

The Affect of Insecticide Application Timing For Controlling Aphid Vectors On Barley Yellow Dwarf Incidence in Wheat Grown in Henderson Co., KY. (1998-99)

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Patterson variety wheat was planted on Oct 16, 1998 in 4' by 15' plots on the Alexander Farm in Henderson Co. KY. The experiment was arranged in a randomized complete block design with four replications. The test area was most recently in corn and a conventional seed bed was prepared by moldboard plow followed by a discing. Fertility was applied as 35 lbs N on Feb 15, 1999 (Feekes GS 3) and 65 lbs. on March 22, 1999 (Feekes GS: 5). Insecticide applications of Warrior® (lambda-Cyhalothrin) at 3.2 fl.oz. per acre were made with a backpack sprayer in 26 gal of spray per acre, on Nov 24, 1998 (Feekes GS: 2-3), Feb 16, 1999 (Feekes GS: 3), both dates or neither date. A fungicide application of Tilt® at 4 fl.oz. per acre was made to all plots on April 29, 1999 (Feekes GS:10.3-5) using a backpack sprayer delivering 25 gal of spray per acre. Plots were observed for BYD symptoms but pressure was too light to warrant rating. Regular aphid counts were not made but plots were observed at application times. Plots were harvested in June 1999 using a small plot combine. Harvested grain was weighed, and check for moisture content. Plot grain weights were corrected to a moisture standard of 13.5% and yields per acre were calculated based on a standard 60 lbs. per bushel. Yields and test weights were analyzed for differences using SAS, Proc GLM..

Plot yields and test weights ± their Standard Errors (SE) are shown in Table. 1. No significant affect was detected on yields (F=1.13) or test weights (F=1.47) for any of the insecticide treatments. This was expected as BYD pressure was very light in these plots and could not account for any differences. Very few aphids were seen before the final insecticide application. However, aphids were wide spread and numerous during the spring.

TABLE 1. YIELD AND TEST WEIGHT OF WHEAT HARVESTED FROM PLOTS WITH VARIOUS INSECTICIDE TREATMENTS FOR CONTROL OF APHID VECTORS OF BARLEY YELLOW DWARF VIRUS.

Time of Application	Yield ± SE (Bu / Acre)	Test Weight ± SE (Lbs. / Bu)
No Insecticide	94.3 ± 6.7	57.8 ± 0.9
Nov 24, 1998	94.7 ± 6.5	55.2 ± 3.3
Nov 24, 1998 and Feb 16, 1999	102.3 ± 2.3	62.9 ± 5.3
Feb 16, 1999	100.8 ± 2.1	55.8 ± 2.5

Such variations as did occur were largely due to lodging in some of the plots. This problem is partially illustrated (Table 2.) by the difference in yields among replications. If all the difference in yields were due to treatments (in this case the insecticide applications), we would expect that

yields and test weights calculated for replications (since each replication contains all the same treatments) would be nearly equal. It is obvious that this is not the case, so something other than insecticide treatment is causing the differences in yield and test weight. A portion of this difference is random chance and a portion is likely to be due to the lodging.

TABLE 2. YIELD AND TEST WEIGHT BY REPLICATION OF WHEAT HARVESTED FROM PLOTS WITH VARIOUS INSECTICIDE TREATMENTS.		
Replication*	Yield \pm SE	Test Weight \pm SE
	(Bu / Acre)	(Lbs. / Bu)
1	91.4 \pm 5.6	57.8 \pm 3.1
2	95.5 \pm 6.7	57.8 \pm 0.8
3	101.3 \pm 1.6	55.6 \pm 2.4
4	103.9 \pm 2.0	63.7 \pm 5.1

* Each replication contains all four insecticide treatments.

Because the insecticide treatments did not produce any difference in yield at this location and year, using them would have reduced the producers profit. In general terms the fall application is often made as an "insecticide only" application, which would cost about \$ 11.00. The spring application is often made in conjunction with other inputs so the application cost may be saved. Using this as the basis, in this location in this year, the insecticide applications would have returned the following: Nov (-\$11.00), Feb (-\$ 6.00) and Nov and Feb (- \$17.00).

Certainly the circumstances on your farm will alter these figures. As prices and yields decline and treatment costs increase, the insecticide treatments will look even less appropriate. However, as prices and yields increase and treatment costs decrease the insecticide applications will look better.

Deciding whether or not to treat for control of aphid vectors of BYDV is a hard decision to make in KY. You do the best you can based on the information available at the time the decision has to be made. However, it is important to remember that spraying "just in case" is very often not profitable and even if you see symptoms in the spring that does not necessarily mean that you made the wrong decision by not spraying in the fall or winter.

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