83.7
Cert/10	57.4	85.5
OG/1	56.4	85.3
OG/2	54.8	82.8
OG/3	50.8	84.8
OG/4	54.0	81.9
OG/5	58.0	82.8
OG/6	54.8	86.5
OG/7	53.5	83.2
OG/8	55.7	83.7
OG/9	53.1	83.4
OG/10	58.5	85.1
Mean	56.5	83.7
Mean Cert/1-Cert/10	57.3	84.1
Mean OG/1-OG/10	55.0	84.0

STANDARD ERRORS OF DIFFERENCES. TOTAL TUBERS

SEEDSRCE	
Healthy v Healthy +	1.77
Healthy or Healthy + v any of remainder	2.17
Between any of remainder	2.50
Mean CERT/1-Cert/10 v mean OG/1-OG/10	0.79

74/W/P/3

POTATOES

METHODS OF INCORPORATING NEMATOCIDE

Object: To study the effects of several methods of incorporating three rates of aldicarb into the soil on the incidence of *Heterodera rostochiensis* and yield of potatoes - Woburn Butt Close I.

Sponsors: A.G. Whitehead, R.H. Bromilow.

Design: 4 randomised blocks of 16 plots.

Whole plot dimensions: 2.84 x 11.4. **Area harvested:** 0.00163.

Treatments: All combinations of:

1. Rates of aldicarb (kg):	ALDICARB
2.25	2.25
4.50	4.50
9.00	9.00

2. Methods of incorporation of aldicarb (all applied just before planting):	METHOD
---	--------

Applied to surface and then cultivated by 'Roterra' (a rotary cultivator with blades revolving around a vertical axis) to 20 cm depth	S/RR
Half applied to surface and half to 5 cm depth*, then cultivated by 'Roterra' to 20 cm depth	SM/RR
One third applied to surface, one third to 5 cm depth*, one third to 10 cm depth* then cultivated by 'Roterra' to 20 cm depth	SMD/RR
Soil cultivated by 'Roterra' to 20 cm depth, then all aldicarb applied to surface, then rotary cultivated to 10 cm depth	RR/S/RV1
Soil cultivated by 'Roterra' to 20 cm depth, then all aldicarb applied to surface, then rotary cultivated to 20 cm depth	RR/S/RV2
together with one plot not treated with aldicarb, cultivated by 'Roterra' to 20 cm depth	ALDICARB
	0.00

* Applied with a specially made applicator.

Basal applications: Manures: (13:13:20) at 1940 kg. Weedkillers: Linuron at 1.2 kg plus paraquat at 0.28 kg ion in 280 l. Fungicide and insecticide: Mancozeb at 1.3 kg plus demeton-s-methyl at 0.25 kg in 450 l. Fungicide: Mancozeb at 1.3 kg in 450 l.

74/W/P/3

Seed: Pentland Crown.

Cultivations, etc.:-

Sub-soiled, tines 140 cm apart, 50 cm deep: 22 Sept, 1973. Ploughed: 14 Nov. NPK applied: 8 Apr, 1974. All plots cultivated by 'Roterra': 23 Apr. Treatments applied, potatoes planted: 24 Apr. Weedkiller applied: 17 May. Rotary ridged: 11 June. Fungicide with insecticide applied: 19 July. Fungicide applied: 7 Aug. Haulm mechanically destroyed: 16 Sept. Sprayed with undiluted BOV at 170 l: 18 Sept. Potatoes lifted: 1-14 Oct. Previous crops: Potatoes 1972, 1973.

NOTE: Soil samples were taken in spring, before treatments were applied and after harvest, for cyst and egg counts of *Heterodera rostochiensis*.

Standard error per plot.

Total tubers: tonnes/hectare: 3.98 or 6.8% (45 d.f.)

74/W/P/3

TABLES OF MEANS

METHOD

	S/RR	SM/RR	SMD/RR	RR/S/RV1	RR/S/RV2	Mean
TOTAL TUBERS: TONNES/HECTARE						
ALDICARB						
2.25	56.5	56.3	54.9	60.6	61.3	57.9
4.50	57.8	58.3	59.4	59.9	64.1	59.9
9.00	59.8	60.4	63.9	62.0	63.2	61.8
Mean	58.1	58.3	59.4	60.9	62.9	59.9
ALDICARB 0.00	30.3					

Grand mean 58.1

STANDARD ERRORS OF DIFFERENCES

ALDICARB	METHOD	ALDICARB METHOD & ALDICARB 0.00
1.26	1.62	2.81

PERCENTAGE WARE: 3.81 CM (1.5 INCH) RIDDLE

ALDICARB						
2.25	97.3	96.6	97.7	97.2	96.1	97.0
4.50	96.9	96.7	97.1	97.3	96.7	96.9
9.00	96.2	98.1	96.8	96.9	96.6	96.9
Mean	96.8	97.1	97.2	97.1	96.5	96.9
ALDICARB 0.00	95.6					

Grand mean 96.9

74/R/P/4

POTATOES

BLIGHT AND APHID REFERENCE PLOTS

Object: To study the separate and combined effects of sprays to control blight and aphids on potatoes - Pastures.

Sponsors: O.J. Stedman, R.W. Gibson.

Design: 4 randomised blocks of 7 plots split into 3.

Whole plot dimensions: 8.53 x 9.52. Sub plot area harvested: 0.00271.

Treatments: All combinations of:-

Whole plots: 1. Blight fungicide: FUNGICIDE

None None

Mancozeb applied on 2 occasions at
1.3 kg in 450 l: 23 July, 6 Aug Mancozeb

2. Aphicide: APHICIDE

None None

Demeton-s-methyl applied on 2
occasions, starting early, on
8 July and 6 Aug, at 0.25 kg
in 370 l DemetoEL

Demeton-s-methyl applied once on
6 Aug at 0.25 kg in 450 l DemetoL

Sub plots: 3. Varieties: VARIETY

King Edward	Edward
Majestic	Majestic
Pentland Crown	Crown

together with one extra treatment, sprayed mancozeb only and split for varieties as above, plot used for sampling (no yields recorded).

Basal applications: Manures: (13:13:20) at 1510 kg. Weedkillers:
Linuron at 1.2 kg with paraquat at 0.42 kg ion in 450 l.

74/R/P/4

Cultivations, etc.:— Ploughed: 23 Nov, 1973. Spring-tine cultivated: 17 Apr, 1974. NPK applied: 24 Apr. Spike rotary cultivated: 25 Apr. Seed planted: 26 Apr. Weedkiller applied: 21 May. Grubbed: 19 June. Rotary ridged: 21 June. Haulm mechanically destroyed: 10 Sept. Sprayed with undiluted BOV at 220 l: 16 Sept. Lifted: 25 Oct. Previous crops: Barley 1972, spring beans 1973.

- NOTES: (1) Aphids were counted fortnightly during June and July.
(2) Samples were taken for bulking and size distribution of tubers on 10, 18, 24 June, 8, 22 July, 5, 19 Aug, 2 and 16 Sept.
(3) Estimates were made of the percentage of haulm destroyed by blight and number of tubers affected by blight.

Standard errors per plot. Total tubers: tonnes/hectare.

Whole plot: 1.26 or 2.2% (15 d.f.)

Sub plot: 2.65 or 4.7% (36 d.f.)

74/R/P/4

TABLES OF MEANS

TOTAL TUBERS: TONNES/HECTARE

	None	APHICIDE DemetoEL	DemetoL	Edward	VARIETY Majestic	Crown	Mean
FUNGCIDE							
None	54.5	55.6	55.4	56.0	51.2	58.3	55.2
Mancozeb	58.1	58.4	55.5	56.2	53.4	62.4	57.3
			APHICIDE				
			None	56.4	51.8	60.8	56.3
			DemetoEL	56.5	53.5	61.0	57.0
			DemetoL	55.4	51.7	59.3	55.4
Mean				56.1	52.3	60.4	56.3
APHICIDE	None		DemetoEL		DemetoL		
VARIETY	Edward	Majestic	Crown	Edward	Majestic	Crown	

FUNGCIDE									
None	56.2	49.9	57.5	56.2	52.4	58.3	55.7	51.3	59.2
Mancozeb	56.6	53.6	64.0	56.9	54.5	63.7	55.0	52.1	59.4

STANDARD ERRORS OF DIFFERENCES

FUNGCIDE	APHICIDE	VARIETY	FUNGCIDE APHICIDE	FUNGCIDE VARIETY	APHICIDE VARIETY	FUNGCIDE APHICIDE VARIETY
0.52	0.63	0.77	0.89	1.02	1.25	1.77
Except when comparing means with same levels of						
FUNGCIDE				1.08		
APHICIDE					1.33	
FUNGCIDE.APHICIDE						1.87

74/R/P/4

PERCENTAGE WARE: 3.81 CM (1.5 INCH) RIDDLE

	None	APHICIDE			VARIETY				
		DemetoEL	DemetoL	Edward	Majestic	Crown	Mean		
FUNGICIDE									
None	95.8	95.6	95.8	94.2	94.8	98.3	95.8		
Mancozeb	95.0	95.1	95.5	93.3	94.2	98.1	95.2		
		APHICIDE							
			None	93.7	94.4	98.2	95.4		
			DemetoEL	93.9	94.0	98.2	95.4		
			DemetoL	93.7	95.1	98.2	95.7		
Mean				93.8	94.5	98.2	95.5		
APHICIDE	None		DemetoEL		DemetoL				
VARIETY	Edward	Majestic	Crown	Edward	Majestic	Crown			
FUNGICIDE									
None	94.6	94.5	98.4	94.2	94.3	98.4	93.8	95.5	98.1
Mancozeb	92.7	94.4	98.0	93.6	93.7	98.1	93.7	94.6	98.3

74/W/P/4

POTATOES

SOIL FUNGICIDES AND SCAB

Object: To compare the effects of 4-tertiary butylcatechol with the standard, quintozone, on yield and common scab of potatoes - Woburn Great Hill Bottom I.

Sponsor: A.H. McIntosh.

Design: 4 randomised blocks of 5 plots.

Whole plot dimensions: 2.84 x 6.10. Area harvested: 0.00087.

Treatments: Fungicides, applied to soil and rotary cultivated in just before planting:-

	FUNGICIDE
None	None
Quintozone as a dust at 78 kg	Qui D 78
4-tertiary butylcatechol applied:-	
As a spray, in 1400 l, at 39 kg	TBC S 39
As a spray, in 1400 l, at 78 kg	TBC S 78
As a dust at 78 kg.	TBC D 78

Basal applications: Manures: (13:13:20) at 1940 kg. Weedkiller: Linuron at 1.2 kg plus paraquat at 0.42 kg ion in 280 l. Fungicide with insecticide: Mancozeb at 1.3 kg plus demeton-s-methyl at 0.25 kg in 450 l. Fungicide: Mancozeb at 1.3 kg in 450 l.

Variety: Maris Piper.

Cultivations, etc.: Ploughed: 11-13 Dec, 1973. NPK applied: 8 Apr, 1974. Spring-tine cultivated: 9 Apr. Treatments applied, rotary cultivated, potatoes planted: 17 Apr. Weedkiller applied: 17 May. Fungicide with insecticide applied: 12 July. Fungicide applied: 6 Aug. Haulm mechanically destroyed: 10 Sept. Sprayed with undiluted BOV at 170 l: 18 Sept. Lifted: 1 Oct. Previous crops: Spring beans 1972, winter wheat 1973.

NOTE: Tuber samples were taken at harvest for assessment of scab.

Standard error per plot.

Total tubers: tonnes/hectare: 6.42 or 15.2% (12 d.f.)

74/W/P/4

TABLES OF MEANS

FUNGICIDE					
None	Qui D 78	TBC S 39	TBC S 78	TBC D 78	Mean

TOTAL TUBERS: TONNES/HECTARE					
43.6	47.3	41.0	41.2	37.4	42.1

STANDARD ERROR OF DIFFERENCES

FUNGICIDE

4.54

PERCENTAGE WARE: 3.81 CM (1.5 INCH) RIDDLE					
95.0	96.7	94.3	95.1	95.1	95.2

74/R/P/5

POTATOES

SPACING AND FERTILISER

Object: To study the effects of different spacings within and between rows and of fertiliser rates on yields and size grades of two potato varieties - Pastures.

Sponsors: G.A. Hide, J.R. Moffatt, F.V. Widdowson.

Design: 3 randomised blocks of 24 plots.

Whole plot dimensions: Narrow rows - 2.84 x 17.1, Wide rows - 3.66 x 17.1.
Area harvested: Narrow rows - 0.00243, Wide rows - 0.00312.

Treatments: All combinations of:-

1. Varieties:

King Edward
Pentland Crown

VARIETY

Edward
Crown

2. Compound fertiliser (13:13:20) kg:

1510
3020

FERT

1510
3020

3. Row spacing cm:

71 (28 inches)
91 (36 inches)

ROWSPACE

71
91

4. Number of plants per hectare:

37100 (by spacing seed at 38 cm on rows 71 cm
apart, 30 cm on rows 91 cm apart)
29700 (seed 48 cm on 71 cm rows, 38 cm on 91
cm rows)
22200 (seed 61 cm on 71 cm rows, 48 cm on 91
cm rows)

PLANT HA

37100
29700
22200

Basal applications: Weedkiller: Linuron at 1.2 kg plus paraquat at 0.42 kg
ion 450 l. Fungicide: Mancozeb at 1.3 kg in 450 l on two occasions.
Insecticide: Demeton-s-methyl at 0.25 kg with mancozeb on first occasion.

74/R/P/5

Cultivations, etc.:— Ploughed: 24 Nov, 1973. Spring-tine cultivated: 17 Apr, 1974. NPK applied: 29 Apr. Spike rotary cultivated: 30 Apr. Seed planted, narrow rows: 1 May, wide rows: 2 May. Reridged wide rows: 3 May. Weedkiller applied: 21 May. Fungicide and insecticide applied: 11 July. Fungicide applied: 2 Aug. Sprayed with undiluted BOV at 220 l: 16 Sept. Lifted: 28 Oct. Previous crops: Barley 1972, spring beans 1973.

NOTE: Counts were made of plant and stem numbers after burning off and before lifting. Tubers were graded into 6 sizes.

Standard error per plot.

Total tubers: tonnes/hectare: 3.78 or 5.6% (46 d.f.)

74/R/P/5

TABLES OF MEANS

TOTAL TUBERS: TONNES/HECTARE

	FERT		ROWSPACE		PLANT HA			Mean
	1510	3020	71	91	37100	29700	22200	
VARIETY								
Edward	62.6	65.4	68.6	59.4	64.2	64.8	63.0	64.0
Crown	68.8	72.5	76.6	64.8	73.3	71.2	67.6	70.7
	FERT							
	1510		70.1	61.3	67.0	66.8	63.3	65.7
	3020		75.0	62.9	70.4	69.1	67.3	68.9
			ROWSPACE					
				71	74.4	73.8	69.6	72.6
				91	63.1	62.1	61.1	62.1
Mean					68.7	68.0	65.3	67.3
	ROWSPACE		71		91			
	PLANT HA	37100	29700	22200	37100	29700	22200	
VARIETY	FERT							
Edward	1510	67.4	67.0	66.6	58.3	58.6	57.7	
Edward	3020	73.4	71.3	65.6	57.7	62.0	62.2	
Crown	1510	75.1	75.3	69.3	67.4	66.2	59.7	
Crown	3020	81.5	81.6	76.7	69.1	61.6	64.6	

74/R/P/5

TOTAL TUBERS: TONNES/HECTARE

STANDARD ERRORS OF DIFFERENCES

VARIETY	FERT	ROWSPACE	PLANT HA	VARIETY FERT	VARIETY ROWSPACE	VARIETY PLANT HA
0.89	0.89	0.89	1.09	1.26	1.26	1.54
FERT ROWSPACE	FERT PLANT HA	ROWSPACE PLANT HA	VARIETY FERT ROWSPACE PLANT HA			
1.26	1.54	1.54	3.09			

74/R/P/5

PERCENTAGE WARE: 4.44 CM (1.75 INCH) RIDDLE

	FERT		ROWSPACE		PLANT HA			Mean
	1510	3020	71	91	37100	29700	22200	
VARIETY								
Edward	84.1	86.9	84.7	86.3	83.8	85.3	87.5	85.5
Crown	97.3	97.3	97.4	97.2	97.0	97.3	97.7	97.3
		FERT						
		1510	90.1	91.3	89.6	90.5	92.0	90.7
		3020	92.0	92.2	91.2	92.0	93.2	92.1
			ROWSPACE					
			71		89.8	91.0	92.4	91.1
			91		90.9	91.6	92.8	91.8
Mean					90.4	91.3	92.6	91.4
	ROWSPACE	PLANT HA	37100	71	29700	22200	37100	91
VARIETY	FERT							
Edward	1510	79.4	83.4	85.6	84.8	84.7	86.9	
Edward	3020	85.7	85.8	88.4	85.1	87.2	88.9	
Crown	1510	97.0	97.3	97.9	97.1	96.8	97.6	
Crown	3020	97.1	97.4	97.7	96.6	97.6	97.6	