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60/R/B/11 and 60/W/B/11 Triazine Weedkiller Rotations

Rothamsted Research

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60/B/11.1

TRIAZINE WEEDKILLER ROTATIONS

The direct and residual effects of triazine weedkillers - Rothamsted (R)
Great Knott II and Woburn (W) Great Hill I and II 1960.

Owing to the unsuitability of the Rothamsted site this experiment is
discontinued. The Woburn experiment will be continued in 1961
in an altered form.

Rotations: Great Knott II (R): Winter beans, winter wheat, potatoes,
barley.
Great Hill I and II (W): Potatoes, barley.

Design (each field): 2 randomised blocks of 9 plots each per crop.

Area of each plot (acres):	Area harvested (acres):
Great Knott II (R): 0.0636	Winter beans - 0.0139, winter wheat - 0.0150, potatoes - 0.0035, barley - 0.0139.
Great Hill I and II (W): 0.0482	Potatoes - 0.0107, barley - 0.0115.

Treatments.

Great Knott II (R): All plots were ploughed and received normal
cultivations before planting. The potato plots were also rotary
cultivated. Cultivations described below were carried out
after planting.

To potatoes and beans:

No cultivations	(0)
Normal weed control cultivations	(N)
No cultivations, 1 lb simazine ⁺	(1)
No cultivations, 2 lb simazine ⁺	(2)

To potatoes only:

2 lb simazine ⁺ , then potatoes grubbed and earthed up	(2E)
Potatoes grubbed and earthed up and later 2 lb simazine ⁺ applied before crop emergence	(2L)

To beans only:

Normal weed control cultivations, 1 lb simazine ⁺ in autumn and 1 lb simazine ⁺ in spring	(2D)
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The barley and wheat plots were split* for 0 v. hormone spray
for weed control.

Great Hill I and II (W):

To potatoes only:

As above (excluding treatment 2D) except that the plots were
not rotary cultivated.

The barley plots were split* for 0 v. hormone spray for weed
control.

*1 plot per block was not split, but received hormone spray only.
It was intended that it should be followed by a "No weed control"
treatment. The yields from these plots are not presented.

⁺In 40 gallons per acre

60/B/11.2

Note: 2 plots for each of treatments 1, 2, N, 2D were included in each block to accommodate a comparison between ploughing and no ploughing in later seasons.

Basal dressings per acre:

Great Knott II (R):

Beans: $4\frac{1}{2}$ cwt compound fertiliser (12% P_2O_5 , 24% K_2O) placement drilled.

Wheat: $2\frac{1}{2}$ cwt compound fertiliser (6% N, 15% P_2O_5 , 15% K_2O) combine drilled: $3\frac{1}{2}$ cwt sulphate of ammonia top dressed.

Potatoes: 10 tons dung: 8 cwt compound fertiliser (10% N, 10% P_2O_5 , 18% K_2O).

Barley: $3\frac{1}{2}$ cwt compound fertiliser (16% N, 9% P_2O_5 , 9% K_2O) combine drilled.

Great Hill I and II (W):

Potatoes: 14 tons dung: 12 cwt compound fertiliser (10% N, 10% P_2O_5 , 18% K_2O).

Barley: 4 cwt compound fertiliser (16% N, 9% P_2O_5 , 9% K_2O) combine drilled.

Cultivations, etc.:

Great Knott II (R):

Beans: Ground chalk applied at 2 tons per acre: Oct 1, 1959.

Ploughed: Oct 3. Seed placement drilled at 275 lb per acre with basal fertiliser: Oct 16. Simazine applied to appropriate plots: Oct 30 and Mar 22, 1960. Treatment N harrowed: Apr 4. Treatment N horse-hoed: Apr 12, Apr 29, May 2. Combine harvested: Aug 20. Variety S.Q. The crop was poor and on one block certain plots were discarded.

Wheat: Ground chalk applied at 2 tons per acre: Oct 1, 1959.

Ploughed: Oct 3. Seed combine drilled at $2\frac{3}{4}$ bushels per acre with basal fertiliser: Oct 16. Top dressed with sulphate of ammonia: Apr 14, 1960. Appropriate sub plots sprayed with CMPP at 6 pints in 40 gallons per acre: Apr 22. Combine harvested: Aug 30. Variety: Cappelle.

Potatoes: Ploughed: Oct 3, 1959. Dung applied: Jan 15 - Feb 9, 1960. Ploughed 2nd time: Feb 10. Basal fertiliser applied:

Mar 28. Rotary cultivated: Apr 14. Potatoes planted: Apr 19. Simazine applied (excluding treatment 2L): Apr 30. Treatments N and 2L tractor weeded: May 16 and May 25.

Treatments N and 2L grubbed: May 26. Treatment 2L earthed up and sprayed with simazine: May 27. Treatments N and 2E grubbed: June 17. Treatments N and 2E earthed up: June 20. Sprayed with copper fungicide at 5 lb in 40 gallons per acre: July 16 and Aug 10. Sprayed with undiluted BOV at 15 gallons per acre: Aug 31. Haulm destroyed mechanically: Sept 22. Lifted: Nov 30. Variety: Ulster Supreme.

* Hand dug. Harvested area much reduced owing to wet condition.

60/B/11.3

Barley: Ploughed: Oct 3, 1959. Seed combine drilled at 2 bushels per acre with basal fertiliser: Mar 7, 1960. Appropriate sub plots sprayed with TCB/MCPA at 4 pints in 40 gallons per acre: May 10. Combine harvested: Aug 16. Variety: Proctor. Previous crop (whole area): Spring wheat Great Hill I and II (W):

Potatoes: Dung applied at 14 tons per acre; ploughed: Feb 24, 1960. Basal fertiliser applied: Apr 19. Potatoes planted: Apr 20. Simazine applied (excluding 2L plots): May 2. Treatments N, 2L tractor weeded: May 7. Treatment 2L grubbed and earthed up and simazine applied: May 23. Treatment N tractor weeded: May 31. Treatment N grubbed: June 14. Treatment 2E grubbed, treatments N, 2E earthed up: June 18. Sprayed with zineb at 2 lb in 40 gallons per acre: July 15. Sprayed with copper fungicide at 5 lb in 40 gallons: July 26. Sprayed with undiluted BOV at 15 gallons per acre: Sept 8. Haulm destroyed mechanically: Sept 15. Lifted: Sept 26. Variety: Ulster Supreme. Previous crop: Barley

Barley: Ploughed: Jan 4 - 5, 1960. Seed combine drilled at $2\frac{1}{4}$ bushels per acre with basal fertiliser: Mar 25. Appropriate sub plots sprayed with TCB/MCPA at 4 pints in 40 gallons per acre: May 7. Combine harvested: Aug 22. Variety: Proctor. Previous crop: Potatoes.

Standard errors per plot.

Great Knott II (R).

Winter wheat, grain (at 85% dry matter): 3.23 cwt per acre or 8.3% (13 d.f.)

Potatoes, total tubers: 0.615 tons per acre or 5.3% (11 d.f.)

Barley, grain (at 85% dry matter): 0.87 cwt per acre or 2.5% (15 d.f.)

Great Hill I and II (W).

Potatoes, total tubers: 2.142 tons per acre or 10.0% (11 d.f.)

Barley, grain (at 85% dry matter): 1.33 cwt per acre or 6.0% (15 d.f.)

60/B/11.4

Summary of Results

Winter beans Great Knott II (R)

0	Treatment				Mean
	N	1	2	2D	
<u>Grain (at 85% dry matter): cwt per acre</u>					
24.4	26.8	28.1	23.0	25.2	25.6

Mean dry matter % as harvested: 79.1

Winter wheat Great Knott II (R)

Hormone		Mean	Difference
None	Sprayed		
<u>Grain (at 85% dry matter): cwt per acre</u>			
38.8	39.3	39.0	+0.5(±1.22)

Mean dry matter % as harvested: 79.7

Potatoes

	Treatment						Mean
	0	N	1	2	2E	2L	
<u>Total tubers: tons per acre Great Knott II (R)</u>							
Mean	8.71 (±0.435)	14.16	9.86 (±0.307)	11.86	11.84 (±0.435)	12.14	11.61
Increase		+5.45	+1.15 (±0.533)	+3.15	+3.13 (±0.615)	+3.43	

Total tubers: tons per acre Great Hill I and II (W)

Mean	21.61 (±1.514)	24.24	19.56 (±1.071)	21.01	22.38 (±1.514)	19.15	21.42
Increase		+2.63	-2.05 (±1.906)	-0.60	+0.77 (±2.201)	-2.46	

60/B/11.5

Potatoes

	Treatment						Mean
	0	N	1	2	2E	2L	
<u>Percentage ware (1$\frac{1}{2}$" riddle) Great Knott II (R)</u>							
Mean	96.0	97.8	96.4	97.0	96.8	98.0	97.0
Increase		+1.8	+0.4	+1.0	+0.8	+2.0	

<u>Percentage ware (1$\frac{3}{8}$" riddle) Great Hill I and II (W)</u>							
Mean	99.5	99.4	99.4	99.6	99.6	99.1	99.4
Increase		-0.1	-0.1	+0.1	+0.1	-0.4	

Barley

Grain (at 85% dry matter): cwt per acre

None	Hormone		Mean	Difference
	Sprayed			
<u>Great Knott II (R)</u>				
34.8	33.9		34.3	-0.9 (± 0.31)
<u>Great Hill I and II (W)</u>				
21.9	22.6		22.3	+0.7 (± 0.47)

Mean dry matter % as harvested: Great Knott II (R) 81.2
 Great Hill I and II (W) 79.0