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71/R/CS/74 Break Crops and Wheat - Barley, Oats, Beans, Maize, Clover, Undersown *Trefoil*

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71/R/CS/74

BREAK CROPS AND WHEAT

Object: To study the effects of different break crops on yields and soil-borne pathogens of a following sequence of cereals - Fosters West Side.

The first year, barley, oats, beans, maize, clover, undersown trefoil.

Design: 3 randomised blocks of 10 plots.

Whole plot dimensions: 4.27 x 39.3. Area harvested: Barley: 0.01112, Oats: 0.00839, Beans: 0.01258, Clover: 0.00399.

Treatments: Crops:- Maize receiving N at 100 kg, 200 kg as 'Nitro-Chalk' in the seedbed, spring beans (2 plots per block), clover (2 plots per block) and all combinations of:-
1. Crops: Barley, oats, each receiving N at 50 kg as 'Nitro-Chalk' in the seedbed.
2. Undersowing: None (O), trefoil (T).

Basal and standard applications:- 505 kg (0:20:20) across the plough furrow. Weedkillers: Paraquat at 0.56 kg ion in 225 l. Ioxynil octanoate, bromoxynil octanoate and the iso-octyl ester of dichlorprop ('Oxytril P' at 1.4 l in 225 l) to barley and oats (not undersown). MCPB at 2.8 kg in 225 l to undersown barley and oats. Insecticide: Demeton-s-methyl at 245 g in 438 l to beans.

Cultivations, etc.: Paraquat applied: 14 Oct, 1970. Ploughed: 13 Oct. PK applied: 24 Feb, 1971.

Barley: Seed drilled at 157 kg: 25 Feb, 1971. N applied: 24 Mar. Trefoil (variety English) undersown at 27 kg: 13 Apr. 'Oxytril P' applied: 18 May. Combine harvested: 11 Aug. Variety: Julia.
Oats: Seed drilled at 191 kg: 4 Mar, 1971. N applied: 24 Mar. Trefoil (variety English) undersown at 27 kg: 13 Apr. 'Oxytril P' applied: 18 May. Combine harvested: 16 Aug. Variety: Manod.

Spring beans: Seed drilled at 224 kg: 25 Feb, 1971. Insecticide applied: 1 July. Combine harvested: 2 Sept. Variety: Maris Bead.

Maize: N applied, seed drilled at 7.8 kg: 6 May, 1971. Seed resown at 58 kg: 10 May. Cut twice: 30 Oct, 1 Nov. Variety: First sowing - Kelvedon 59A, second - Pioneer 131,

Clover: Seed sown at 34 kg: 28 Apr, 1971. Topped and weeds carted off: 22 June. Topped second time: 19 July. Cut twice: 18 Aug, 29 Oct. Variety: Essex Broadleaf Red.

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Previous crops: Spring oilseed rape 1969, winter wheat 1970.

NOTE: Barley plots were sampled in summer for eyespot (*Cercospora herpotrichoides*) and take-all (*Ophiobolus graminis*). Trefoil and clover were sampled before ploughing in and estimates made of the dry matter and N per acre.

SUMMARY OF RESULTS

GRAIN: TONNES/HECTARE

O	T	Mean
BARLEY		
(±0.078)		
5.04	4.88	4.96

Mean D.M. %: 79.9

OATS		
(±0.012)		
3.95	4.07	4.01

Mean D.M. %: 77.6

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BEANS

GRAIN: TONNES/HECTARE

Mean

2.50

CLOVER

DRY MATTER: TONNES/HECTARE

Mean

1st cut:	3.37
2nd cut:	1.72
Total of 2 cuts:	5.09

Mean D.M. %

Beans	79.5
Clover, 1st cut:	12.6
2nd cut:	18.8
Total of 2 cuts:	15.7