INTEGRATED APPROACHES TO MANAGING APHIDS AND BARLEY YELLOW DWARF IN TENNESSEE WHEAT

Clay Perkins
Scott D. Stewart
Heather Kelly
The University of Tennessee
West Tennessee Research and Education Center
Jackson, TN
Angus L. Catchot
Mississippi State University
Mississippi State, MS

Abstract

Several aphid species (Hemiptera: Aphididae) are found in wheat throughout the Mid-South that are potentially detrimental to yield and grain quality and capable of transmitting Barley Yellow Dwarf (BYD). It is known that relatively low numbers of aphids can result in the transmission of BYD and yield loss. Higher infestation levels may cause direct yield loss as well as indirect losses associated with the transmission of BYD. The three most common species found in wheat in Tennessee include the bird cherry-oat aphid (*Rhopalosiphum padi*), English grain aphid (*Sitobion avenae*), and greenbug (*Schizaphis graminum*). Neonicotinoid seed treatments and foliar-applied insecticides are two common methods to control aphid infestations and reduce BYD. A meta-analysis of data collected in Tennessee during an eleven year period (2006-2017) was done to better understand the impact of insecticide seed treatments and foliar applied insecticides on aphid control, the incidence of BYD, and wheat yield. These data indicated the use of an insecticide seed treatment and/or a foliar-applied insecticide reduced the numbers of aphids and the incidence of BYD. Also, a preliminary analysis was presented of a separate experiments done at multiple locations during the 2016-2017 growing season. The results indicated that the incidence of BYD in a resistant variety was less than that of a susceptible variety, despite there being more aphids found on the resistant variety. Similar to the results of the meta-analyses, the use of an insecticide seed treatment and/or a foliar-applied insecticide reduced the numbers of aphids and the incidence of BYD on both the susceptible and resistant variety. These data highlight the importance of managing aphids on wheat where yields, on average, were increased by 4-7 bushels per acre by the use of insecticide, depending upon the treatment regime.