

Planting Conditions Influence Early Season Vigor 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. Crop growth can be influenced by several factors such as genotype, management practices, and various environmental conditions. Notably, different temperature conditions can have a dramatic effect on plant growth and development. Selection of a planting date with optimal environmental conditions (temperature) is critical for crop production. 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 in 2018 on three different planting dates (mid-April, mid-May and early-June) in order to generate differences in temperatures at planting and early growth. Field measurements consisted of stand counts from 5 to 14 days after planting (DAP) and destructively harvesting plants from 2-m sections from each plot at 21 and 35 DAP to measure total leaf area per plant (TLA) and plant dry matter. These measurements were also used to calculate crop growth indices between 21 and 35 DAP such as Crop Growth Rate (CGR), Net Assimilation Rate (NAR), and Leaf Area Index (LAI). Result analysis showed the effect of cultivar and planting date on plant growth parameters and derived growth indices. Temperature conditions for the June planting resulted in highest plant density, height, number of mainstem nodes, leaf area and dry weights at both 21 and 35 DAP compared to other two planting dates. For the growth indices, a similar planting date effect for CGR, LAI, and NAR were observed, with higher indices for the June planting. Comparing cultivars, GA-06G plants were significantly more vigorous than TifNV and Georgia-14N. Crop growth indices were significantly higher for Georgia-06G than TifNV and Georgia-14N. However, no significant cultivar effect was observed for NAR. CGR was found to be significantly correlated with both NAR and LAI ($r = 0.81$, and 0.91 , respectively). These results suggested that temperature played an important role on plant early growth and development. In addition, differences in early crop growth of peanuts were more closely related to leaf area development than photosynthetic efficiency of the canopy.