

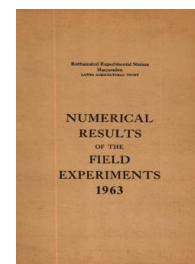
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63/R/CW/B/10 Weedkiller-cultivation Rotation

Rothamsted Research

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63/B/10.1

CULTIVATION - WEEDKILLER ROTATION

(CW)

Great Harpenden I 1963, the third year

A comparison of weed control by various cultivation methods and by pre-emergence weedkillers.

For previous history, rotation treatments etc., see 'Numerical Results of the Field Experiments' 61/B/10 and 62/B/10.

Area harvested (acres): Winter beans - 0.0201. Spring wheat, potatoes, barley - 0.0107.

The weedkiller used on potatoes is now a mixture of 2 lb prometryne and 0.75 lb paraquat in 40 gallons per acre. X and Y treatments for potatoes were identical.

Basal dressings per acre: Spring wheat and barley: 2.5 cwt compound fertiliser, 20% N, 10% P₂O₅, 10% K₂O. Potatoes and beans, as 1961.

Operations in 1963

Note: Spring wheat was again sown instead of winter wheat.

Cultivations, etc.:

Winter beans: R plots rotary cultivated, T plots rigid-tine cultivated 3 times: Oct 22, 1962. R plots rotary cultivated second time: Oct 23. P and reserve plots ploughed: Oct 25. T, P and reserve plots spring-tine cultivated twice: Oct 29, Nov 30. Seed drilled at 275 lb per acre, all plots spring-tine cultivated: Dec 1. X and Y* plots sprayed with simazine: Dec 19. Y* plots sprayed with simazine: Apr 19, 1963. M and reserve plots tractor hoed twice: May 21, May 29. All plots sprayed with menazon at 5.6 fluid oz in 40 gallons per acre: June 22. Combine harvested: Oct 5. Variety: Pedigree.

Spring wheat: Sprayed with dalapon at 7.4 lb in 40 gallons per acre: Oct 20, 1962 and again at 3.7 lb in 40 gallons per acre: Oct 30. T plots rigid-tine cultivated twice, P and reserve plots ploughed: Apr 3, 1963. T, P and reserve plots spring-tine cultivated: Apr 18. R plots rotary cultivated, T, P and reserve plots spring-tine harrowed, seed drilled at 3 bushels per acre: Apr 19. Rolled: May 8. H sub plots and reserve plots sprayed with methoxychloro-benzoic acid/MCPA (MBA/MCPA) at 4 pints in 40 gallons per acre: June 6. Combine harvested: Sept 19. Variety: Jufy I.

Potatoes: R plots rotary cultivated, T plots rigid-tine cultivated twice: Oct 22, 1962. P and reserve plots ploughed: Oct 25. T, P and reserve plots spring-tine cultivated: Apr 25, 1963. R plots

* half-rate

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rotary cultivated: Apr 27. Basal compound fertiliser applied: Apr 30. T, P and reserve plots spring-tine cultivated, seed machine planted: May 3. Rolled: May 6. X and Y plots sprayed with prometryne at 2 lb plus paraquat at 0.75 lb in 40 gallons per acre, M plots chain harrowed: May 31. M and reserve plots grubbed: June 7. M and reserve plots mechanically weeded and grubbed: June 17. Reserve plots earthed up: June 26. M and ME sub-plots earthed up (round and pointed ridges), E sub-plots of X and Y plots grubbed twice and earthed up: June 28. Sprayed with maneb at 1.2 lb in 20 gallons per acre: July 19. Sprayed with copper oxychloride fungicide at 2.3 lb Cu in 20 gallons per acre: Sept 4. Sprayed with undiluted BOV at 16 gallons per acre: Sept 13. Lifted: Oct 23. Variety: Majestic.

Barley: All plots spring-tine cultivated twice: Nov 27, 1962, Mar 27, 1963. T plots rigid-tine cultivated: Apr 3. P and reserve plots ploughed: Apr 4. All plots except R plots disc-harrowed: Apr 11. R plots rotary cultivated, P and reserve plots spring-tine cultivated: Apr 19. T, P and reserve plots spring-tine harrowed, seed drilled at 2 bushels per acre: Apr 20. Rolled: May 8. H sub-plots and reserve plots sprayed with methoxychloro-benzoic acid/MCPA (MBA/MCPA) at 4 pints in 40 gallons per acre: June 6. Combine harvested: Sept 7. Variety: Proctor.

Standard errors per plot:

Winter beans, grain (at 85% dry matter): 3.63 cwt per acre or 10.9% (9 d.f.)

Spring wheat, grain (at 85% dry matter):

Whole plot: 2.42 cwt per acre or 6.6% (15 d.f.)

Sub plot: 2.00 cwt per are or 5.4% (18 d.f.)

Potatoes, total tubers:

Whole plot: 0.752 tons per acre or 5.5% (15 d.f.)

Sub plot: 0.456 tons per acre or 3.3% (18 d.f.)

Barley, grain (at 85% dry matter):

Whole plot: 1.91 cwt per acre or 4.5% (12 d.f.)

Sub plot: 3.28 cwt per acre or 7.8% (15 d.f.)

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Summary of Results

Beans, grain (at 85% dry matter): cwt per acre

Treatment after planting	Initial cultivation			Mean
	P	R	T	
		(±2.57)		(±1.48)
M	39.1	27.5	31.5	32.7
X	33.8	33.9	29.7	32.4
Y	33.0	32.5	34.8	33.4
Mean (±1.48)	35.3	31.3	32.0	32.8

Reserve plots: 36.5 (±1.82)

General mean: 33.5

Mean dry matter % as harvested: 68.2

Spring wheat, grain (at 85% dry matter): cwt per acre

	Initial cultivation			Mean
	P	R	T	
Mean (±0.99)	36.3	36.7	35.6	36.2
<u>Treatment in 1962</u>				
M (±1.71)	35.4	36.4	36.4	36.1 (±0.99)
X (±1.21)	36.8	36.8	35.2	36.2 (±0.70)
<u>Spray in 1963</u>		(±1.14)*		
-	37.5	36.3	35.4	36.4
H	35.2	37.1	35.7	36.0
Diff (±1.15)	-2.3	+0.8	+0.3	-0.4 (±0.67)

Reserve plots: 38.8 (±0.99)

General mean: 36.8

Mean dry matter % as harvested: 79.0

* For use in horizontal and diagonal comparisons only

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Potatoes

Treatment after planting	Initial cultivation			Mean	Not earthed up	Earthed up
	P	R	T			
<u>Total tubers: tons per acre</u>						
					(±0.186)(1)	(±0.293)(2)
M (±0.532)	14.58	13.37	13.88	13.94 (±0.307)	13.90	13.98
X (±0.376)	13.40	13.90	13.84	13.70 (±0.217)	13.48	13.94
					(±0.132)(1)	(±0.262)(2)
Mean (±0.307)	13.79	13.72	13.85	13.79		
Reserve plots:	13.77 (±0.307)					
General mean:	13.78					

Percentage ware (1.5 inch riddle)

M	94.8	95.6	95.8	95.4	95.1	95.7
X	95.0	94.8	95.2	95.0	94.7	95.2
Mean	94.9	95.1	95.4	95.1		

Reserve plots: 95.9
General mean: 95.3

- (1) For use in vertical and interaction comparisons
(2) For use in horizontal and diagonal comparisons

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Barley, grain (at 85% dry matter): cwt per acre

	Initial cultivation			Mean
	P	R	T	
Mean (± 0.78)	42.9	39.8	41.9	41.5
<u>Treatment in 1962</u>		(± 1.35)		(± 0.78)
M	42.8	39.2	43.6	41.8
X	41.4	40.8	41.6	41.2
Y	44.6	39.4	40.5	41.5
<u>Spray in 1963</u>		(± 1.22)*		
-	42.8	40.7	40.2	41.2
H	43.0	38.8	43.6	41.8
Diff (± 1.89)	+0.2	-1.9	+3.4	+0.6 (± 1.09)

Reserve plots: 44.0 (± 0.78)

General mean: 42.1

Mean dry matter % as harvested: 71.8

* For use in horizontal and diagonal comparisons