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Yields of the Field Experiments 1973

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73/R/CS/90 - Cultivations for Cereals - Wheat

Rothamsted Research

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73/R/CS/90

CULTIVATIONS FOR CEREALS

Object: To study the engineering aspects - power requirements, rate of work, revenue and costs - of different tillage systems for wheat. Effects on weeds, soil pathogens and yields are also studied - Meadow.

Sponsors: D.E. Patterson (N.I.A.E.), R. Moffitt.

The second year, winter wheat.

For previous year, see 72/R/CS/90(t).

Design: 3 randomised blocks of 10 plots.

Whole plot dimensions: 13.7 x 33.8. Area harvested: 0.01031.

Treatments: Tillage systems:-

	TILLAGE
Three passages of the tractor (three-pass system): Ploughed* 20 cm deep (8 inches): spring-tine cultivated: drilled	1
Four-pass system: Tine cultivated* 15 cm deep (6 inches) twice: spring-tine cultivated: drilled	2
Two-pass system: Ploughed* 20 cm deep (8 inches): spring-tine cultivated and drilled	3
Two-pass system: Ploughed* 10 cm deep (4 inches): spring-tine cultivated and drilled	4
Two-pass system: Tine cultivated* 20 cm deep (8 inches): spiked rotary cultivated and drilled	5
Two-pass system: Tine cultivated* 10 cm deep (4 inches): spiked rotary cultivated and drilled	6
Two-pass system: Sprayed with paraquat** (0.56 kg ion): tine cultivated 10 cm deep (4 inches), rotary cultivated and drilled	7
Three-pass system: Sprayed with paraquat** (0.56 kg ion): rotary digger cultivated: rotary harrowed and drilled	8
Two-pass system: Ploughed* 20 cm deep (8 inches): rotary harrowed and drilled	9
Two-pass system: Rotary digger cultivated: spring-tine cultivated and drilled	10

NOTE: Rotary digger - depth of working: rotor 10 cm (4 inches), tines 20 cm (8 inches)

* Cultivations done on 14 Sept, 1972.

** Paraquat applied in 220 1 5 Oct.

All other cultivations and all drilling done on 13 Oct with a disc drill.

73/R/CS/90

Basal applications: Manures: (10:24:24) at 310 kg combine drilled, 'Nitro-Chalk' at 410 kg. Weedkiller: Mecoprop ('Compitox Plus' at 4.2 l in 220 l).

Seed: Cappelle, sown at 190 kg.

Cultivations, etc.: - N applied: 13 Apr, 1973. Weedkiller applied: 16 Apr. Combine harvested: 23 Aug.

NOTES: Observations and determinations were made as follows:

- (1) Soil: Mechanical analysis and profile descriptions, moisture determinations, bulk densities, photographs.
- (2) Implements: Depth and width of work, forward speed, wheel slip, draught, p.t.o. power, labour requirements.
- (3) Crop: Plant and tiller counts, incidence of eyespot (*Cercospora herpotrichoides*) and take-all (*Gaeumannomyces graminis*), weed assessments, grain size, aerial photographs.

Standard error per plot.

Grain, tonnes/hectare: 0.358 or 6.6% (18 d.f.)

TABLES OF MEANS

GRAIN: TONNES/HECTARE

TILLAGE

1	2	3	4	5	6	7	8	9	10	Mean
5.39	5.73	5.27	5.14	5.48	5.68	5.73	5.14	5.21	5.48	5.43

STANDARD ERROR OF DIFFERENCES

TILLAGE

0.293

Mean D.M. % 85.3