Leaf Stomatal Density Variation in Eleven Pawpaw Cultivars. SHERI B. CRABTREE*, KIRK W. POMPER, KESI NEBLETT, and SIERRA SKAGGS, Community Research Service, Land Grant Program, Kentucky State University, Frankfort, KY 40601.

The pawpaw [Asimina triloba (L.) Dunal] is a native tree fruit found in most of the eastern U.S. As the satellite site for the USDA National Clonal Germplasm Repository for Asimina species, goals of the KSU pawpaw research program include description and classification of pawpaw germplasm. With summer droughts and lack of water for irrigation often being a challenge for growers, use of drought-tolerant plants is desirable. Plants with fewer stomata on their leaf surfaces are generally better adapted to dry conditions. Drought tolerant pawpaw cultivars have not been definitively identified. The objective of this study was to examine density of stomata in leaves of eleven pawpaw cultivars. Five leaves were collected from eleven different pawpaw cultivars (Shenandoah, Susquehanna, Middletown, Mitchell, NC-1, Overleece, PA-Golden, Sunflower, Taytwo, Wilson, and Wells) at the KSU research farm. Leaf stomata impressions were made using clear fingernail polish and mounted to a microscope slide using adhesive tape. Stomata were counted using a compound light microscope at 400× magnification. Stomatal density varied significantly by cultivar, with Sunflower having the most stomata per mm² (387) and Shenandoah (232), Mitchell (221), and Wells (220) the fewest stomata per mm². These cultivars could potentially be more drought-tolerant than others due to their low stomatal density.

Genetic Diversity in Five Kentucky Pawpaw Populations Using SSR Markers. YANKUBA BANDA*, JEREMIAH D. LOWE, KIRK W. POMPER, LI LU, and SHERI B. CRABTREE, Land Grant Program, Kentucky State University, Atwood Research Facility, Frankfort, KY 40601-2355.

Pawpaw [Asimina triloba (L.) Dunal] is a native tree fruit in eastern North America. This plant contains annonaceous acetogenins in fruit and vegetative tissues that display antitumor, pesticidal, antiviral, and antimicrobial activity, with many potentially useful applications. The objective of this study was to identify KSU advanced selections with high acetogenin activity to serve as new sources of biomass for acetogenin extract. About 10 grams of thawed ripe fruit pulp from KSU advanced selections G6-120 and G4-25, as well as the cultivars ‘Susquehanna’ and ‘Sunflower’, were extracted with 95% ethanol. The brine shrimp test (BST) was employed to assess acetogenin activity in pulp extracts. Concentrated extract was transferred to vials to correspond to 0, 1, 5, 10, and 100 ppm concentrations with three replicate vials per concentration. Ten brine shrimp larvae, taken 48 h after initiation of hatching in artificial seawater, were added to each vial, and the final volume of each vial was adjusted to 5 ml using artificial seawater. After 24 h, survivors were counted. Brine shrimp mortality was low (3%) in 0, 1, 5, and 10 ppm concentrations. However, at 100 ppm ’Susquehanna’ (80%) showed high brine shrimp mortality and ‘Sunflower’ (55%) low mortality, while G6-120 and