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73/R/BS/8 - Effects of N Plot Length on Combine Performance - Spring Barley

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73/R/BS/8

SPRING BARLEY

EFFECT OF N AND PLOT LENGTH ON COMBINE PERFORMANCE

Object: To study the performance of the Claas 'Compact 20' and 'Sampo' combines in harvesting barley on different plot lengths at a range of nitrogen rates and to compare with hand harvesting - Long Hoes IV.

Sponsors: J.C. Wilson, R. Moffitt.

Design: 8 blocks of 6 plots split into 4.

Whole plot dimensions: Claas: 2.41 x 16.5
Sampo: 3.05 x 16.5

Treatments: All combinations of:

Whole plots: 1. Width of area harvested: WIDTHCM

165 cm as 13 rows, 12.7 cm (5 inches) apart, harvested by 'Claas Compact 20' combine on mechanically harvested sub plots 165Claas

203 cm as 16 rows, 12.7 cm (5 inches) apart, harvested by 'Sampo' combine on mechanically harvested sub plots 203Sampo

2. Nitrogen fertiliser (kg N): N

45 45
90 90
135 135

Sub plots: 3. Length of area harvested and method of harvest: LENGTHM

1.52m (5 feet) harvested by hand 1.52Hand
1.52m (5 feet) harvested by machine 1.52Comb
3.05m (10 feet) harvested by machine 3.05Comb
6.10m (20 feet) harvested by machine 6.10Comb

NOTE: The 5 feet 16 row plots planned for hand harvesting were harvested by Sampo combine.

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Basal applications: Manures: Ground chalk at 7.5 tonnes. (0:14:28) at 390 kg. Weedkiller: MCPA, mecoprop and dicamba ('Tetralix plus' at 7.0 l in 290 l).

Seed: Julia, dressed with ethirimol, sown at 160 kg.

Cultivations, etc.: Ploughed: 26 Sept, 1972. PK applied and seed sown: 21 Mar, 1973. N applied: 25 Mar. Weedkiller applied: 18 May. Combine harvested: 13 Aug. Previous crops: Barley 1971, winter wheat 1972.

NOTE: The Claas combine cut 13 rows (at 5 in., about 13 cm) between single missing rows, the Sampo cut 16 rows between pairs of missing rows. Paths 2 feet (61 cm) wide were cut at all cross-boundaries. All yields have been adjusted for edge effects (Widdowson, F.V., Experimental Husbandry, 23, 16-20, 1973), the factors used were 0.69 (Claas) and 0.71 (Sampo).

Standard errors per plot (pooled whole and sub plot). Grain, tonnes/hectare:
WIDTHCM 165Claas only (LENGTHM 1.52Hand omitted): 0.379 or 6.7 (56 d.f.)
WIDTHCM 203Sampo only: 0.405 or 7.1 (60 d.f.)
Pooled (all treatments): 0.394 or 7.0 (16 d.f.)

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TABLES OF MEANS

GRAIN: TONNES/HECTARE

WIDTHCM 165C laas LENGTHM 1.52Hand Omitted								WIDTHCM 165C laas LENGTHM 1.52Hand
	45	90	135	1.52 Comb	3.05 Comb	6.10 Comb	Mean	
WIDTHCM								
203Sampo	5.59	5.79	5.62	5.78	5.62	5.49	5.67	
165C laas	5.49	5.86	5.69	5.64	5.64	5.75	5.68	
	N							
		45		5.60	5.50	5.52	5.55	5.19
		90		5.86	5.79	5.78	5.82	5.33
		135		5.73	5.61	5.55	5.65	5.06
Mean				5.73	5.63	5.62	5.67	5.19

	45			90			135		
N LENGTHM	1.52 Comb	3.05 Comb	6.10 Comb	1.52 Comb	3.05 Comb	6.10 Comb	1.52 Comb	3.05 Comb	6.10 Comb
WIDTHCM									
203Sampo	5.69	5.54	5.44	5.85	5.78	5.68	5.79	5.55	5.35
165C laas	5.41	5.45	5.60	5.89	5.80	5.89	5.63	5.68	5.76

Grand mean 5.61
Mean D.M. % 82.1

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STANDARD ERRORS OF DIFFERENCES

WIDTHCM 165Claas LENGTHM 1.52Hand omitted

WIDTHCM	N	LENGTHM	
0.061	0.075	1.52 Comb v 3.05 Comb	
		or 6.10 Comb	0.073
		3.05 Comb v 6.10 Comb	0.081

WIDTHCM N		WIDTHCM LENGTHM		N LENGTHM	
203Sampo	0.099	203Sampo 1.52Comb		1.52Comb	0.114
165Claas	0.114	v any of remainder	0.099	3.05Comb or	
				6.10Comb	0.139
203Sampo v		Between any of		1.52Comb v 3.05	
165Claas	0.107	remainder	0.114	Comb or 6.10Comb	0.127

WIDTHCM
LENGTHM
N

Any 203Sampo 1.52Comb v remainder 0.171
Between any of remainder 0.197

WIDTHCM 165Claas LENGTHM 1.52Hand only
N

0.197