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80/R/PE/1 and 80/W/PE/1 Peas Control of Pathogens

Rothamsted Research

Rothamsted Research (1981) *80/R/PE/1 and 80/W/PE/1 Peas Control of Pathogens* ; Yields Of The Field Experiments 1980, pp 305 - 313 - DOI: <https://doi.org/10.23637/ERADOC-1-31>

80/R/PE/1 and 80/W/PE/1

PEAS

CONTROL OF PATHOGENS

Object: To study the effects of a range of pesticides on the incidence of pathogens and on the yield of leafless peas - Rothamsted (R) Long Hoos V 7 and Woburn (W) Gt. Hill III.

Sponsors: A.J. Cockbain, K.E. Fletcher, E.D.M. Macaulay, J. McEwen, G.A. Salt, A.G. Whitehead.

Design: Single replicate of 2 whole plots split into 16.

Whole plot dimensions: 4.57 x 5.49.

Treatments: All combinations of:-

Whole plots

1. SEEDRATE Seed rate (kg):

200

400

Sub plots

2. NEMACIDE Nematicide:

NONE

None

ALDICARB

Aldicarb at 10 kg to the seedbed on 7 Apr (R),
11 Apr (W)

3. INSECTCDE(1) Early insecticide, to control Sitona:

NONE

None

PERMETH

Permethrin at 0.15 kg on 7 May (R), 9 May (W)

4. INSECTCDE(2) Late insecticide, to control pea moth:

NONE

None

PERMETH

Permethrin at 0.15 kg on 18 June

5. FUNGCIDE Fungicide:

NONE

None

CARBENDA

Carbendazim (as 'Focal SC' at 9.4 l) on 23 July and
14 Aug, (R & W)

NOTE: All treatment sprays were applied in 340 l.

Basal applications:

Long Hoos V 7 (R): Manures: Chalk at 2.9 t. Weedkillers: Glyphosate at 1.5 l in 340 l. Trietazine and simazine (as 'Remtal SC' at 3.0 l in 340 l). Desiccant: Diquat at 0.59 kg ion in 340 l.

Gt. Hill III (W): Manures: Magnesial limestone 7.5 t. (0:14:28) at 340 kg. Weedkillers: Carbetamide (as 'Carbetamex' at 3.1 kg in 280 l). Trietazine and simazine (as 'Remtal SC' at 2.4 l in 340 l). Desiccant: Diquat at 0.59 kg ion in 340 l.

80/R/PE/1 and 80/W/PE/1

Seed: Filby, dressed thiram.

Cultivations, etc.:-

Long Hoos V 7 (R): Glyphosate applied: 17 Sept, 1979. Chalk applied: 19 Oct. Ploughed: 1 Nov. Spring-tine cultivated, power harrowed, seed sown: 7 Apr, 1980. 'Remtal SC' applied: 15 Apr. Desiccant applied: 25 Aug. Hand harvested: 1 Sept. Previous crops: Potatoes 1978, s. wheat 1979.

Gt. Hill III (W): Manures: Magnesian limestone applied: 29 Sept, 1979. Ploughed: 20 Oct. Spring-tine cultivated, winter beans sown: 24 Oct. Carbetamide applied: 2 Nov. W. beans failed and ploughed in: 12 Feb, 1980. Heavy spring-tine cultivated, PK applied, rotary cultivated, seed sown: 11 Apr. 'Remtal SC' applied: 15 Apr. Desiccant applied: 25 Aug. Hand harvested: 27 Aug. Previous crops: Potatoes 1978, w. wheat 1979.

NOTE: Observations on pests and diseases were made during the season. Nitrogen percentages of grain were measured.

80/R/PE/1 LONG HOOS V (R)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

NEMACIDE SEEDRATE	NONE	ALDICARB	MEAN
200	3.86	4.32	4.09
400	3.88	4.18	4.03
MEAN	3.87	4.25	4.06
INSECTCDE(1) SEEDRATE	NONE	PERMETH	MEAN
200	4.08	4.10	4.09
400	4.01	4.06	4.03
MEAN	4.04	4.08	4.06
INSECTCDE(1) NEMACIDE	NONE	PERMETH	MEAN
NONE	3.86	3.89	3.87
ALDICARB	4.23	4.27	4.25
MEAN	4.04	4.08	4.06
INSECTCDE(2) SEEDRATE	NONE	PERMETH	MEAN
200	3.96	4.22	4.09
400	4.14	3.93	4.03
MEAN	4.05	4.07	4.06

80/R/PE/1 LONG HOOS V (R)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

INSCTCDE(2)	NONE	PERMETH	MEAN	
NEMACIDE				
NONE	3.81	3.93	3.87	
ALDICARB	4.28	4.22	4.25	
MEAN	4.05	4.07	4.06	
INSCTCDE(2)	NONE	PERMETH	MEAN	
INSCTCDE(1)				
NONE	4.11	3.98	4.04	
PERMETH	3.99	4.16	4.08	
MEAN	4.05	4.07	4.06	
FUNGCIDE	NONE	CARBENDA	MEAN	
SEEDRATE				
200	3.88	4.29	4.09	
400	3.92	4.15	4.03	
MEAN	3.90	4.22	4.06	
FUNGCIDE	NONE	CARBENDA	MEAN	
NEMACIDE				
NONE	3.69	4.06	3.87	
ALDICARB	4.11	4.39	4.25	
MEAN	3.90	4.22	4.06	
FUNGCIDE	NONE	CARBENDA	MEAN	
INSCTCDE(1)				
NONE	3.84	4.25	4.04	
PERMETH	3.97	4.19	4.08	
MEAN	3.90	4.22	4.06	
FUNGCIDE	NONE	CARBENDA	MEAN	
INSCTCDE(2)				
NONE	4.05	4.04	4.05	
PERMETH	3.75	4.40	4.07	
MEAN	3.90	4.22	4.06	
NEMACIDE	NONE	ALDICARB		
INSCTCDE(1)	NONE	PERMETH	NONE	PERMETH
SEEDRATE				
200	3.79	3.94	4.38	4.25
400	3.92	3.84	4.09	4.28
NEMACIDE	NONE	ALDICARB		
INSCTCDE(2)	NONE	PERMETH	NONE	PERMETH
SEEDRATE				
200	3.65	4.07	4.27	4.36
400	3.97	3.79	4.30	4.07

80/R/PE/1 LONG HOOS V (R)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

INSCTCDE(1)	NONE		PERMETH	
INSCTCDE(2)	NONE	PERMETH	NONE	PERMETH
SEEDRATE				
200	3.94	4.22	3.98	4.21
400	4.27	3.75	4.01	4.11
INSCTCDE(1)	NONE		PERMETH	
INSCTCDE(2)	NONE	PERMETH	NONE	PERMETH
NEMACIDE				
NONE	3.95	3.77	3.68	4.10
ALDICARB	4.27	4.20	4.30	4.23
NEMACIDE	NONE		ALDICARB	
FUNGICIDE	NONE	CARBENDA	NONE	CARBENDA
SEEDRATE				
200	3.57	4.15	4.20	4.43
400	3.81	3.96	4.03	4.34
INSCTCDE(1)	NONE		PERMETH	
FUNGICIDE	NONE	CARBENDA	NONE	CARBENDA
SEEDRATE				
200	3.88	4.29	3.89	4.30
400	3.80	4.22	4.04	4.08
INSCTCDE(1)	NONE		PERMETH	
FUNGICIDE	NONE	CARBENDA	NONE	CARBENDA
NEMACIDE				
NONE	3.64	4.08	3.74	4.04
ALDICARB	4.04	4.43	4.19	4.34
INSCTCDE(2)	NONE		PERMETH	
FUNGICIDE	NONE	CARBENDA	NONE	CARBENDA
SEEDRATE				
200	3.87	4.05	3.89	4.54
400	4.24	4.04	3.60	4.26
INSCTCDE(2)	NONE		PERMETH	
FUNGICIDE	NONE	CARBENDA	NONE	CARBENDA
NEMACIDE				
NONE	3.76	3.87	3.62	4.24
ALDICARB	4.35	4.22	3.88	4.55
INSCTCDE(2)	NONE		PERMETH	
FUNGICIDE	NONE	CARBENDA	NONE	CARBENDA
INSCTCDE(1)				
NONE	4.17	4.04	3.50	4.46
PERMETH	3.94	4.05	3.99	4.33

80/R/PE/1 LONG HOOS V (R)

GRAIN TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	FUNGCIDE	NEMACIDE	INSCDCDE(1)	INSCDCDE(2)
REP	16	16	16	16
SED	0.135	0.135	0.135	0.135

TABLE	INSCDCDE(2) FUNGCIDE	SEEDRATE* NEMACIDE	SEEDRATE* INSCDCDE(1)	NEMACIDE INSCDCDE(1)
SED	0.190	0.190	0.190	0.190

TABLE	SEEDRATE* INSCDCDE(2)	NEMACIDE INSCDCDE(2)	INSCDCDE(1) INSCDCDE(2)	SEEDRATE* FUNGCIDE
SED	0.190	0.190	0.190	0.190

TABLE	NEMACIDE FUNGCIDE	INSCDCDE(1) FUNGCIDE	INSCDCDE(1) INSCDCDE(2) FUNGCIDE	SEEDRATE* NEMACIDE INSCDCDE(1)
SED	0.190	0.190	0.269	0.269

TABLE	SEEDRATE* NEMACIDE INSCDCDE(2)	SEEDRATE* INSCDCDE(1) INSCDCDE(2)	NEMACIDE INSCDCDE(1) INSCDCDE(2)	SEEDRATE* NEMACIDE FUNGCIDE
SED	0.269	0.269	0.269	0.269

TABLE	SEEDRATE* INSCDCDE(1) FUNGCIDE	NEMACIDE INSCDCDE(1) FUNGCIDE	SEEDRATE* INSCDCDE(2) FUNGCIDE	NEMACIDE INSCDCDE(2) FUNGCIDE
SED	0.269	0.269	0.269	0.269

* SED ONLY VALID FOR COMPARING MEANS WITH THE SAME LEVEL OF SEEDRATE

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
WP.SP	6	0.380	9.4

GRAIN MEAN DM% 75.8

PLOT AREA HARVESTED 0.00091

80/W/PE/1 GREAT HILL III (W)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

NEMACIDE	NONE	ALDICARB	MEAN
SEEDRATE			
200	4.30	5.25	4.78
400	3.92	4.76	4.34
MEAN	4.11	5.01	4.56
INSCTCDE(1)	NONE	PERMETH	MEAN
SEEDRATE			
200	4.73	4.82	4.78
400	4.24	4.44	4.34
MEAN	4.49	4.63	4.56
INSCTCDE(1)	NONE	PERMETH	MEAN
NEMACIDE			
NONE	4.08	4.14	4.11
ALDICARB	4.89	5.13	5.01
MEAN	4.49	4.63	4.56
INSCTCDE(2)	NONE	PERMETH	MEAN
SEEDRATE			
200	4.70	4.86	4.78
400	4.25	4.43	4.34
MEAN	4.47	4.64	4.56
INSCTCDE(2)	NONE	PERMETH	MEAN
NEMACIDE			
NONE	3.90	4.32	4.11
ALDICARB	5.04	4.97	5.01
MEAN	4.47	4.64	4.56
INSCTCDE(2)	NONE	PERMETH	MEAN
INSCTCDE(1)			
NONE	4.41	4.56	4.49
PERMETH	4.53	4.73	4.63
MEAN	4.47	4.64	4.56
FUNGCIDE	NONE	CARBENDA	MEAN
SEEDRATE			
200	4.42	5.14	4.78
400	4.21	4.47	4.34
MEAN	4.32	4.80	4.56

80/W/PE/1 GREAT HILL III (W)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

FUNGCIDE	NONE	CARBENDA	MEAN	
NEMACIDE				
NONE	3.77	4.45	4.11	
ALDICARB	4.86	5.15	5.01	
MEAN	4.32	4.80	4.56	
FUNGCIDE	NONE	CARBENDA	MEAN	
INSTCDE(1)				
NONE	4.16	4.81	4.49	
PERMETH	4.47	4.80	4.63	
MEAN	4.32	4.80	4.56	
FUNGCIDE	NONE	CARBENDA	MEAN	
INSTCDE(2)				
NONE	4.40	4.55	4.47	
PERMETH	4.23	5.05	4.64	
MEAN	4.32	4.80	4.56	
NEMACIDE	NONE	ALDICARB		
INSTCDE(1)	NONE	PERMETH	NONE	PERMETH
SEEDRATE				
200	4.37	4.24	5.10	5.41
400	3.80	4.03	4.68	4.85
NEMACIDE	NONE	ALDICARB		
INSTCDE(2)	NONE	PERMETH	NONE	PERMETH
SEEDRATE				
200	4.10	4.51	5.30	5.21
400	3.71	4.12	4.79	4.74
INSTCDE(1)	NONE	PERMETH		
INSTCDE(2)	NONE	PERMETH	NONE	PERMETH
SEEDRATE				
200	4.67	4.80	4.73	4.92
400	4.16	4.31	4.34	4.55
INSTCDE(1)	NONE	PERMETH		
INSTCDE(2)	NONE	PERMETH	NONE	PERMETH
NEMACIDE				
NONE	3.91	4.25	3.89	4.38
ALDICARB	4.92	4.86	5.17	5.09
NEMACIDE	NONE	ALDICARB		
FUNGCIDE	NONE	CARBENDA	NONE	CARBENDA
SEEDRATE				
200	3.77	4.83	5.07	5.44
400	3.76	4.07	4.66	4.86

80/W/PE/1 GREAT HILL III (W)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

INSCTCDE(1)	NONE		PERMETH	
FUNGCIDE	NONE	CARBENDA	NONE	CARBENDA
SEEDRATE				
200	4.26	5.20	4.58	5.07
400	4.06	4.41	4.36	4.52

INSCTCDE(1)	NONE		PERMETH	
FUNGCIDE	NONE	CARBENDA	NONE	CARBENDA
NEMACIDE				
NONE	3.69	4.47	3.84	4.43
ALDICARB	4.63	5.14	5.10	5.16

INSCTCDE(2)	NONE		PERMETH	
FUNGCIDE	NONE	CARBENDA	NONE	CARBENDA
SEEDRATE				
200	4.43	4.97	4.41	5.30
400	4.37	4.13	4.06	4.80

INSCTCDE(2)	NONE		PERMETH	
FUNGCIDE	NONE	CARBENDA	NONE	CARBENDA
NEMACIDE				
NONE	3.88	3.92	3.65	4.98
ALDICARB	4.91	5.18	4.82	5.13

INSCTCDE(2)	NONE		PERMETH	
FUNGCIDE	NONE	CARBENDA	NONE	CARBENDA
INSCTCDE(1)				
NONE	4.35	4.48	3.98	5.13
PERMETH	4.45	4.61	4.49	4.98

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	FUNGCIDE	NEMACIDE	INSCTCDE(1)	INSCTCDE(2)
SED	0.106	0.106	0.106	0.106

TABLE	INSCTCDE(2) FUNGCIDE	SEEDRATE* NEMACIDE	SEEDRATE* INSCTCDE(1)	NEMACIDE INSCTCDE(1)
SED	0.150	0.150	0.150	0.150

TABLE	SEEDRATE* INSCTCDE(2)	NEMACIDE INSCTCDE(2)	INSCTCDE(1) INSCTCDE(2)	SEEDRATE* FUNGCIDE
SED	0.150	0.150	0.150	0.150

TABLE	NEMACIDE FUNGCIDE	INSCTCDE(1) FUNGCIDE	INSCTCDE(1) INSCTCDE(2) FUNGCIDE	SEEDRATE* NEMACIDE INSCTCDE(1)
SED	0.150	0.150	0.213	0.213

80/W/PE/1 GREAT HILL III (W)

GRAIN TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	SEEDRATE* NEMACIDE INSCTCDE(2)	SEEDRATE* INSCTCDE(1) INSCTCDE(2)	NEMACIDE INSCTCDE(1) INSCTCDE(2)	SEEDRATE* NEMACIDE FUNGIDE
SED	0.213	0.213	0.213	0.213

TABLE	SEEDRATE* INSCTCDE(1) FUNGIDE	NEMACIDE INSCTCDE(1) FUNGIDE	SEEDRATE* INSCTCDE(2) FUNGIDE	NEMACIDE INSCTCDE(2) FUNGIDE
SED	0.213	0.213	0.213	0.213

* SED ONLY VALID FOR COMPARING MEANS WITH THE SAME LEVEL OF SEEDRATE

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
WP.SP	6	0.301	6.6

GRAIN MEAN DM% 82.3

PLOT AREA HARVESTED 0.00091