Assessing the Composition of a High-Oleic Peanut Cultivar Grown in North Carolina Using Various Pesticide Inputs

A.A. KAUFMAN* Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695; L. L. DEAN, Market Quality and Handling Research Unit, USDA, ARS, SEA, Raleigh, NC 27695; D. L. JORDAN Department of Crop and Soil Sciences, North Carolina State University, Raleigh, NC 27695; M.K. BOOTH, Department of Chemistry, University of Florida, Gainesville, FL 32611.

Organic foods continue to capture the interest of consumers. Organic foods are now responsible for over 5% of total food sales and in 2016, U.S. organic sales were approximately $47 billion. Despite this growth, there is an opportunity for organic legume production, specifically peanut. To date, little information has been gathered regarding the impact various pesticide inputs have on peanut crops and their composition. The purpose of this research is to investigate the impact of various pesticide treatments on the total oil, fatty acid, tocopherol, and sugar composition of the Virginia market-type cultivar, Sullivan. In 2017, Sullivan variety peanuts were planted at two locations in North Carolina in late May. The experimental design was a randomized complete block with treatments replicated four times. Treatments consisted of two levels of seeding rate/fungicide seed treatment, two levels of insecticide, and three levels of fungicide. Weeds were controlled using herbicides. These treatments include the best management practices for a low pesticide input system simulating insect and disease management in organic production and the best management practice for conventional production.

For the simulated organic production system, fungicide was not applied to the seed, no insecticides were used, and seeds were planted at a rate of 175 lbs/acre. In the conventional production system, seed was treated with fungicide and planted at a rate of 135 lbs/acre with insecticides applied three weeks after planting to control tobacco thrips and at mid-season to control southern corn rootworm. The sound mature kernel fraction of the harvested peanuts was retained and used for evaluation of peanut composition including total oil content, fatty acids, tocopherols, and sugars. Results determined that simulated organic production methods have minimal impact on peanut composition when compared to peanuts grown in a conventional system.