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

LANSIME 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
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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

HEALTH	FUNGICIDE				VARIETY				Mean
	None	Benomyl	Secbutyl	Thiabend	Edward	Majestic	Crown	Record	
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 FUNGICIDE	FS				VTSC			
	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 FUNGICIDE	FS				VTSC			
	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

LANSIME III (W)

TOTAL TUBERS: TONNES/HECTARE

	FUNGICIDE				VARIETY				Mean
	None	Benomyl	Secbutyl	Thiabend	Piper	Majestic	Crown	Record	
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 FUNGICIDE	FS				VTSC			
	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

	TOTAL TUBERS: TONNES/HECTARE	PERCENTAGE WARE 4.44 CM (1.75 INCH) RIDDLE
SEEDSRCE		
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 CERE/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

METHDD

	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	METHDD	ALDICARB METHDD & 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: FUNGCIDE

None None

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

2. Aphicide: APHCIDE

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		Edward	VARIETY		Mean
		DemetoEL	DemetoL		Majestic	Crown	
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

FUNGICIDE	APHICIDE			VARIETY			Mean		
	None	DemetoEL	DemetoL	Edward	Majestic	Crown			
None	95.8	95.8	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	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, quintozene, 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
Quintozene 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
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 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

VARIETY	FERT		ROWSPACE		PLANT HA			Mean
	1510	3020	71	91	37100	29700	22200	
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

VARIETY	FERT		ROWSPACE		PLANT HA			Mean
	1510	3020	71	91	37100	29700	22200	
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		71		91		
		PLANT HA	37100	29700	22200	37100	29700	22200
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	