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Yields of the Field Experiments 1975

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75/ R/CS/90 - Cultivations for Cerealswheat -

Rothamsted Research

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75/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 continuous wheat. Effects on weeds, soil pathogens and yields are also studied - Meadow.

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

The fourth year, winter wheat.

For previous years see 72/R/CS/90(t) and 73-74/R/CS/90.

Design: 3 randomised blocks of 10 plots.

Whole plot dimensions: 13.7 x 33.8.

Treatments: Tillage systems:-	TILLAGE
Three passages of the tractor (three-pass system): Ploughed* 20 cm deep (8 inches): spring-tine cultivated: drilled.	1
Three-pass system: Tine cultivated* (Bomford) 15 cm deep (6 inches): tine cultivated 15 cm: spring-tine cultivated and drilled.	2
Two-pass system: Ploughed* 20 cm deep: 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* (N.I.A.E.) 20 cm deep: spring-tine cultivated and drilled.	5
Three-pass system: Sprayed with paraquat (0.56 kg ion in 220 l on 14 Oct): tine cultivated* (N.I.A.E.) 10 cm deep: spring-tine cultivated and drilled.	6
Two-pass system: Sprayed with paraquat (0.56 kg ion in 220 l on 14 Oct): tine cultivated, rotary cultivated and drilled.	7
Two-pass system: Sprayed with paraquat (0.56 kg ion in 220 l on 24 Oct): direct drilled.	8
Two-pass system: Rotary digger (N.I.A.E.) cultivated*: spring-tine cultivated and drilled.	9
Two-pass system: Rotary digger cultivated* 20 cm deep: spring-tine cultivated and drilled.	10

* Cultivation done on 14-18 Oct. All other cultivations and drilling done on 24-25 Oct. A disc drill was used on all treatments except 8.

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NOTE: Rotary digger (N.I.A.E.) - depth of working: rotor 10 cm, tines 20 cm.

Basal applications: Manures: (10:24:24) at 310 kg combine drilled, 'Nitro-Chalk' at 380 kg. Weedkiller: Mecoprop ('Proponex Plus' at 4.2 l in 220 l).

Seed: Cappelle, sown at 160 kg.

Cultivations, etc.: - N applied: 21 Apr, 1975. Weedkiller applied: 24 Apr. Combine harvested: 11 Aug.

NOTES: Observations and determinations were made as follows:-

- (1) Soil: Mechanical analysis and profile descriptions, moisture determinations, soil aggregate stability, organic matter, pH, nutrient distribution and photographs.
- (2) Implements: Depth and width of work, forward speed, wheel slip, power requirements.
- (3) Crop: Plant and tiller counts, number of ears and grains per ear, disease and pest assessments, aerial photographs.

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*** TABLES OF MEANS ***

GRAIN TONNES/HECTARE

TILLAGE	1	2	3	4	5	6	7	8	9	10	MEAN
	5.98	5.49	6.05	5.67	5.24	5.56	5.59	5.52	5.80	5.81	5.67

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

TABLE	TILLAGE
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SED	0.284

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

STRATUM	DF	SE	CV%
BLOCK.WP	18	0.348	6.1

GRAIN MEAN DM% 86.8

PLOT AREA HARVESTED 0.01031