THE VALUE OF APHID MANAGEMENT IN TENNESSEE WHEAT

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Abstract

Wheat is the world's most widely cultivated crop with over 221 million hectares being produced in the world and over 184,000 hectares of wheat being produced in the state of Tennessee. However, there are several aphid species (Hemiptera: Aphididae) that are found in wheat that can decrease yield and grain quality if not properly managed. The most common species found in wheat include bird cherry-oat aphid (*Rhopalosiphum padi*), English grain aphid (*Sitobion avenae*), greenbug (*Schizaphis graminum*), corn leaf aphid (*Rhopalosiphum maidis),* and rice root aphid (*Rhopalosiphum rufiabdominalis).* The three most common species found in Tennessee are the bird cherry-oat aphid, English grain aphid, and greenbug. It takes relatively high aphid populations to directly reduce yield. However, these aphids may indirectly reduce yield at lower populations by the transmission of barley yellow dwarf (BYD) to some degree. Transmission of BYD is seedling wheat typically has the most impact on yield. Insecticide seed treatments (ISTs) and foliar applications of insecticides are the two common methods to control aphid infestations and reduce BYD. Insecticide seed treatments commonly used to control aphids in wheat include Gaucho® (imidacloprid), Cruiser® (thiamethoxam) and NipsIt Inside® (clothianidin). Foliar application of pyrethroid insecticides are also commonly used to manage aphid infestations. We did a meta-analysis of 27 different tests during the last ten years to determine how an IST and/or a foliar insecticide application made in February affected aphid populations, incidence of BYD, and yield. There was a significant decrease in springtime aphid populations resulting from the use of an IST or a foliar insecticide application. A significant decrease in the incidence of BYD virus was also observed when using an IST, a foliar insecticide application, or both. Average wheat yields were 4-5 bushel/acre higher if an IST or a foliar insecticide application was made. Compared with treatments where only an IST was used, yields were approximately 3 bushels/acre higher if a foliar insecticide application was also made, but this difference was not statistically significant. Management of aphids on wheat is important to protect yield. IST and foliar insecticide applications provided statistically similar protection.