Dave Kehler's Shoppers Guide article for 3-14-17

# Sorghum hybrids with resistance to sugarcane aphid

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A number of sorghum hybrids have now been identified which express variable, but quite significant, levels of resistance to sugarcane aphids (SCA).

Growers are encouraged to contact their seed suppliers for more detailed information on the agronomic characteristics of these lines. All of these hybrids express fortuitous resistance to SCA; that is, they happen to have traits that greatly reduce their suitability as a host plant for the aphid.

** Do not expect resistant plants to be aphid-free; they will still get infested, but the aphids will not thrive. **

Conventionally, a source of aphid resistance is first identified in some odd land race of the crop and then intentionally bred into commercially acceptable parental lines, resulting in a wide range of hybrids that all express the same trait. Success with this approach is usually only temporary because reliance on a single trait exerts strong selection on the aphid population to evolve and overcome the host plant resistance. Often only a small genetic change in the aphid is required and the trait is no longer effective.

In contrast, every example of fortuitous resistance is most likely due to completely different traits that have a similar end result for the aphids, although through different mechanisms: reduced immature survival combined with slower rates of growth and reproduction. Because multiple host plant resistance traits are involved, there will be less selection pressure acting on the aphids to overcome resistance to all the different traits; a single genetic change is no longer enough. Thus, the outlook going forward is very positive as we would expect these traits to remain effective for some time.

The use of resistant hybrids is encouraged because this serves to synergize the impact of natural enemies and reduce the need for spraying. With slower aphid population growth, there is more time for predators to arrive in sufficient numbers and consume all the aphids before the aphids can reach densities sufficient to escape biological control. It also means that management control decisions such as insecticide applications are not quite so urgent as aphids approach threshold numbers.

Do not expect resistant plants to be aphid-free; they will still get infested, but the aphids will not thrive. There is no way to generalize about what you can expect to see with any given resistant hybrid. Each resistant hybrid in the list above is probably going to have very different effects on aphid growth, survival, and reproduction. Some will have more impact on development, others more on reproduction, and still others more on nymphal survival. It is not uncommon for a resistant plant to reduce any one of these performance factors, but not necessarily all of the factors, by much more than 50 percent.

In short, the overall effect of the SCA resistance in these grain sorghum hybrids will be quite noticeable but don't expect plants to be clean and free of aphids.

A list of these hybrids can be found in the 2-24-17 Agronomy E-update at http://ksu.ag/2lNSitf