

## **Physiological Quality Gain in Peanut Seeds During Development.**

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Use of high-quality seed is an important strategy for successful peanut (*Arachis hypogaea* L.) production. Since peanut is an indeterminate crop, the accurate harvest time for greatest seed quality is a challenge. Seed acquire the physiological components of quality during development. However, the pattern of physiological quality acquisition is not clear in peanut seed. This study aimed to characterize the gain of physiological quality components in peanut seed during their development. The field research was conducted in Dawson, GA where seed from the cultivar Georgia-06G were planted on May 30, 2019. The plots received supplemental irrigation to provide required water by the plants. Plants were harvested at 140 days after planting (DAP) corresponding to 2300 growing degree days. Seed were separated into eight groups according to the peanut maturity profile board. For analyses in fresh seed, seed were split into two groups, in which one group was treated with ethephon to release potential dormancy and the other group remained untreated. Germination and vigor were tested by quantifying radicle protrusion (2 mm). For germination, the reading was taken 10 days after the test was started, whereas for vigor, readings were performed every 6 hours starting from test setup for a total of 240 hours. In seed from both groups (treated and untreated with ethephon), germination ability was acquired at early seed development (white stage) and dormancy was acquired after stage yellow 2. For treated seed, germination reached its maximum potential at stage brown 1, whereas for untreated seed, the maximum potential for germination was reached at stage yellow 2. Dormancy was naturally released 25 days after pod harvest. For treated seed, maximum vigor was reached at stage brown 2, whereas for untreated seed, the maximum vigor was reached at stage brown 1. Analysis to identify the desiccation tolerance and longevity patterns are still in process, and when completed, the acquisition pattern model will be built.