Effects of a Spray Treatment on Secondary Metabolites in Runner Peanuts

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Many of the small molecules produced as secondary metabolites by peanut seeds are responsible for peanut flavor after roasting. These compounds are affected by growing environments, field treatments and maturity. Two peanut varieties, GA 06G (normal oleic) and GA 09B (high oleic) were planted in Dawson, GA at 3 different planting dates considered early, mid and late for the area. Treated plots were sprayed at 100 and 110 days after planting with Diflufenzopyr (D-Na) to terminate flowering on the plants. Control plots were not treated with D-Na. Half of the plots were harvested at the normal time and half of the plots were harvested 2 weeks later than normal.

The peanuts harvested were sorted into the market grades (oil stock, number 1, medium, jumbo and splits). Targeted and Non-targeted chemical analyses were performed. 491 unique compounds were identified in the samples. The statistical analysis for the trends in the metabolite data were most closely correlated with variable of the harvest time rather than the spray treatment. These trends included increasing levels of several compounds typically associated with anabolic processes and decreasing levels of several amino acid and lipid products. The actual size classification which relates to maturity did produce significant effects in metabolism, which suggests that peanut flavor will be more impacted by seed maturation rather than the specific spray treatment applied in this study.