

The Effects of Storage Conditions on Peanut Seed Quality

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Peanut (*Arachis hypogaea* L.) is one of the most important commodities in Georgia with over 291,000 hectares planted in 2017. Seed quality is an important component to overall successful peanut production. Exposure of seeds to unfavorable temperatures and relative humidity over time can result in loss of germination and vigor. The objective of this study was to determine the effects of storage conditions on germination and vigor of runner-type peanut seed. Storage conditions consisted of a greenhouse, office, peanut wagon, and a cold storage room. The experiment was carried out at the University of Georgia Coastal Plain Experiment Station in Tifton, GA in 2017. The storage conditions were selected to obtain extreme diurnal fluctuations which are similar to what growers encounter compared to more stable diurnal fluctuations where temperatures are controlled and seed storage is more consistent. The cultivar used in this experiment was Georgia-06G. One month after the seeds were maintained in each respective storage (April 3- May 3), samples were taken from each storage condition starting at 30 days after initial storage and every 14 days thereafter for a total of 4 sampling dates and maintained in a cold room until measurements were taken. Seed germination and vigor were evaluated using a thermal gradient table with temperature range of 13 to 32.5 °C. Seeds were placed in Petri-dishes and incubated for 7 days. Seeds were considered germinated when radicle length was ≥ 5 mm. Number of seeds that germinated was counted daily up to five consecutive days starting on day three. In addition, a field trial was conducted under optimal planting conditions to assess emergence. Storage condition affected lab germination. Seeds stored in the greenhouse and peanut wagon experienced higher diurnal fluctuations and relative humidity throughout the month of May and early June compared to seeds stored in a cold storage room or office. Seeds from the cold storage had the highest germination percentage throughout the four sample dates. This preliminary study suggested that storage conditions having extreme diurnal fluctuations does affect germination and vigor over time compared to more consistent conditions.