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72/R/CS/90 Cultivations for Cereals - W. Wheat

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72/R/CS/90

CULTIVATIONS FOR CEREALS

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

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

The first year, winter wheat.

Design: 3 randomised blocks of 10 plots.

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

Treatments: Tillage systems (TS):-

- 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): spiked rotary cultivated and drilled (3)
 - Two-pass system: Ploughed* 10 cm deep (4 inches): spiked rotary 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)
 - One-pass system: Tine cultivated 18 cm deep (7 inches) and rotary cultivated and drilled (7)
 - One-pass system: Tine cultivated 15 cm deep (6 inches) and rotary harrowed and drilled (8)
 - Two-pass system: Ploughed* 20 cm deep (8 inches): rotary harrowed and drilled (9)
 - Two-pass system: Cultivated by rotary digger* 22 cm deep (8.5 inches): spiked rotary cultivated and drilled (10)
- All plots were disc drilled.

* Cultivations done on 14 Sept, 1971. All others done on 21/22 Oct.

Basal applications: 250 kg (10:24:24) combine drilled. 410 kg 'Nitro-Chalk' 25% N. Weedkiller: Paraquat at 0.56 kg ion in 220 l.

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Seed: Joss Cambier sown at 180 kg.

Cultivations, etc.: Paraquat applied: 6 Oct, 1971. N applied:
21 Apr, 1972. Combine harvested: 25 Aug. Previous crops:
Barley 1970 and 1971.

NOTE: Observations and determinations were made as follows:

1. Soil: Mechanical soil 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: Tiller counts, disease and weed assessments, grain size, aerial photographs.

Standard error per plot.

Grain, tonnes/hectare: 0.326 or 9.6% (18 d.f.)

TABLE OF MEANS

GRAIN: TONNES/HECTARE

TS

1	2	3	4	5	6	7	8	9	10	Mean
3.58	3.38	3.56	3.35	3.79	3.16	3.29	2.89	3.63	3.27	3.39

STANDARD ERROR OF DIFFERENCES

TS 0.266

Mean D.M. %: 85.0