FAWR +

Section 1
Mites and Sap Sucking Insects

THE BYDV CORN CONNECTION

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Barley yellow dwarf virus (BYDV) epidemics have occurred in 4 out of the past 10 years in SW Idaho (Blackmer, 1986). Spread of the disease can be reduced by delayed planting of fall grains and/or use of systemic insecticides to control aphid vectors. But since protective measures are not required every year it would be useful to be able to predict potential for epidemics.

Although aphid numbers are important, potential for virus spread is also contingent upon the percent of the aphids which are viruliferous. The Idaho suction trap network is doing a satisfactory job of monitoring grain aphid flights, but a means of monitoring primary inoculum pressure is needed. In England, an infectivity index (Plumb and Lennon) is used. This may be feasible on a limited scale in Idaho, but it is too labor intensive for statewide use. Because maturing corn was the most obvious source of Rhopalosiphum padi, the most important BYDV vector in irrigated grain, experiments were conducted to ascertain whether percent transmission by R. padi collected in corn was correlated with percent transmission by R. padi in flight and on newly emerged grain.

R. padi was collected from corn and grain in Prosser, Washington in 1983, from corn, grain and a suction trap adapted for live collection in Prosser in 1984, and from corn, grain and an adapted suction trap in Canyon County, Idaho in 1985 and 1986. All aphids were assayed for BYDV transmission. Results are summarized as follows:

Percent transmission of BYDV by R. padi collected on corn, grain or in a suction trap.

	Corn[1]	Grain[2]	Trap[2]
WA 1983	11.5	14.1[3]	--
WA 1984	0	3.2[3]	7.2
ID 1985	1.3	0.0[4]	10.6
ID 1986	0.6	1.3[3]	6.9

1 All Morphs
2 Alates only
3 Wheat
4 Barley -- alate R. padi were very scarce on wheat in 1985 in Canyon Co., ID.

It appears from these data that a measure of the inoculum reservoir in corn could be a good predictor of primary inoculum pressure in irrigated areas.

Blackmer, J. L. 1986. Relationship of aphid vectors to barley yellow dwarf epidemiology in southwestern Idaho. M.S. Thesis. University of Idaho, Moscow, ID. 90 pp.

Plumb, R. T. and Lennon, E. 1982. Aphid infectivity and the infectivity index. Report of the Rothamsted Experimental Station for 1981, Part 1:195-197.