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88/R/M/5 Comparison of Combines - W. Wheat, S. Barley - Mixed Crops

Rothamsted Research

Rothamsted Research (1989) *88/R/M/5 Comparison of Combines - W. Wheat, S. Barley - Mixed Crops* ; Yields Of The Field Experiments 1988, pp 256 - 258 - **DOI:**
<https://doi.org/10.23637/ERADOC-1-43>

88/R/M/5

MIXED 5

COMPARISON OF COMBINES

Object: To evaluate the suitability of two combines for plot work in respect of purity of sample and accuracy when working on slopes - Great Knott II.

Sponsors: R. Moffitt, M.N. Rogers.

Design: A systematic split-plot design of 56 whole plots arranged as shown below.

W	B	W	B	W	B	W	B	Top of slope
W	W	W	W	W	W	W	W	
W	W	W	W	W	W	W	W	
B	B	B	B	B	B	B	B	
W	W	W	W	W	W	W	W	
W	W	W	W	W	W	W	W	
W*	B	W	B	W	B	W	B	Bottom of slope

* Combines started here (after harvesting a dummy wheat plot downhill), worked up the column of plots then down the next column etc.

B = Barley W = wheat

NOTES: (1) Each whole plot was systematically divided to compare the two combine harvesters.
(2) There were 10 m headlands between contiguous barley and wheat plots. These were removed before combining the plots. There were 1 m paths between contiguous wheat plots.

Whole plot dimensions: 9.0 x 11.0.

Treatments:

Whole plots

- CROP** Crop:
WHEAT W. wheat
BARLEY S. barley
- DIRECTN** Combine direction in relation to slope:
UP Up slope
DOWN Down slope
- ORDER** Order of combining:
BEGIN First plot in column
STRAIGHT Central plots in column
END Last plot in column

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Sub plots

4. COMBINE	Combine type:
CLAYSON	Clayson 1530
DEUTZ-F	Deutz-Fahr 660

NOTE: Spring barley replaced autumn-sown rye which failed.

Basal applications: Manures: Chalk at 5.0 t. 'Nitram' at 120 kg and later at 250 kg. Weedkillers: Paraquat at 0.60 kg ion in 200 l. Glyphosate at 0.36 kg in 200 l (to failed rye plots only). Fluroxypyr at 0.15 kg with clopyralid at 0.05 kg and bromoxynil at 0.24 kg in 200 l. Fungicide: Propiconazole at 0.12 kg in 200 l.

Seed: W. wheat: Mission, sown at 200 kg.
W. rye: Dominant, sown at 200 kg.
S. barley: Klaxon, sown at 180 kg.

Cultivations, etc.:- Ploughed: 12 Aug, 1987. Discd: 17 Aug. Chalk applied: 16 Sept. Paraquat applied: 28 Oct. Rotary harrowed, w. wheat and w. rye seed sown: 18 Nov. First N applied: 2 Mar, 1988. Glyphosate applied (to rye plots): 19 Apr. Second N applied: 22 Apr. Ex-rye plots heavy spring-tine cultivated, rotary harrowed, s. barley seed sown: 29 Apr. Remaining weedkillers applied: 13 May. Fungicide applied: 27 May. Combine harvested: 5 Sept (CLAYSON plots) and 6 Sept (DEUTZ-F plots). Previous crops: W. barley 1986, w. oilseed rape 1987.

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GRAIN TONNES/HECTARE

***** Tables of means *****

COMBINE	CLAYSON	DEUTZ-F						
	5.77	5.33						
	DIRECTN	UP						
	ORDER	BEGIN	STRAIGHT	END	DOWN	BEGIN	STRAIGHT	END
WHEAT		5.45	6.38	6.48			6.67	
BARLEY			3.07			3.70	3.41	3.41
CROP	DIRECTN	ORDER	COMBINE	CLAYSON	DEUTZ-F			
WHEAT	UP	BEGIN		6.10	4.79			
		STRAIGHT		6.87	5.88			
		END		6.87	6.09			
	DOWN	STRAIGHT		7.00	6.34			
BARLEY	UP	STRAIGHT		2.52	3.62			
	DOWN	BEGIN		3.53	3.87			
		STRAIGHT		3.10	3.73			
		END		3.19	3.63			

Grand mean 5.55

*** Standard errors of differences of means ***

COMBINE	CROP	CROP		
	DIRECTN	DIRECTN		
	ORDER	ORDER		
		COMBINE		
0.082	0.375	0.434	min.rep	
	0.297	0.343	max-min	
	0.188	0.217	max.rep	
Except when comparing means with the same level(s) of				
CROP.DIRECTN.ORDER			0.307	min.rep
			0.242	max-min
			0.153	max.rep

max.rep CROP WHEAT and ORDER STRAIGHT
 min.rep any of the remainder
 max-min CROP WHEAT and ORDER STRAIGHT v any of the remainder

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
WP	48	0.531	9.6
WP.SP	48	0.434	7.8

GRAIN MEAN DM% 84.0

PLOT AREA HARVESTED	CLAYSON	0.00310
	DEUTZ F	0.00230