Pecan Cultivar Differences in Aphid Reproduction and Abundance

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Foliage-feeding aphids of pecan include 3 species that are considered as potential pests – yellow pecan aphid (Monelliopsis pecanis (Bissell)), blackmargined aphid (Monellia caryella (Fitch)), and black pecan aphid (Melanocallis caryeafoliae (Davis)) (Hemiptera: Aphididae). The biology of these aphids is well documented, and nymphs and adults are easily identified by the descriptions and drawings of Tedders (1978, USDA Tech. Bull. 1579). The reproductive rates of the 3 aphid species also are well documented on pecan (Kaakeh and Dutcher 1992, Environ. Entomol. 21: 632 - 639). Aphid abundance on pecan varies among pecan cultivars to the extent that pecan plant breeders often indicate that a new introduction is either susceptible or tolerant to aphids. Cultivar selection is an important decision for pecan producers, and cultivars with naturally lower levels of aphids require fewer aphicides. The overall costs of aphid control are considerably lower on pecan cultivars with natural tolerance or host plant resistance to aphids.

Relative abundance of pecan aphids on pecan cultivars observed by horticulturists during the breeding of new cultivars and the subsequent extended evaluation of cultivar performance in the field are qualitative and are readily available in 2 sources (Sparks 1992, Pecan Cultivars: The Orchard Foundation. Pecan Production Innovations, Watkinsville, GA, USA 446 p.; Worley 2002, Compendium of Pecan Production and Research. Edwards Bros., Inc. Ann Arbor, MI, USA. 479 p.). Other examples found in the literature indicate that: black pecan aphids are a problem on ‘Alley’; ‘Pawnee’ is resistant to aphids (Thompson et al. 2000, J. Amer. Pom. Soc. 54: 193 - 198); ‘Navaho’ is resistant to aphids (Thompson et al. 1995, HortScience 30: 156 - 157) and; ‘Choctaw’, ‘Gloria Grande’, ‘Jackson’, ‘Caddo’, and ‘Shawnee’ are susceptible to black pecan aphids (Calcote and Scott. 1988, Proc. Southeastern Pecan Growers Assoc. 81: 83 - 95). Host plants for blackmargined aphid include pecan, water hickory, hican and scrub hickory. Yellow pecan aphid host plants are pecan and nutmeg hickory.