

## **Planting Conditions Influence Early Season Crop Growth of Peanut Cultivars**

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Vigorous early seedling growth increases competitiveness with weeds, lessens the negative impacts of early season pathogens, minimizes the risks of stand loss, and in some instances is correlated with yield. Early season crop growth can be influenced by genotype, field management, and environmental conditions during seed and seedling development. Notably, high or low temperature conditions can have a dramatic effect on plant growth and development. Selection of a planting date with optimal environmental conditions (temperature) is a critical factor for crop production, and can be problematic. To determine the effect of different planting conditions on early season peanut growth, three different peanut cultivars (Georgia-06G, Georgia-14N, and TifNV High O/L) were planted on 04/01/2017 (mid-April), 05/10/2017 (early-May), and 06/05/2017 (early-June) to generate different field conditions, especially differences in temperature conditions. Field measurements consisted of destructively harvesting plants from 2-m sections from each plot at 21 and 35 days after planting (DAP) and measuring stem height, number of nodes, total leaf area per plant (TLA), leaf dry weight (LDW), and stem dry weight (SDW). These measurements were also used to calculate the following crop growth indices between 21 and 35 DAP: Crop Growth Rate (CGR), Net Assimilation Rate (NAR), and average Leaf Area Index (LAI). Initial result analysis showed the effect of cultivar and planting date on plant growth parameters and derived growth indices. At 21 DAP, average height of plants sown in early-May was higher than the other planting dates, whereas at 35 DAP, height was the lowest in early-May. Comparing cultivars, GA-06G and TifNV plants were significantly taller than Georgia-14N. The number of nodes was higher in plants sown in early-June than the other two planting dates at both 21 and 35 DAP. GA-06G and TifNV were the cultivars with highest number of nodes. Higher TLA, SDW, and LDW per plant were observed in early-June for 21 and 35 DAP. In addition, GA-06G and TifNV resulted in higher TLA, SDW, and LDW per plant than GA-14N. Growth analysis results showed that CGR and LAI were significantly higher for GA-06G and TifNV ( $p=0.0035$  and  $P<0.0001$ , respectively) than GA-14N. However, GA-14N exhibited the highest NAR ( $p=0.0006$ ) among the cultivars. In addition, when comparing planting dates, the highest NAR was observed in plants sown in early-May, whereas both CGR and LAI were the lowest in early-May. These preliminary results suggested that differences in early crop growth of peanuts were more closely related to leaf area development than photosynthetic efficiency of the canopy.