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71/R/RN/8 Cultivation/WEEDKILLER - Beans, S. Wheat, Potatoes, Barley

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71/R/RN/8

CULTIVATION/WEEDKILLER

Object: To determine the long-term effects of weedkillers and different methods of primary cultivation on a rotation of crops - Great Harpenden I.

The 11th year, beans, wheat, potatoes, barley.

For previous years see 'Details' 1967, 68/B/6(t), 69/R/RN/8(t) and 70/R/RN/8.

Paraquat, at 1.68 kg ion in 225 l, was applied to all bean stubble (and not, as hitherto, to half plots) in September 1970 for spring wheat 1971.

Beans tested dinoseb acetate, at 2.80 kg in 425 l, on SY plots and simazine, at 1.12 kg in 225 l, on SX, A, B and C plots.

Whole plot dimensions: 12.8 x 15.2. Area harvested: Beans - 0.00487, Wheat, potatoes and barley - 0.00434.

Cultivations, etc.:-

Spring beans: Barley straw burnt on B plots: 29 Aug, 1970.

Paraquat applied to B plots and to G sub plots: 11 Sept.

T and B plots deep-tine cultivated once: 30 Oct. T plots

deep-tine cultivated second time: 4 Nov. R plots rotary

cultivated, P and C plots ploughed: 5 Nov. P, R, T, B and

C plots power-harrowed, A plots rotary cultivated, all plots

placement drilled at 224 kg: 26 Feb, 1971. Simazine applied to

SX, A, B and C plots: 10 Mar. M plots tractor hoed: 30 Apr.

Dinoseb acetate applied to SY plots: 4 May. Sprayed with

demeton-s-methyl at 245 g in 438 l: 1 July. Combine harvested:

3 Sept. Variety: Maris Bead.

Spring wheat: Bean straw raked off B plots (insufficient to burn):

7 Sept, 1970. Paraquat applied to all plots: 11 Sept. All plots

disced twice: 23 Sept. All plots disced: 12 Oct. B plots deep-

tine cultivated: 30 Oct. T plots deep-tine cultivated twice:

4 Nov. R plots rotary cultivated, P and C plots ploughed:

5 Nov. P, R, T, B and C plots power-harrowed, A plots rotary

cultivated: 31 Mar, 1971. Seed combine drilled at 190 kg: 2 Apr.

H sub plots and B and C plots sprayed with ioxynil at 0.84 kg and

mecoprop at 2.52 kg in 225 l: 12 May. Combine harvested: 1 Sept.

Variety: Kolibri.

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Potatoes: Wheat straw burnt on B plots: 29 Aug. Paraquat applied to B plots and G sub plots: 11 Sept. T plots deep-tine cultivated: 30 Oct, and 4 Nov. R plots rotary cultivated: 5 Nov. P and C plots ploughed: 6 Nov. Basal NPK applied: 6 Apr, 1971. P and T plots power-harrowed, R, A, B and C plots rotary cultivated, potatoes machine planted: 8 Apr. All ridges rolled: 14 Apr. M plots chain harrowed: 30 Apr. M plots grubbed: 4 May. S plots sprayed: 8 May. M plots mechanically weeded: 12 May. M and Y plots grubbed: 3 June. M and Y plots rotary ridged: 4 June. All plots sprayed with mancozeb at 1.35 kg in 438 l: 23 June. Sprayed twice with mancozeb at 1.35 kg in 438 l: 14 Aug and 16 Aug (heavy rain followed the application on 14 Aug). Haulm destroyed mechanically: 9 Sept. Sprayed with undiluted BOV at 169 l: 13 Sept. Lifted: 20 Sept. Variety: Pentland Crown.

Barley: T plots deep-tine cultivated: 30 Oct, 1970. T plots deep-tine cultivated once, C plots twice: 4 Nov. R plots rotary cultivated, B plots spring-tine cultivated, P plots ploughed: 5 Nov. P, R, T, B and C plots power-harrowed, A plots rotary cultivated twice, seed combine drilled at 157 kg: 26 Feb, 1971. H sub plots and B and C plots sprayed with ioxynil at 0.84 kg and mecoprop at 2.52 kg in 225 l: 4 May. Combine harvested: 11 Aug. Variety: Julia.

NOTE: Docks were hand pulled on wheat, coltsfoot on wheat and beans and thistles on all crops. Weed counts were taken.

Standard errors per plot.

Spring beans: Grain, tonnes/hectare:	Whole plot: 0.488 or 24.2% (8 d.f.)
	Sub plot: 0.158 or 7.8% (9 d.f.)
Spring wheat: Grain, tonnes/hectare:	Whole plot: 0.366 or 8.9% (8 d.f.)
	Sub plot: 0.116 or 2.8% (9 d.f.)
Potatoes: Total tubers, tonnes/hectare:	
	Whole plot: 4.71 or 12.6% (8 d.f.)
	Sub plot: 4.71 or 12.6% (9 d.f.)
Barley: Grain, tonnes/hectare:	Whole plot: 0.155 or 2.6% (8 d.f.)
	Sub plot: 0.229 or 3.9% (9 d.f.)

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SUMMARY OF RESULTS

SPRING BEANS

GRAIN: TONNES/HECTARE

	P	R	T	Mean	
Mean (0.141)	2.18	1.97	1.90	2.02	
		(±0.244)		(±0.141)	
M	2.39	2.13	1.89	2.14	
SX	2.23	1.85	1.85	1.98	
SY	1.92	1.92	1.95	1.93	
		(1) and (2)		(±0.037)	
D	2.09	1.94	1.83	1.95	
G	2.27	2.00	1.96	2.08	
	A	AG	BG	C	CG
	2.30	2.24	1.77	2.04	2.34

General mean: 2.03

Mean D.M. %: 81.3

- (1) (±0.065) For use in horizontal and diagonal comparisons only
 (2) (±0.148) For use in vertical and interaction comparisons only

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SPRING WHEAT

GRAIN: TONNES/HECTARE

	P	R	T	Mean
Mean (± 0.106)	4.18	4.15	4.04	4.12
1970				
M (± 0.183)	4.28	4.16	3.85	4.09 (± 0.106)
S* (± 0.129)	4.13	4.14	4.14	4.14 (± 0.074)
1971		(1) and (2)		(± 0.027)
D	4.21	4.08	3.98	4.09
H	4.15	4.21	4.10	4.15
	A	AH	BH	CH
	3.85	3.99	4.20	4.15

General mean: 4.11

* Duplicated level

Mean D.M. %: 80.9

- (1) (± 0.047) For use in horizontal and diagonal comparisons only
 (2) (± 0.111) For use in vertical and interaction comparisons only

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POTATOES

TOTAL TUBERS: TONNES/HECTARE

	P	R	T	Mean	
Mean (± 1.36)	41.3	33.8	37.2	37.4	
		(± 2.36)		(± 1.36)	
M	41.8	34.7	36.9	37.8	
SX	40.9	32.7	38.1	37.2	
SY	41.1	33.9	36.6	37.2	
		(1) and (2)		(± 1.11)	
O	38.5	32.0	36.3	35.6	
G	44.0	35.6	38.1	39.2	
	A	AG	BG	C	CG
	34.1	39.0	33.8	40.4	43.9

General mean: 37.4

- (1) (± 1.92) For use in horizontal and diagonal comparisons only
 (2) (± 1.92) For use in vertical and interaction comparisons only

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POTATOES

% WARE: 3.81 CM (1.5 INCH) RIDDLE

	P	R	T	Mean	
Mean	94.4	92.6	93.8	93.6	
M	94.6	93.3	94.1	94.0	
SX	94.4	91.7	93.8	93.3	
SY	94.3	92.8	93.4	93.5	
O	94.1	92.1	93.4	93.2	
G	94.8	93.0	94.1	94.0	
	A	AG	BG	C	CG
	91.2	94.5	92.8	94.1	95.3

General mean: 93.5

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BARLEY

GRAIN: TONNES/HECTARE

	P	R	T	Mean
Mean (± 0.045)	6.00	5.76 (± 0.077)	5.82	5.86 (± 0.045)
1970				
M	5.95	5.68	5.88	5.84
SX	6.06	5.83	5.86	5.92
SY	5.99	5.77	5.73	5.83
		(1) and (2)		(± 0.054)
1971				
O	5.93	5.65	5.73	5.77
H	6.07	5.87	5.92	5.95
	A	AH	BH	CH
	5.73	5.84	5.61	6.04

General mean: 5.85

Mean D.M. %: 80.2

- (1) (± 0.093) For use in horizontal and diagonal comparisons only
 (2) (± 0.080) For use in vertical and interaction comparisons only