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# Yields of the Field Experiments 1988

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## Sunflowers

### Rothamsted Research

Rothamsted Research (1989) *Sunflowers* ; Yields Of The Field Experiments 1988, pp 240 - 247 -  
DOI: <https://doi.org/10.23637/ERADOC-1-43>

88/R/SU/1

SUNFLOWERS

EARLY VARIETIES AND PLANT HEALTH

**Object:** To compare six varieties of sunflower with and without pest and pathogen control - Fosters Corner.

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

**Design:** 3 randomised blocks of 12 plots.

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

**Treatments:** All combinations of:-

1. **VARIETY** Varieties:

S10	S - 10
HA 701	HA 701
S34	S - 34
S47	S - 47
S54	S - 54
S69	S - 69
  
2. **PATHCONT** Pathogen control:

NONE	None
FULL	Full: Pirimicarb at 0.14 kg in 220 l on 23 June, 1988. Carbendazim at 0.25 kg with vinclozolin at 0.50 kg in 220 l on 7, 15, 26 July, 3 and 15 Aug.

**Basal applications:** Manures: (10:10:15+4.5 Mg) at 600 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 0.80 kg ion in 440 l to S10, at 0.60 kg ion in 220 l to other varieties .

**Seed:** Varieties, sown at 100,000 seeds per hectare.

**Cultivations, etc.:-** Glyphosate applied: 17 Nov, 1987. Ploughed: 8 Dec. Manures applied: 11 Mar, 1988. Trifluralin applied, spring-tine cultivated, rotary harrowed twice: 6 Apr. Seed sown, rolled: 7 Apr. Linuron applied: 11 Apr. Desiccant applied to all plots except S10: 5 Sept, to S10 plots: 29 Sept. Harvested by hand, threshed by stationary combine harvester, all plots except S10: 6 Sept, S10 plots: 30 Sept. Previous crops: S. oats 1986, w. wheat 1987.

- NOTES:** (1) Plots were covered by a bird-proof net from mid-April to maturity.
- (2) Crop height was measured at anthesis. Head diameters and neck thickness were measured at maturity. Botrytis was assessed on four occasions.

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GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

PATHCONT VARIETY	NONE	FULL	Mean
S10	1.87	2.01	1.94
HA 701	2.88	2.76	2.82
S34	0.70	0.86	0.78
S47	1.74	1.78	1.76
S54	1.40	1.42	1.41
S69	1.35	1.41	1.38
Mean	1.66	1.71	1.68

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

VARIETY	PATHCONT	VARIETY PATHCONT
0.078	0.045	0.110

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	22	0.135	8.0
GRAIN MEAN DM%	66.6		
PLOT AREA HARVESTED	0.00120		

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SUNFLOWERS

SEED RATES

**Object:** To test the effects of five seed rates on plant growth, disease and yield - Fosters Corner.

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

**Design:** 4 randomised blocks of 5 plots.

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

**Treatments:**

**SEEDRATE**      Seed rate (no. seeds sown per square metre):

6  
8  
10  
12  
14

**Basal applications:** Manures: (10:10:15+4.5 Mg) at 600 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 0.40 kg ion in 220 l on two occasions.

**Seed:** HA 701.

**Cultivations, etc.:-** Glyphosate applied: 17 Nov, 1987. Ploughed: 8 Dec. Manures applied: 11 Mar, 1988. Trifluralin applied, spring-tine cultivated, rotary harrowed, seed sown: 6 Apr. Rolled: 7 Apr. Linuron applied: 11 Apr. Desiccant applied twice: 14 Sept. Combine harvested: 22 Sept. Previous crops: S. oats 1986, w. wheat 1987.

**NOTE:** The plots were covered by a bird-proof net from mid-April to maturity. Crop heights were measured at anthesis and maturity. Flower head angles and diameters were measured at maturity. Botrytis was assessed on three occasions.

88/R/SU/2

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

SEEDRATE	6	8	10	12	14	Mean
	1.99	1.99	2.30	2.16	2.39	2.16

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

SEEDRATE  
0.121

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	12	0.171	7.9

GRAIN MEAN DM% 64.6

PLOT AREA HARVESTED 0.00120

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SUNFLOWERS

FUNGICIDES AND BOTRYTIS

**Object:** To study the effects of four rates of fungicides on the control of Botrytis head infection and on the yield of sunflowers - Fosters Corner.

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

**Design:** 4 randomised blocks of 5 plots.

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

**Treatments:**

**FUNGRATE** Rates of fungicides, per application:

0	None (duplicated)
1	Carbendazim at 0.25 kg plus vinclozolin at 0.5 kg
2	Carbendazim at 0.50 kg plus vinclozolin at 1.0 kg
3	Carbendazim at 0.75 kg plus vinclozolin at 1.5 kg

**NOTE:** Fungicides were applied on 7, 15, 26 July, 1988, 3 and 15 Aug.

**Basal applications:** Manures: (10:10:15+4.5 Mg) at 600 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.

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

**Cultivations, etc.:-** Glyphosate applied: 17 Nov, 1987. Ploughed: 8 Dec. Manures applied: 11 Mar, 1988. Spring-tine cultivated: 5 Apr. Trifluralin applied, spring-tine cultivated, rotary harrowed, seed sown: 6 Apr. Rolled: 7 Apr. Linuron applied: 11 Apr. Desiccant applied: 5 Sept. Combine harvested: 6 Sept. Previous crops: S. Oats 1986, w. wheat 1987.

**NOTES:** (1) The plots were covered by a bird-proof net from mid-April to maturity.  
(2) Botrytis was assessed on three occasions.

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GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

FUNGRATE	0	1	2	3	Mean
	0.99	1.23	1.19	1.21	1.12

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

**FUNGRATE**

0.086 min.rep

0.075 max-min

**FUNGRATE**

max-min 0 v any of remainder

min.rep any of remainder

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	13	0.122	10.9
GRAIN MEAN DM%	83.7		
PLOT AREA HARVESTED	0.00120		

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## SUNFLOWERS

### VARIETIES AND SOWING DATES

**Object:** To study the effects of five sowing dates on the rates of vegetative and floral development, seed growth, dates of maturity, disease and yield of two varieties of sunflowers - Fosters Corner.

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

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

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

**Treatments:** All combinations of:-

1. **VARIETY**                      Varieties:  
  
    SUNB 246                      Sunbred 246  
    S 47                              S47
  
2. **SOWDATE**                      Sowing date:  
  
    17 MAR                          17 March, 1988  
    5 APR                              5 April  
    15 APR                          15 April  
    25 APR                          25 April  
    11 MAY                          11 May

**Basal applications:** Manures: (10:10:15+4.5 Mg) at 600 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 to S47 on the first three sowing dates and at 0.80 kg in 440 l to the remainder.

**Seed:** Sown at 100,000 seeds per hectare.

**Cultivations, etc.:-** Glyphosate applied: 17 Nov, 1987. Ploughed: 8 Dec. NPK Mg applied: 11 Mar, 1988. Spring-tine cultivated, trifluralin applied, rotary harrowed all plots and, to sowdate 17 Mar; seed sown, rolled, linuron applied: 17 Mar. To sowdate 5 Apr; seed sown: 5 Apr, rolled: 7 Apr, linuron applied: 11 Apr. To sowdate 15 Apr; rotary harrowed, seed sown, rolled: 15 Apr, linuron applied: 25 Apr. To sowdate 25 Apr; rotary harrowed, seed sown, rolled, linuron applied: 25 Apr. To sowdate 11 May; rotary harrowed, seed sown, rolled: 11 May. Linuron applied: 20 May. Desiccant applied to S 47, sowdates 17 Mar, 5 Apr and 15 Apr: 5 Sept. Desiccant applied to S 47, sowdates 25 Apr and 11 May: 29 Sept. Desiccant applied to SUNB 246, sowdates 17 Mar, 5 Apr and 5 Apr: 5 Oct. Desiccant applied to SUNB 246, sowdates 25 Apr and 1 May: 12 Oct. Hand harvested S 47, sowdates 17 Mar, 5 Apr and 15 Apr: 6 Sept. Hand harvested S 47, sowdates 25 Apr and 11 May: 30 Sept. Hand harvested SUNB 246 sowdates 17 Mar, 5 Apr and 15 Apr: 10 Oct. Hand harvested SUNB 246 sowdates 25 Apr and 11 May: 17 Oct. Previous crops: s. oats 1986, w. wheat 1987.



88/R/SU/4

- NOTES: (1) Heads were cut by hand and then threshed by stationary combine harvester.  
 (2) The plots were covered by a bird-proof net soon after sowing until maturity.  
 (3) Assessments of Botrytis was made on six occasions.  
 (4) Head diameters were measured at anthesis and before harvest.  
 (5) Crop height, head angle and neck thickness were measured after anthesis.

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

SOWDATE	17 MAR	5 APR	15 APR	25 APR	11 MAY	Mean
VARIETY						
SUNB 246	0.74	1.60	1.69	0.41	1.85	1.26
S 47	1.47	1.68	2.05	1.30	2.02	1.70
Mean	1.11	1.64	1.87	0.86	1.94	1.48

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

VARIETY	SOWDATE	VARIETY
0.128	0.202	0.285

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	18	0.349	23.6
GRAIN MEAN DM%	61.7		
PLOT AREA HARVESTED	0.00120		