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Grass

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75/R/M/1

SPRING WHEAT AND MAIZE

PHYSIOLOGICAL STUDY

Object: To study the photosynthetic mechanisms of spring wheat and maize and assess the effects of a photorespiration inhibitor - Fosters Corner.

Sponsors: A.J. Keys, A.J. Barnard.

Design: Spring wheat: 3 randomised blocks of 9 plots. Maize: 1 randomised block of 9 plots.

Whole plot dimensions: Spring wheat: 4.06 x 6.10. Maize: 4.27 x 6.10.

Treatments: All combinations of:-

1. Rates of photorespiration inhibitor (ethyl-2,3-epoxypropanoate) kg:

	E E RATE
None	0.00
0.27	0.27
0.77	0.77

2. Times of applying photorespiration inhibitor:

	E E TIME
Early, wheat: 24 June. Maize: 11 July	EARLY
Middle, wheat: 11 July. Maize: 29 July	MIDDLE
Late, wheat: 29 July. Maize: 7 Aug	LATE

NOTE: Yields were not taken from the maize.

Basal applications: Manures: (20:14:14) at 500 kg combine drilled for wheat and at 750 kg for maize. Weedkillers: Wheat: Dicamba with mecoprop and MCPA ('Tetralax Plus' at 7.0 l in 340 l), maize: Atrazine at 1.7 kg in 340 l.

Seed: Wheat: Kleiber, sown at 190 kg.

Maize: Cargill Primeur 170 sown at 123000 seeds per ha.

Cultivations, etc.:- Ploughed: 11 Nov, 1974. Spring-tine cultivated: 21 Apr, 1975. Spring-tine cultivated and rotary harrowed: 24 Apr. Wheat: NPK applied and seed sown: 26 Apr. Weedkiller applied: 9 June. Combine harvested: 28 Aug. Maize: NPK applied: 12 May. Power harrowed and seed sown: 14 May. Weedkiller applied: 23 May. Harvested: 14 Nov. Previous crops: Barley 1973, beans 1974.

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GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

E E TIME E E RATE	EARLY	MIDDLE	LATE	MEAN
0.27	2.92	2.87	2.97	2.92
0.77	2.87	3.01	2.85	2.91
MEAN	2.89	2.94	2.91	2.91

E E RATE 0.0 2.91

GRAND MEAN 2.91

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

TABLE	E E RATE	E E TIME	E E RATE E E TIME AND E E RATE 0.0
SED	0.092	0.112	0.159

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

STRATUM	DF	SE	CV%
BLOCK.WP	18	0.194	6.7

MEAN D.M% 87.9

PLOT AREA HARVESTED 0.00101

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MIXED CROPS

WINTER AND SPRING WHEAT, BARLEY AND OATS
SOWING DATES AND CEREAL CYST-NEMATODE

Object: To study the effects of sowing date and a nematicide on the incidence of cereal cyst-nematode (*Heterodera avenae*) and the yield of three cereals in a soil known to contain a fungal parasite of the nematode - Woburn, Butt Close.

Sponsor: B.R. Kerry.

Design: 4 randomised blocks of 12 plots.

Whole plot dimensions: 2.13 x 6.70.

Treatments: All combinations of:-

Whole plots: 1. Crop:	CROP
Wheat	WHEAT
Barley	BARLEY
Oats	OATS
2. Sowing date:	SOW DATE
Autumn	AUTUMN
Spring	SPRING
3. Nematicide:	NEMACIDE
None	NONE
Oxamyl at 8.8 kg	OXAMYL

Standard applications:

Autumn-sown cereals: Manures: (10:24:24) at 250 kg combine drilled.

Winter wheat: N at 110 kg as 'Nitro-Chalk'. Winter barley and
oats: N at 90 kg as 'Nitro-Chalk'.

Spring-sown cereals: Manures: (20:14:14) at 380 kg combine drilled.
N at 50 kg as 'Nitro-Chalk'.

All cereals: Weedkillers: Ioxynil at 0.63 kg plus mecoprop at 1.9 kg
in 340 l.

Seed: Wheat: Maris Ranger, sown at 200 kg.

Barley: Maris Otter, sown at 170 kg.

Oats: Maris Quest, sown at 190 kg.

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Cultivations, etc.:-

Autumn-sown cereals: Treatments applied and these plots only rotary cultivated: 12 Nov, 1974. Spring-tine cultivated, seed sown: 27 Nov. Weedkiller applied: 22 May, 1975. N applied: 29 May. Harvested by hand: 1 Aug.

Spring-sown cereals: Spring-tine cultivated: 27 Nov, 1974. Treatments applied and these plots only rotary cultivated: 4 Mar, 1975. Spring-tine cultivated with crumbler, seed sown: 20 Mar. Weedkiller applied: 22 May. N applied: 20 June. Hand harvested: 5 Aug.

All cereals: Ploughed: 31 Oct, 1974. Spring-tine cultivated: 7 Nov. Previous crops: Spring wheat 1973, spring oats 1974.

- NOTES: (1) Soil samples were taken before sowing in autumn and spring and after harvest for egg counts of *Heterodera avenae*.
(2) Larval invasion counts were made in April, May and June.
(3) Counts of white females were made in June, July and August and disease assessments made.
(4) Root and stem samples were taken during the growing season for assessments of dry matter.
(5) All crops were severely damaged by birds before harvest and yields were not taken.

75/R/M/2

MAIZE AND SWEET CORN

INSECT AND VIRUS CONTROL

Object: To study the effects of several insecticides applied at different times on control of insects and on yield of maize and sweet corn - Long Hoos V 7.

Sponsors: J.C. Wilson, K.E. Fletcher, R.T. Plumb.

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

Whole plot dimensions: 3.20 x 18.3.

Treatments: All combinations of:-

Whole plots: 1. Crop:

Grain maize, Cargill Primeur 170
Sweet corn, Early King

CROP
MAIZE
SWEETCORN

Sub plots: 2. Chemicals and times of application:

None (duplicated, for maize only)
Aldicarb in seedbed (sweet corn only)
Phorate granules in seedbed (duplicated, for maize only)
Phorate granules in seedbed plus second-early spray
of dimethoate (sweet corn only)
Chlorfenvinphos, first-early spray (25 June)
Chlorfenvinphos, second-early spray (18 July)
Dimethoate, first-early spray (25 June)
Dimethoate, second-early spray (18 July)

CHEMICAL
NONE
AL
PH
PH/DI/E2
CH/E1
CH/E2
DI/E1
DI/E2

NOTE: Aldicarb applied at 4.48 kg.
Dimethoate applied at 0.67 kg in 340 l.
Phorate applied at 1.68 kg.
Chlorfenvinphos applied at 0.55 kg in 340 l.

Basal applications: Manures: (20:14:14) at 730 kg. Weedkiller: Atrazine ('Vectal' at 3.4 kg in 340 l).

Seed: Grain maize: Cargill Primcur sown at 123,000 seeds/ha.
Sweetcorn: Early King sown at 123,000 seeds/ha.

Cultivations: Ploughed: 10 Jan, 1975. NPK applied: 28 Apr. Spring-tine cultivated: 12 May. Aldicarb applied, power harrowed: 15 May. Phorate applied and seed sown: 21 May. Weedkiller applied: 23 May. Sweet corn harvested: 8 Sept. Grain maize harvested: 10 Nov. Previous crops: Spring wheat 1973, potatoes 1974.

NOTES: (1) Assessments of the numbers of plants and of shoots attacked by frit fly (*Oscinella frit*) were made: sweet corn: 9, 29 July, grain maize: 15 July.
(2) Aphid counts and virus assessments were made on 18 June, 10 July and 15 September.

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CROP MAIZE

*** TABLES OF MEANS ***

GRAIN TONNES/HECTARE

CHEMICAL	NONE	PH	CH/E1	CH/E2	D1/E1	D1/E2	MEAN
	2.96	2.90	2.76	2.76	3.26	3.18	2.97

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

TABLE	CHEMICAL
SED	0.306 (1) 0.375 (2) 0.433 (3)

- (1) NON V PH
- (2) NONE OR PH V ANY OF REMAINDER
- (3) ANY OF REMAINDER

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

STRATUM	DF	SE	CV%
BLOCK.WP	16	0.531	17.9

GRAIN MEAN DM% 65.0

PLOT AREA HARVESTED 0.00130

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CROP SWEETCRN

*** TABLES OF MEANS ***

WEIGHT OF SALEABLE COBS (OVER 10.16 CM) TONNES/HECTARE

CHEMICAL	NONE	AL	PH	PH/D1/E2	CH/E1	CH/E2	D1/E1	D1/E2	MEAN
	1.26	1.97	3.11	2.11	1.29	1.90	0.87	1.46	1.75

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

TABLE	CHEMICAL
-----	-----
SED	0.364

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

STRATUM	DF	SE	CV%
BLOCK.WP	14	0.446	25.5

NUMBER OF SALEABLE COBS (OVER 10.16 CM) TONNES/HECTARE

CHEMICAL	NONE	AL	PH	PH/D1/E2	CH/E1	CH/E2	D1/E1	D1/E2	MEAN
	9.4	14.8	20.0	15.5	10.8	13.9	7.0	11.9	12.9

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

TABLE	CHEMICAL
-----	-----
SED	2.81

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

STRATUM	DF	SE	CV%
BLOCK.WP	14	3.44	26.7

PLOT AREA HARVESTED 0.00149