

WAS 67

FIELD EXPERIMENTS 1967

POTATO WEED CONTROL EXPERIMENTS

EXPERIMENT: Cultivations and Herbicide Trial SITE: O.S. 151, Morley

SOIL TYPE: Sandy loam

TREATMENTS AND LAYOUT: Randomised block (2 x 4 factorial) with 3 replicates

1. Traditional Ridging

- A No herbicide, mechanical cultivations
- B Linuron 1.5 lb a.i. per acre
- C Paraquat 1.0 lb a.i. per acre
- D Linuron + paraquat 1.0 + 0.75 lb a.i. per acre

2. Rotary Ridging

- E No herbicide
- F As B
- G As C
- H As D

MAJOR INDIGENOUS WEED SPECIES: Veronica persica, V. hederifolia, Polygonum aviculare, P. convolvulus, Stellaria media, Capsella bursa-pastoris, Senecio vulgaris

PLOT SIZE: Treatment: Six 30" rows x 44 yards

Harvest: Two 30" rows x 15 yards

MANURING OF EXPERIMENTAL CROP: 12 tons per acre F.Y.M.
9 owt per acre 13 : 13 : 20 giving 117 : 117 : 180

PREVIOUS CROPPING: 1965 - barley
1966 - sugar beet

CULTIVATIONS: Post-planting for weed control on appropriate plots. Three times with rigid tined cultivator on traditional ridges and rotary ridger on rotary produced ridges.

DRILLING: Date: 31st March
Seed: King Edward (once grown)
Seed spacing: -
Drill: -

SPRAYING:

Date: 11th May

Soil condition (previous weather): Dry seedbed

Weather conditions during spraying: Hot with very slight breeze along plots.
Clear sky and low humidity

Equipment and method adopted: Farm Sprayer - Allman No. 4 nozzles 80 p.s.i.
50 g.p.a.

Order of spraying: B + F, D + H, C + G

Chemicals:

Linuron 50 - 50% w/w Linuron

Gramoxone W - 20% w/v paraquat

State of weeds: Veronica spp. - 2 true leaves; Polygonum spp. - cot. to 1 true leaf; S. media and C. bursa-pastoris - 2 to 6 true leaves; S. vulgaris - 2 to 4 true leaves

State of ~~weeds~~
potatoes: Just beginning to damage (0 - 5%)

CONDITIONS AFTER SPRAYING:

Week	1	2	3	4	Total
Rainfall (inches)	0.83	0.68	0.39	0.00	1.90

WEED ~~Microplot~~ COUNTS:

Date: 11th May (pre-spraying) and 6th July

Method: Twelve 4" x 18" quadrats per plot

HARVEST: Date: 18th October

~~Harvested on 30th October~~ Riddled: 30th October

GENERAL OBSERVATIONS:

Satisfactory weed control by all treatments except paraquat alone where, even though many weeds were emerged at spraying, re-population occurred and presented severe competition to the crop.

POTATO CULTIVATIONS AND HERBICIDES TRIAL - MORLEY

Seedling counts and visual assessments before and after herbicide applications on 11th May

TREATMENTS	PRE-SPRAYING					POST-SPRAYING										
	11th May					31st May					6th July					
	Veron- ica spp. per sq.yd.	Poly- gonum spp. per sq.yd.	Stell- aria media per sq.yd.	Other annual weeds per sq.yd.	Total annual weeds per sq.yd.	Visual (0 = maximum effect or complete kill, 10 = no effect or healthy)					Veron- ica spp. per sq.yd.	Poly- gonum spp. per sq.yd.	Stell- aria media per sq.yd.	Other annual weeds per sq.yd.	Total annual weeds per sq.yd.	
					Weed vigour	Crop vigour	Crop leaf chlorosis	Weed vigour	Crop vigour							
Traditional Ridging																
A No herbicide, mechanical weeding	10	6	5	15	33	5.0	9.0	9.7	1.0	8.0	7	3	2	6	16	
B Linuron 1.5	37	21	22	26	105	1.0	6.3	8.7	1.0	8.7	8	2	0	3	12	
C Paraquat 1.0	25	38	10	28	100	6.0	7.3	10.0	9.0	6.7	68	21	4	5	97	
D Linuron + paraquat 1.0 + 0.75	23	15	15	27	79	0.7	7.3	9.0	1.0	9.0	24	4	0	1	29	
Rotary Ridging																
E No herbicide, mechanical weeding	34	28	22	25	113	5.7	7.7	9.3	3.0	7.3	9	15	1	7	29	
F Linuron 1.5	18	9	14	18	59	0.7	6.3	9.0	1.0	8.3	9	1	0	1	11	
G Paraquat 1.0	25	19	18	15	77	5.7	7.3	10.0	9.3	6.3	89	24	4	6	122	
H Linuron + paraquat 1.0 + 0.75	14	16	16	21	66	1.0	7.0	8.7	1.0	8.0	7	2	0	2	10	

POTATO CULTIVATIONS AND HERBICIDES TRIAL - MORLEYHarvested on 18th October, 1967Total Yield (tons per acre)

RIDGING SYSTEM	WEED CONTROL				MEANS
	Mechanical (no herbicide)	Linuron	Paraquat	Linuron + paraquat	
Traditional	9.41	9.19	5.30	8.97	8.22
Rotary	7.50	10.77	5.12	10.62	8.50
		(± 0.683)			(± 0.541)
MEANS	8.46	9.98	5.21	9.80	
		(± 0.483)			
S.E. as % G.M.		14.14			

Yield of Ware (i.e. over 1 $\frac{1}{2}$ inches) (tons per acre)

Traditional	7.40	6.93	3.58	6.57	6.12
Rotary	5.47	7.71	3.45	8.15	6.20
		(± 0.574)			(± 0.287)
MEANS	6.44	7.32	3.51	7.36	
		(± 0.406)			
S.E. as % G.M.		16.14			

Proportion of Ware in Total Yield (%)

Traditional	78.7	75.1	67.8	72.9	73.6
Rotary	72.7	71.0	67.1	76.7	71.9
		(± 2.21)			(± 1.10)
MEANS	75.7	73.1	67.4	74.8	
		(± 1.56)			
S.E. AS % G.M.		5.26			

POTATO CULTIVATIONS AND HERBICIDES TRIAL - MORLEYHarvested on 18th October, 1967Yield over 2 inches (tons per acre)

RIDGING SYSTEM	WEED CONTROL				MEANS
	Mechanical (no herbicide)	Linuron	Paraquat	Linuron + paraquat	
Traditional	3.94	3.68	1.42	3.10	3.04
Rotary	2.78	3.56	1.04	4.22	2.85
		(\pm 0.500)			(\pm 0.150)
MEANS	3.36	3.52	1.23	3.66	
		(\pm 0.212)			
S.E. as % G.M.		17.68			

Proportion of Yield over 2 inches in Total Yield (%)

Traditional	41.9	40.0	27.1	34.0	35.8
Rotary	36.2	30.5	20.5	39.7	31.7
		(\pm 1.87)			(\pm 0.93)
MEANS	39.1	35.2	23.8	36.9	
		(\pm 1.32)			
S.E. as % G.M.		9.58			

Yield 1 $\frac{1}{2}$ - 2 inches (tons per acre)

Traditional	3.46	3.25	2.16	3.46	3.08
Rotary	2.69	4.36	2.41	3.93	3.55
		(\pm 0.370)			(\pm 0.185)
MEANS	3.08	3.80	2.28	3.69	
		(\pm 0.261)			
S.E. as % G.M.		19.91			

POTATO CULTIVATIONS AND HERBICIDES TRIAL - MORLEY

Harvested on 18th October, 1967

Proportion of Yield 1 $\frac{1}{2}$ - 2 inches in Total Yield (%)

RIDGING SYSTEM	WEED CONTROL				MEANS
	Mechanical (no herbicide)	Linuron	Paraquat	Linuron + paraquat	
Traditional	36.7	35.2	40.7	38.9	37.8
Rotary	36.4	40.5	46.6	36.9	40.1
		(± 2.67)			(± 1.54)
MEANS	36.6	37.8	43.6	37.9	
		(± 1.89)			
S.E. as % G.M.		11.87			

Proportion of Green Tubers over 2 inches (%)

Traditional	0.2	1.0	0.7	0.4	0.5
Rotary	1.8	0.6	0.0	0.3	0.7
		(± 0.50)			(± 0.25)
MEANS	1.0	0.8	0.3	0.4	
		(± 0.35)			
S.E. as % G.M.		142.75			

Proportion of Green Tubers 1 $\frac{1}{2}$ - 2 inches (%)

Traditional	0.2	1.8	0.0	0.7	0.7
Rotary	1.3	2.4	0.0	0.9	1.2
		(± 0.31)			(± 0.16)
MEANS	0.8	2.1	0.0	0.8	
		(± 0.22)			
S.E. as % G.M.		58.27			

POTATO CULTIVATIONS AND HERBICIDES TRIAL - MORLEY

Harvested on 18th October, 1967

Proportion of Diseased Tubers over 2 inches (%)

RIDGING SYSTEM	WEED CONTROL				MEANS
	Mechanical (no herbicide)	Linuron	Paraquat	Linuron + paraquat	
Traditional	2.1	1.5	1.9	1.9	1.8
Rotary	2.1	2.1	5.9	1.7	2.9
		(+ 1.57)			(+ 0.78)
MEANS	2.1	1.8	3.9	1.8	
		(+ 1.11)			
S.E. as % G.M.		113.50			

Proportion of Diseased Tubers 1½ - 2 inches (%)

Traditional	0.7	1.0	1.4	1.1	1.0
Rotary	1.2	0.9	1.9	0.8	1.2
		(+ 0.59)			(+ 0.30)
MEANS	0.9	0.9	1.6	0.9	
		(+ 0.42)			
S.E. as % G.M.		91.91			

Proportion of Green Tubers in Ware Yield (%)

Traditional	0.2	1.5	0.2	0.6	0.6
Rotary	1.5	1.5	0.0	0.6	0.9
		(+ 0.29)			(+ 0.15)
MEANS	0.8	1.4	0.1	0.6	
		(+ 0.21)			
S.E. as % G.M.		68.81			

POTATO CULTIVATIONS AND HERBICIDES TRIAL - MORLEYHarvested on 18th October, 1967Proportion of Diseased Tubers in Ware Yield (%)

RIDGING SYSTEM	WEED CONTROL				MEANS
	Mechanical (no herbicide)	Linuron	Paraquat	Linuron + paraquat	
Traditional	1.2	1.2	1.6	1.4	1.4
Rotary	1.6	1.5 (± 0.72)	3.1	1.2	1.8 (± 0.36)
MEANS	1.4	1.3 (± 0.51)	2.4	1.3	
S.E. as % G.M.		77.64			

Proportion of Green and Diseased Tubers in Ware Yield (%)

Traditional	1.4	2.6	1.8	2.0	2.0
Rotary	3.1	3.0 (± 0.70)	3.1	1.8	2.8 (± 0.35)
MEANS	2.3	2.8 (± 0.50)	2.5	1.9	
S.E. as % G.M.		51.51			

Marketable Ware Yield (tons per acre)

Traditional	7.30	6.76	3.51	6.45	6.00
Rotary	5.31	7.48 (± 0.563)	3.35	8.00	6.03 (± 0.282)
MEANS	6.30	7.12 (± 0.398)	3.43	7.22	
S.E. as % G.M.		16.22			