Technology Summary

A Penn State researcher investigated sorghum genotypes exposed to corn leaf aphid (CLA) to identify protective alleles that mediate resistance to corn leaf aphids (CLAs) in sorghum. The researcher identified near isogenic lines (NILs) that showed resistance by the plants carrying a functional allele. A family of flavonoid secondary metabolites were also discovered as the causative agents having antibiosis and antixenosis activity. Subsequently, aphids were fed an artificial diet supplemented with an extract or a control flavonoid to determine the effect on aphid mortality and fecundity. CLAs also suffered reduced growth, fecundity and increased mortality on artificial diets supplemental with this flavonoid extract as compared to the control flavonoid.

Application & Market Utility

The subject invention represents an important elucidation of sorghum's defense signaling that can branch into a number of potential commercial applications involving genetic modification of flavonoid pathway within the plant, chemical modification of the active flavonoid metabolite to improve its commercial value proposition for prophylactic or treatment application on sorghum as well as other host plants, for example maize. This discovery may also have broader implications against a wide range of insect herbivores, and fungal and bacterial pathogens.

Next Steps

Seeking research collaboration and licensing opportunities.