

## **Peanut Seedling Vigor under Sub-optimal Growing Temperature**

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Sub-optimal temperatures at planting and early-season can be detrimental for peanut emergence and early development, leading to decreased seedling vigor. However, the underlying processes affecting seedling growth and vigor under adverse temperature conditions has not been fully investigated. Therefore, the objective of this study was to assess seedling vigor of peanut plants grown under sub-optimal temperature during the emergence process. To this end, two runs of a controlled-environment study was conducted. Peanut seeds from the cultivar Georgia-06G were planted in pots in two different growth chambers to control the temperature conditions. Temperatures of 18/24 ( $\pm 0.5$ ) °C and 21/29 ( $\pm 0.6$ ) °C during the day/night period with 13.5-h photoperiod and average PAR of  $600 \mu\text{mol}^{-1} \text{m}^{-2} \text{s}^{-1}$  ( $\pm 15$ ) were maintained in the chambers from planting until sampling. At 18 days after planting, OJIP fluorescence was measured in the uppermost, fully-expanded, mainstem, tetrafoliate leaf. Total leaf area was measured in the plants from the second run. Plants were harvested and separated into leaves and stems and oven dried at 60 °C for dry matter quantification. Overall quantum efficiencies and performance indices were impaired by lower growing temperature (18/24 °C). However, OJIP fluorescence-derived structural indicators were unaffected by the temperature regimes. Leaf area and dry matter of leaves and stems were significantly higher for the plants grown under 21/29 °C compared to those grown under 18/24 °C. Overall, seedlings grown at 18/24 °C were less efficient at absorbing light, and trapping and transporting energy during the thylakoid reactions, which likely led to the impaired growth and development of peanut seedlings.