

The Influence of Digging Date on Fatty Acid and Tocopherol Expression in Normal and High-Oleic Virginia Peanut Varieties Grown in North Carolina

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Due to the indeterminate growth of the peanut crop, there can be a wide range of maturity within pods on individual plants at the time of harvest. For high-oleic (HO) cultivars, this wide range in maturity can be the difference between a farmer harvesting peanuts that are expressing the HO trait and peanuts that are not. This study explores the expression of fatty acid and tocopherol content in three HO (Emery, Sullivan, and Wynne) and one normal-oleic (NO) (Bailey) Virginia peanut varieties. Two fields were planted in Lewiston-Woodville, NC in a randomized complete block design with four replications. One field was planted in mid-May and harvested four times throughout the season at approximately 110, 120, 130, and 140 days after planting. The second field was planted in early June with harvest dates at approximately 100, 110, 120, 130, and 140 days after planting. After fields were harvested, pods were hand-picked off plants and the hull scrape method was used to determine maturity of individual pods. Color-sorted pods were then dried using ambient air temperature prior to being used for analytical testing.

Data collected included percent maturity (as determined by color) per plot, whole pod and seed weights, total oil content, fatty acid, and tocopherol expression. The results suggest that although immature pods were shown to have reduced amounts of overall total oil content and fatty acid expression, some of the pods from the HO cultivars were still found to exhibit the required 9:1 oleic to linoleic fatty acid ratio to be considered HO. The impact of early digging dates on overall peanut yield was not apparent, but the reduced mass of peanut crop associated with an early digging date may have negative economic impacts on the farmer.