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90/R/M/1 Aphids and Bydv - W. Wheat and W. Barley - Mixed Crops

Rothamsted Research

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90/R/M/1

WINTER WHEAT AND WINTER BARLEY

APHIDS AND BYDV

Object: To study the effects of barley yellow dwarf virus (BYDV) on winter cereals - Appletree.

Sponsors: N. Carter, R.T. Plumb.

Design: 3 randomised blocks of 8 plots.

Whole plot dimensions: 9.0 x 10.0.

Treatments: All combinations of:-

1. **CROP** Crops:
 W BARLEY Winter barley
 W WHEAT Winter wheat
2. **AUT INS** Autumn insecticide:
 NONE None
 CYPERMET Cypermethrin at 25 g in 200 l on 1 Nov, 1989
3. **FLO INS** Insecticide at flowering:
 NONE None
 PIRIMICA Pirimicarb at 0.14 kg in 200 l on 17 May, 1990
 (to barley) and 11 June (to wheat)

Basal applications: Manure: 'Nitram' at 350 kg. Weedkillers: Isoproturon at 1.7 kg in 200 l. Bromoxynil at 0.19 kg, ioxynil at 0.19 kg with mecoprop at 2.4 kg applied with the prochloraz in 200 l. Fungicides: Prochloraz at 0.40 kg. Propiconazole at 0.12 kg in 200 l.

Seed: W. wheat: Mercia, sown at 180 kg.
 W. barley: Magie, sown at 160 kg.

Cultivations, etc.:- Rotary cultivated: 1 Aug, 1989. Deep-tine cultivated with vibrating tines: 2 Aug. Ploughed: 21 Aug. Rotary harrowed: 16 Sept. Rotary harrowed, seed sown: 18 Sept. Isoproturon applied: 20 Nov. N applied: 22 Mar, 1990. Remaining weedkillers with prochloraz applied: 30 Mar. Propiconazole applied: 4 May. Combine harvested: 24 July (barley) and 7 Aug (wheat). Previous crops: W. barley 1988, w. oilseed rape 1989.

- NOTES:** (1) Aphids were sampled from mid-October to early July.
(2) BYDV was assessed visually on four occasions during May and June and leaves from some plants were tested by enzyme-linked immunosorbent assay to determine virus present.
(3) Components of yield were measured.

90/R/M/1

GRAIN TONNES/HECTARE

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

AUT INS CROP	NONE	CYPERMET	Mean
W BARLEY	8.30	8.56	8.43
W WHEAT	8.87	8.67	8.77
Mean	8.58	8.61	8.60

FLO INS CROP	NONE	PIRIMICA	Mean
W BARLEY	8.35	8.50	8.43
W WHEAT	8.70	8.83	8.77
Mean	8.53	8.67	8.60

FLO INS AUT INS	NONE	PIRIMICA	Mean
NONE	8.44	8.72	8.58
CYPERMET	8.62	8.61	8.61
Mean	8.53	8.67	8.60

CROP	AUT INS	NONE	CYPERMET	
	FLO INS	NONE	PIRIMICA	NONE PIRIMICA
W BARLEY		8.28	8.32	8.43 8.69
W WHEAT		8.60	9.13	8.81 8.53

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

CROP	AUT INS	FLO INS	CROP AUT INS
0.129	0.129	0.129	0.182

CROP	AUT INS	CROP
FLO INS	FLO INS	AUT INS FLO INS
0.182	0.182	0.258

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	14	0.316	3.7
GRAIN MEAN DM%	90.4		
PLOT AREA HARVESTED	0.00230		