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# Yields of the Field Experiments 1989

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## Sunflowers

### Rothamsted Research

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89/R/SU/1

SUNFLOWERS

VARIETIES AND SOWING DATES

**Object:** To study the effects of five sowing dates on the rates of vegetative and floral development, days to maturity, disease and yield of two varieties of sunflowers - Long Hoos I/II.

**Sponsors:** V.J. Church, R.A. Gutteridge, C.J. Rawlinson.

**Design:** 3 randomised blocks of 10 plots.

**Whole plot dimensions:** 3.5 x 10.0.

**Treatments:** All combinations of:-

1. <b>VARIETY</b>	Varieties:
SUNB 246	Sunbred 246
S 47	S47
2. <b>SOWDATE</b>	Sowing date:
28 MAR	28 March, 1989
19 APR	19 April
2 MAY	2 May
10 MAY	10 May
18 MAY	18 May

**NOTE:** The two latest sowing dates established very poorly and yields were not taken from them.

**Basal applications:** Manures: (0:18:36) at 925 kg. 'Nitram' at 150 kg. Weedkillers: Glyphosate at 1.4 kg in 200 l. Trifluralin at 1.1 kg in 220 l. Linuron at 0.50 kg in 220 l. Molluscicide: Metaldehyde at 0.60 kg.

**Seed:** Varieties sown at 120,000 seeds per hectare.

**Cultivations, etc.:-** PK applied: 28 Sept, 1988. Glyphosate applied: 22 Oct. Ploughed: 16 Dec. N applied, trifluralin applied and rotary cultivated, first sowing done, rolled: 28 Mar, 1989. Linuron applied: 30 Mar, 24 Apr, 4, 11 & 18 May (separately after each sowing). Metaldehyde applied: 31 Mar. Rotary cultivated, second sowing done: 19 Apr. Rotary cultivated remaining plots, third sowing done: 2 May. Third sowing rolled: 3 May. Fourth sowing done: 10 May. Fourth sowing rolled: 11 May. Last sowing done, rolled: 18 May. Irrigated 12 mm: 9 June and 25 mm: 15 June. Hand harvested: S47, first sowing: 9 & 15 Aug, S47, second sowing: 15 Aug, S47, third sowing: 22 Aug, SUNB 246, first and second sowing: 4 Sept, SUNB 246, third sowing: 13 Sept. Previous crops: W. wheat 1987, s. beans 1988.

**NOTE:** The plots were covered by a bird-proof net from April to maturity. Growth stages were monitored twice weekly, number of leaves were counted weekly before flowering, heights and head diameters were measured after flowering. Plants were counted before harvest. Botrytis was assessed on five occasions.

89/R/SU/1

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

\*\*\*\*\* Tables of means \*\*\*\*\*

SOWDATE VARIETY	28 MAR	19 APR	2 MAY	Mean
SUNB 246	4.38	3.99	4.38	4.25
S 47	2.68	2.81	2.87	2.79
Mean	3.53	3.40	3.63	3.52

\*\*\* Standard errors of differences of means \*\*\*

VARIETY	SOWDATE	VARIETY SOWDATE
0.121	0.148	0.209

\*\*\*\*\* Stratum standard errors and coefficients of variation \*\*\*\*\*

Stratum	d.f.	s.e.	cv%
BLOCK.WP	10	0.256	7.3

GRAIN MEAN DM% 61.1

PLOT AREA HARVESTED 0.00150

89/R/SU/2

SUNFLOWERS

VARIETIES & SEED RATES

**Object:** To test the effects of four seed rates on plant growth, disease incidence and yield of two varieties - Long Hoos I/II.

**Sponsors:** C.J. Rawlinson, V.J. Church, R.A. Gutteridge.

**Design:** 3 randomised blocks of 8 plots.

**Whole plot dimensions:** 2.5 x 8.0.

**Treatments:** All combinations of:-

1. **VARIETY** Varieties:

S47  
VINCENT

2. **SEEDRATE** Seed rate (number of seeds sown per square metre):

8  
12  
16  
20

**Basal applications:** Manures: (0:18:36) at 925 kg. 'Nitram' at 150 kg.  
Weedkillers: Glyphosate at 1.4 kg in 200 l. Trifluralin at 1.1 kg in 220 l. Linuron at 0.50 kg in 220 l. Desiccant: Diquat at 0.60 kg ion in 220 l.

**Cultivations, etc.:-** PK applied: 28 Sept, 1988. Glyphosate applied: 22 Oct. Ploughed: 16 Dec. N applied: 14 Apr, 1989. Trifluralin applied, rotary cultivated: 20 Apr. Seed sown: 21 Apr. Rolled, linuron applied: 24 Apr. Irrigated 12 mm: 5 June and 25 mm: 13 June. Desiccant applied to S47: 18 Aug. Desiccant applied to Vincent: 4 Sept. Hand harvested S47: 21 Aug. Hand harvested Vincent: 8 Sept. Previous crops: W. wheat 1987, s. beans 1988.

**NOTE:** The plots were covered by a bird-proof net from early May to maturity. Growth stages were monitored fortnightly. Head diameters and heights were measured. Botrytis was assessed in August. Plants were counted before harvest.

89/R/SU/2

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

\*\*\*\*\* Tables of means \*\*\*\*\*

SEEDRATE	8	12	16	20	Mean
VARIETY					
S47	2.84	2.74	2.94	2.07	2.65
VINCENT	3.42	4.41	3.91	3.40	3.78
Mean	3.13	3.57	3.43	2.73	3.22

\*\*\* Standard errors of differences of means \*\*\*

VARIETY	SEEDRATE	VARIETY SEEDRATE
0.200	0.282	0.399

\*\*\*\*\* Stratum standard errors and coefficients of variation \*\*\*\*\*

Stratum	d.f.	s.e.	cv%
BLOCK.WP	14	0.489	15.2
GRAIN MEAN DM%	78.3		
PLOT AREA HARVESTED	0.00160		

89/R/SU/3

SUNFLOWERS

METHODS OF APPLYING FUNGICIDES

**Object:** To study the effects of mist-blown application of fungicide on the control of Botrytis and on yield of sunflowers - Long Hoos I/II.

**Sponsors:** C.J. Rawlinson, V.J. Church, R.A. Gutteridge.

**Design:** 2 separated 3 x 3 Latin squares with complete directional neighbour balance.

**Whole plot dimensions:** 2.5 x 10.0.

**Treatments:**

SPRAYER	Sprayers:
NONE	None
HYDRAUL	Standard hydraulic sprayer
MIST BLO	Mist blower

**NOTE:** The sprayers applied prochloraz at 0.50 kg with vinclozolin at 0.50 kg in 220 l on 12, 18 and 19 July, 1989.

**Basal applications:** Manures: (0:18:36) at 925 kg. 'Nitram' at 150 kg. Weedkillers: Glyphosate at 1.4 kg in 200 l. Trifluralin at 1.1 kg in 220 l. Linuron at 0.50 kg in 220 l. Desiccant: Diquat at 0.60 kg in 220 l.

**Seed:** S47, sown at 120,000 seeds per hectare.

**Cultivations, etc.:-** PK applied: 28 Sept, 1988. Glyphosate applied: 22 Oct. Ploughed: 16 Dec. N applied: 14 Apr, 1989. Trifluralin applied, rotary cultivated: 20 Apr. Seed sown: 28 Apr. Rolled: 2 May. Linuron applied: 4 May. Irrigated 12 mm: 9 June. Hand harvested: 22 Aug. Previous crops: W. wheat 1987, s. beans 1988.

**NOTE:** The plots were covered by a bird-proof net from early May to maturity. Growth stages were monitored throughout the season. Botrytis was assessed in August. Plants were counted before harvest.

89/R/SU/3

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

\*\*\*\*\* Tables of means \*\*\*\*\*

SPRAYER	NONE	HYDRAUL	MIST BLO	Mean
	2.60	2.65	2.63	2.62

\*\*\* Standard errors of differences of means \*\*\*

SPRAYER  
0.087

\*\*\*\*\* Stratum standard errors and coefficients of variation \*\*\*\*\*

Stratum	d.f.	s.e.	cv%
SQUARE.ROW	4	0.186	7.1
SQUARE.COL	4	0.087	3.3
SQUARE.ROW.COL	6	0.151	5.7

GRAIN MEAN DM% 77.9

PLOT AREA HARVESTED 0.00200

89/R/SU/4

SUNFLOWERS

VARIETIES AND BOTRYTIS

**Object:** To compare two varieties of sunflower for their yield and resistance to Botrytis - Long Hoos I/II.

**Sponsors:** V.J. Church, B.D.L. Fitt, C.J. Rawlinson.

**Design:** 3 blocks each of 2 replicates of 2 plots.

**Whole plot dimensions:** 2.5 x 10.0.

**Treatments:**

VARIETY	Varieties:
CRZ	CRz, susceptible to Botrytis
H4 PZ	H4 Pz, resistant to Botrytis

**Basal applications:** Manures: (0:18:36) at 925 kg. 'Nitram' at 150 kg. Weedkillers: Glyphosate at 1.4 kg in 200 l. Trifluralin at 1.1 kg in 220 l. Linuron at 0.50 kg in 220 l.

**Seed:** Varieties sown at 120,000 seeds per hectare.

**Cultivations, etc.:-** PK applied: 28 Sept, 1988. Glyphosate applied: 22 Oct. Ploughed: 16 Dec. N applied: 14 Apr, 1989. Trifluralin applied, rotary cultivated: 20 Apr. Seed sown: 21 Apr. Rolled, linuron applied: 24 Apr. Hand harvested CRZ: 13 Sept. Hand harvested H4 PZ: 21 Sept. Previous crops: W. wheat 1987, s. beans 1988.

**NOTE:** The plots were covered by a bird-proof net from late April to maturity. Growth stages were monitored fortnightly. Botrytis was assessed on four occasions towards maturity. Plants were counted before harvest.

**GRAIN (AT 90% DRY MATTER) TONNES/HECTARE**

\*\*\*\*\* Tables of means \*\*\*\*\*

VARIETY	CRZ	H4 PZ	Mean
	3.78	3.82	3.80

\*\*\* Standard errors of differences of means \*\*\*

VARIETY  
0.202

\*\*\*\*\* Stratum standard errors and coefficients of variation \*\*\*\*\*

Stratum	d.f.	s.e.	cv%
BLOCK.WP	8	0.349	9.2
GRAIN MEAN DM%	59.8	PLOT AREA HARVESTED	0.00200