

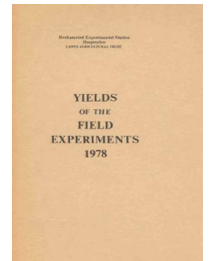
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78/R/BE/1

WINTER BEANS

CONTROL OF CHOCOLATE SPOT

Object: To study the effects of irrigation and benomyl on Chocolate Spot (*Botrytis* spp.) and yield of winter beans - Long Hoos I/II.

Sponsors: A. Bainbridge, M.E. Finney.

Design: 2 blocks, each a 4 x 4 Latin square (with IRRIGTN on blocks)

Whole plot dimensions: 4.27 x 9.14.

Treatments: All combinations of:-

Blocks

1. IRRIGTN	Irrigation:
NONE	None
FULL	Full (72.5 mm)

Plots

2. BENOMYL	Frequency of applying benomyl (at 0.56 kg in 340 l on each occasion):-
0+0+0+0	Never
0+1+1+0	Twice, on 26 May, 1978 and 16 June
0+1+1+1	Three times, on 26 May, 16 June, 18 July
1+1+1+1	Four times, on 28 Apr, 26 May, 16 June, 18 July

NOTE: IRRIGTN FULL plots were given 12.5 mm of irrigation on each of the following dates: 29 May, 31 May, 14 June, 19 June, 17 July and 10 mm on 25 July.

Basal applications: Manures: Chalk at 7.5 t.

Seed: Throws MS sown at 250 kg.

Cultivations, etc.: - Ploughed: 20 Sept, 1977. Rolled: 3 Oct. Chalk applied: 11 Oct. Heavy spring-tine cultivated: 12 Oct. Rotary harrowed: 13 Oct. Seed sown: 14 Oct. Combine harvested: 19 Sept. Previous crops: Wheat 1976, barley 1977.

NOTE: Counts were made of seedling emergence, percentage leaf area affected by *Botrytis* spp, stems per row, and pods per stem.

78/R/BE/1

GRAIN TONNES/HECTARE

IRRIGATN NONE

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

BENOMYL	0+0+0+0	0+1+1+0	0+1+1+1	1+1+1+1	MEAN
	5.82	6.13	6.61	6.74	6.33

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

TABLE	BENOMYL
-----	-----
SED	0.123

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

STRATUM	DF	SE	CV%
ROW.COLUMN	6	0.174	2.8

GRAIN TONNES/HECTARE

IRRIGATN FULL

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

BENOMYL	0+0+0+0	0+1+1+0	0+1+1+1	1+1+1+1	MEAN
	4.65	5.13	5.55	5.82	5.29

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

TABLE	BENOMYL
-----	-----
SED	0.549

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

STRATUM	DF	SE	CV%
ROW.COLUMN	6	0.776	14.7

GRAIN MEAN DM% 84.0

PLOT AREA HARVESTED 0.00279

78/R/BE/2

WINTER BEANS

CONTROL OF SITONA

Object: To study the effects of three chemicals on the control of Sitona larvae and on the yield of winter beans - Long Hoos I/II.

Sponsors: R. Bardner, K.E. Fletcher, D.C. Griffiths.

Design: 4 randomised blocks of 5 plots.

Whole plot dimensions: 5.33 x 13.7.

Treatments:

CHEMICAL	Chemicals and times of application:
NONE	None (duplicated)
ALDICARB	Aldicarb at 5 kg applied to the seedbed
FONOFOS	Fonofos at 5 kg applied to the seedbed
PERMETH	Permethrin at 0.15 kg applied as foliar spray in 340 l on 11 May, 1978

Basal applications: Manures: Chalk at 7.5 t. Fungicide: Benomyl at 0.56 kg in 220 l.

Seed: Throws MS, sown at 250 kg.

Cultivations, etc.: - Ploughed: 20 Sept, 1977. Chalk applied: 11 Oct. Heavy spring-tine cultivated: 12 Oct. Treatments applied, rotary harrowed in and seed sown: 16 Nov. Fungicide applied: 19 May, 1978. Combine harvested: 19 Sept. Previous crops: Wheat 1976, barley 1977.

NOTE: Sitona damage to leaves and stems was assessed in April and May. Incidence of Sitona larvae was assessed in June and July. Aldicarb residues in plants and soil were assessed in November and May.

78/R/BE/2

GRAIN TONNES/HECTARE

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

CHEMICAL	NONE	ALDICARB	FONOFOS	PERMETH	MEAN
	4.88	4.74	4.46	4.87	4.77

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

TABLE	CHEMICAL
SED	0.268 MIN REP 0.232 MAX-MIN

CHEMICAL
MAX-MIN NONE V ANY OF REMAINDER
MIN REP ANY OF REMAINDER

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

STRATUM	DF	SE	CV%
BLOCK.WP	13	0.379	8.0

GRAIN MEAN DM% 83.8

PLOT AREA HARVESTED 0.00279

78/R/BE/5

SPRING BEANS

APHIDS AND ENTOMOPHTHORA

Object: To study the effects of a range of factors on the incidence of Entomophthora infection of aphids and on the yield of spring beans - Gt. Knott I.

Sponsor: N. Wilding.

Design: One experiment (78/R/BE/5/1) 4 randomised blocks of 3 plots
One experiment (78/R/BE/5/2) 3 randomised blocks of 8 plots

Whole plot dimensions: 9.22 x 9.14.

Treatments to 78/R/BE/5/1 (all plots irrigated - total 49 mm):

TREATMNT(1)	Biological and chemical control of aphids:
NONE	None
ENT APH	Entomophthora species applied in live infected aphids
PIRIMICA	Insecticide: Pirimicarb at 0.14 kg in 340 l

Treatments to 78/R/BE/5/2 (all plots unirrigated):

TREATMNT(2)	Biological and chemical control of aphids, fungicides to control Entomophthora:
NONE	None
ENT APH	Entomophthora species applied in live infected aphids
CARBARYL	Insecticide: Carbaryl at 1.49 kg
PIRIMICA	Insecticide: Pirimicarb at 0.14 kg
BENOMYL	Fungicide: Benomyl at 0.61 kg
CAPTAFOL	Fungicide: Captafol at 1.74 kg
MANCOZEB	Fungicide: Mancozeb at 1.36 kg
TRIDEMOR	Fungicide: Tridemorph at 0.52 kg

- NOTES: (1) On all treatments except PIRIMICA aphid colonies were artificially established between 31 May, 1978 and 2 June (10-20 colonies were initiated in each 9.14 m length of row).
- (2) All spray treatments were applied in 340 l.
- (3) Sprays were applied on the following dates:- Pirimicarb: 19 June, 1978. Carbaryl: 12, 28 June and 6 July. Mancozeb, captafol, benomyl and tridemorph: 19 and 28 June, 6, 13, 19 and 26 July.
- (4) Irrigation was applied to BE/5/1 at 25 mm on 1 June, 1978 and 8 mm on each of 19 June, 21 and 25 July.

Basal applications: Manures: FYM at 35 t. Weedkillers: Simazine at 1.1 kg in 220 l. Paraquat at 0.6 kg ion in 220 l.

Seed: Minden, sown at 200 kg.

78/R/BE/5

Cultivations, etc.:— Paraquat applied: 8 Nov, 1977. FYM applied, ploughed: 24 Nov. Rotary harrowed: 8 Mar, 1978. Seed sown: 9 Mar. Simazine applied to BE/5/2: 25 Mar, to BE/5/1: 30 Mar. Combine harvested: 25 Sept. Previous crops: Winter barley (BE/5/2), wheat (BE/5/1) 1976, wheat 1977.

NOTE: Weekly assessments of aphid population density and proportion of aphids infected with *Entomophthora* were made from June to August.

78/R/BE/5/1

GRAIN TONNES/HECTARE

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

TREATMNT(1)	NONE	ENT APH	PIRIMICA	MEAN
	5.33	5.65	5.22	5.40

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

TABLE	TREATMNT(1)
-----	-----
SED	0.448

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.634	11.7

GRAIN MEAN DM% 81.6

PLOT AREA HARVESTED 0.00244

78/R/BE/5/2

GRAIN TONNES/HECTARE

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

TREATMNT(2)	
NONE	4.36
ENT APH	4.89
CARBARYL	4.09
PIRIMICA	5.13
BENOMYL	5.29
CAPTAFOL	4.76
MANCOZEB	5.12
TRIDEMOR	4.40
MEAN	4.75

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

TABLE	TREATMNT(2)
-----	-----
SED	0.412

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

STRATUM	DF	SE	CV%
BLOCK.WP	14	0.504	10.6

GRAIN MEAN DM% 81.2

PLOT AREA HARVESTED 0.00244

78/R/BE/6

SPRING BEANS

COMPARISON OF SPRAYERS

Object: To study the performance of an electrostatic spraying system on distribution of spray material and on yield of beans - Gt. Harpenden II.

Sponsor: A.J. Arnold.

Design: 3 randomised blocks of 6 plots.

Whole plot dimensions: 2.67 x 9.14.

Treatments:

SPRAYER	Sprayer used to apply permethrin:
NONE	None (duplicated)
E C C	Electrostatic sprayer, spraying charged particles with controlled current
E C N	Electrostatic sprayer, spraying charged particles with normal current
E U	Electrostatic sprayer, spraying uncharged particles
F U	Standard farm sprayer, spraying uncharged particles

NOTES: (1) Electrostatic sprayer applied permethrin at 84 g in 34 l.
(2) Farm sprayer applied permethrin at 84 g in 340 l.
(3) Permethrin was applied as a water-based spray. A planned comparison of oil and water-based sprays was not achieved.
(4) Sprays were applied on 11 July, 1978.

Basal applications: Manures: Chalk at 7.5 t.

Seed: Minden, sown at 200 kg.

Cultivations, etc.: - Chalk applied: 12 Oct, 1977. Ploughed: 11 Nov. Spring-tine cultivated: 9 Mar, 1978. Heavy spring-tine cultivated, seed sown: 11 Mar. Tractor hoed: 19 May and 8 June. Combine harvested: 25 Sept. Previous crops: Barley 1976 and 1977.

78/R/BE/6

GRAIN TONNES/HECTARE

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

SPRAYER	NONE	E C C	E C N	E U	F U	MEAN
	5.69	5.72	5.97	5.74	6.04	5.81

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

TABLE	SPRAYER
SED	0.541 MIN REP 0.468 MAX-MIN

SPRAYER
MAX-MIN NONE V ANY OF REMAINDER
MIN REP ANY OF REMAINDER

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

STRATUM	DF	SE	CV%
BLOCK.WP	11	0.662	11.4

GRAIN MEAN DM% 83.9

PLOT AREA HARVESTED 0.00244

78/R/BE/8
 SPRING BEANS
 RED TICK LINES

Object: To compare agronomic characters and yields of several lines of red-seeded field beans with two standard white varieties - Garden Plot 15.

Sponsor: J. McEwen.

Design: 4 randomised blocks of 7 plots.

Whole plot dimensions: 2.03 x 2.13.

Treatments:

VARIETY	Varieties:
RT1-RT4	Four red-seeded lines selected at Rothamsted
RT B	Bulk seed from the four red-seeded lines
BLAZE	Maris Blaze (white-seeded)
MINDEN	Minden (white-seeded)

NOTE: Seed was sown by hand in rows 51 cm apart, seed spaced 5 cm apart in the row.

Basal applications: Manures: (0:14:28) at 720 kg. Chalk at 2.9 t. Weedkiller: Simazine at 0.84 kg in 340 l. Insecticide: Permethrin at 0.15 kg in 340 l on 2 occasions. Pirimicarb at 0.14 kg in 340 l.

Cultivations, etc.: - PK applied: 4 Oct, 1977. Ploughed: 24 Nov. Power harrowed, seed sown: 6 Apr, 1978. Weedkiller applied: 24 Apr. Permethrin applied: 17 May and 9 June. Pirimicarb applied: 5 July. Harvested by hand: 5 Oct. Previous crops: Potatoes 1976, barley 1977.

NOTE: Plant counts were made after establishment and again before harvest. Components of yield were measured at harvest. Nitrogen percentages of grain were measured.

GRAIN TONNES/HECTARE

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

VARIETY	RT1	RT2	RT3	RT4	RT B	BLAZE	MINDEN	MEAN
	6.25	5.22	6.57	5.83	6.37	7.12	6.62	6.28

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

TABLE	VARIETY
-----	-----
SED	0.344

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

STRATUM	DF	SE	CV%
BLOCK.WP	18	0.487	7.7
GRAIN MEAN DM%	85.4		
PLOT AREA HARVESTED	0.00015		

78/R/BE/9

SPRING BEANS

DRILLS AND PLANT POPULATIONS

Object: To study the effects of precision sowing, plant populations and pathogen control on yields and incidence of pests and diseases - Gt. Harpenden II.

Sponsors: R. Bardner, A.J. Cockbain, J.M. Day, K.E. Fletcher, J. McEwen, R.J. Roughley, G.A. Salt, J.F. Witty.

Design: 3 randomised blocks of 2 plots split into 8 sub plots.

Whole plot dimensions: 18.2 x 38.4.

Treatments: All combinations of:-

Whole plots

- | | |
|-------------|---|
| 1. PATHCONT | Pathogen control: |
| STANDARD | Standard, pirimicarb foliar spray only |
| ENHANCED | Aldicarb at 10 kg to seedbed plus pirimicarb foliar spray |

Sub plots

- | | |
|----------|---|
| 2. DRILL | Drill and row spacing: |
| MF 18 | Massey-Ferguson, irregularly spacing seed in rows 18 cm (7 ins) apart |
| ST 20 | Stanhay, precision-sown in rows 20 cm (8 ins) apart |

- | | | | |
|-------------|------------------------|---------------------|---------|
| 3. POPULATN | Populations of plants: | | |
| | Population planned | Population achieved | |
| | | MF 18 | ST 20 |
| 3 | 300,000 | 147,000 | 126,000 |
| 4 | 400,000 | 187,000 | 203,000 |
| 5 | 500,000 | 276,000 | 188,000 |
| 6 | 600,000 | 348,000 | 272,000 |

NOTE: Seedbed conditions were unusually poor and both drills malfunctioned leading to gaps in rows and a failure to achieve the planned populations. The yields reported from these treatments should not be regarded as representing those likely under normal conditions.

Basal applications: Manures: Chalk applied at 7.5 t. Weedkiller: Simazine at 0.56 kg in 220 l. Insecticide: Pirimicarb at 0.14 kg in 220 l.

Seed: Minden.

Cultivations, etc.: - Chalk applied: 12 Oct, 1977. Ploughed: 11 Nov. Spring-tine cultivated: 9 Mar, 1978. Test aldicarb applied: 13 Mar. Spike rotary cultivated after treatments: 15 Mar. Spring-tine cultivated: 6 Apr. Harrowed, seed sown: 7 Apr. Weedkiller applied: 17 Apr. Insecticide applied: 10 July. Combine harvested: 29 Sept. Previous crops: Barley 1976 and 1977.

NOTE: Plant counts were made after establishment and again before harvest. Components of yield were measured before harvest. Nitrogenase activity of the roots was measured at fortnightly intervals. Incidence of Sitona and viruses was measured at intervals through the season.

78/R/BE/9

GRAIN TONNES/HECTARE

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

DRILL	MF 18	ST 20	MEAN		
PATHCONT					
STANDARD	5.21	5.02	5.12		
ENHANCED	5.37	5.55	5.46		
MEAN	5.29	5.29	5.29		
POPULATN	3	4	5	6	MEAN
PATHCONT					
STANDARD	4.22	5.58	5.22	5.44	5.12
ENHANCED	4.78	5.66	5.44	5.94	5.46
MEAN	4.50	5.62	5.33	5.69	5.29
POPULATN	3	4	5	6	MEAN
DRILL					
MF 18	4.30	5.47	5.47	5.90	5.29
ST 20	4.70	5.77	5.19	5.48	5.29
MEAN	4.50	5.62	5.33	5.69	5.29
POPULATN		3	4	5	6
PATHCONT	DRILL				
STANDARD	MF 18	4.03	5.54	5.35	5.90
	ST 20	4.40	5.62	5.09	4.98
ENHANCED	MF 18	4.57	5.41	5.60	5.90
	ST 20	4.99	5.92	5.29	5.98

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

TABLE	PATHCONT	DRILL	POPULATN	PATHCONT DRILL
SED	0.240	0.152	0.216	0.284
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: PATHCONT				0.216

TABLE	PATHCONT POPULATN	DRILL POPULATN	PATHCONT DRILL POPULATN
SED	0.357	0.305	0.469
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: PATHCONT	0.305		0.431

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	28	0.528	10.0
GRAIN MEAN DM%	80.4		
SUB PLOT AREA HARVESTED	0.00251		

78/R/BE/13

SPRING BEANS

COMPARISON OF FUNGICIDES

Object: To study the effects of a range of fungicides and methods of application on the incidence of diseases and on yield - Fosters O & E IV.

Sponsors: G.A. Salt, J. McEwen, D. Yeoman.

Design: 3 randomised blocks of 12 plots.

Whole plot dimensions: 2.03 x 2.13.

Treatments: All combinations of:-

1. FUNGICIDE	Fungicide:
AL TRI	Aluminium tris (ethylphosphonate). 'Aliette'
BEN	Benomyl
DL ME	DL-methyl N-(2,6 dimethylphenyl)-N-(2 methoxyacetyl) alaninate. 'Ridomil'
THIABEND	Thiabendazole

2. METHOD	Method of application:
FOLIAR	Foliar spray
SEEDRESS	Seed dressing (using a methyl cellulose sticker)

plus four extra treatments:

EXTRA

NONE	No fungicides
NONE S	No fungicides, seed treated with methyl cellulose sticker
BEN SB	Benomyl worked in to seedbed
DL ME SB	'Ridomil' worked in to seedbed

NOTES: (1) Rates of application were as follows (foliar sprays were applied in 1250 l):

	Seedbed kg	Seed dressing g/kg seed	Foliar spray kg
AL TRI	-	4.0	3.38
BEN	20.0	8.8	0.50
DL ME	1.5	0.4	0.34
THIABEND	-	11.3	0.50

(2) Seed was sown by hand in rows 51 cm apart, seed spaced 5 cm apart in the row.

78/R/BE/13

Basal applications: Weedkillers: Simazine at 0.84 kg in 340 l. Insecticides: Permethrin at 0.15 kg in 340 l. Pirimicarb at 0.14 kg in 340 l.

Seed: Minden.

Cultivations, etc.:— Ploughed: 11 Oct, 1977. Spring-tine cultivated, seedbed treatments applied: 15 Mar, 1978. Rotary cultivated, seed sown: 31 Mar. Simazine applied: 24 Apr. Weedkiller applied: 10 May. Permethrin applied: 17 May. Pirimicarb applied: 5 July. Foliar spray treatments applied: 18 July. Harvested by hand: 11 Oct. Previous crops: Fallow 1976, spring oats 1977.

NOTE: Observations were made on root and foliar diseases during the season.

GRAIN TONNES/HECTARE

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

METHOD	FOLIAR	SEEDRESS	MEAN		
FUNGCIDE					
AL TRI	5.66	5.80	5.73		
BEN	5.70	6.00	5.85		
DL ME	5.81	5.62	5.71		
THIABEND	5.54	4.59	5.07		
MEAN	5.68	5.50	5.59		
EXTRA	NONE	NONE S	BEN SB	DL ME SB	MEAN
	5.67	5.79	5.39	5.43	5.57

GRAND MEAN 5.58

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

TABLE	EXTRA	FUNGCIDE	METHOD	FUNGCIDE METHOD & EXTRA
SED	0.441	0.312	0.220	0.441

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

STRATUM	DF	SE	CV%
BLOCK.WP	22	0.540	9.7

GRAIN MEAN DM% 80.7

PLOT AREA HARVESTED 0.00015

78/R/BE/14

SPRING BEANS

TIMES OF APPLYING PERMETHRIN

Object: To study the effects of applying foliar sprays of permethrin at a range of dates on the incidence of Sitona and on the yield of spring beans - Gt. Harpenden II.

Sponsors: R. Bardner, D.C. Griffiths, K.E. Fletcher.

Design: 4 randomised blocks of 5 plots.

Whole plot dimensions: 5.33 x 9.14.

PER DATE Dates of applying permethrin (at 150 g on each occasion):

- Not applied
 11 MAY Single spray on 11 May
 9 JUNE Single spray on 9 June
 6 JULY Single spray on 6 July
 MA JN JL Sprayed on all three above dates

NOTE: Permethrin was applied in 340 l.

Basal applications: Manures: Chalk at 7.5 t. Insecticide: Pirimicarb at 0.14 kg in 220 l.

Seed: Minden, sown at 200 kg.

Cultivations, etc.: Chalk applied: 12 Oct, 1977. Ploughed: 11 Nov. Spring-tine cultivated: 9 Mar, 1978. Heavy spring-tine cultivated, seed sown: 11 Mar. Tractor hoed: 19 May and 8 June. Basal insecticide applied: 10 July. Combine harvested: 25 Sept. Previous crops: Barley 1976 and 1977.

NOTE: Sitona damage to leaves was assessed in May. Incidence of Sitona larvae was assessed in June and July. Aphid incidence was assessed before and after treatments were applied. Persistence of permethrin was assessed.

GRAIN TONNES/HECTARE

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

PER DATE	-	11 MAY	9 JUNE	6 JULY	MA JN JL	MEAN
	4.88	5.02	5.25	5.17	4.96	5.06

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

TABLE	PER DATE
SED	0.262

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

STRATUM	DF	SE	CV%
BLOCK.WP	12	0.371	7.3

GRAIN MEAN DM% 84.6 PLOT AREA HARVESTED 0.00293