

2005 National Peanut Board Research
Final Report
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only

Refining
current
harvest...

Title: Assessing the Maturity, Yield, and Grade of Three Newly Released Virginia-Type Peanut Varieties

Project Description

In 2004 and 2005, a trial was conducted at Tidewater Agricultural Research and Extension Center (TAREC) in Suffolk, VA to examine the impact of planting date and heat unit accumulation on peanut maturity, yield, and grade for three new Virginia-type peanut varieties (CHAMPS, Brantley, and Phillips) and two established varieties (Gregory and Perry). This trial was performed by Drs Joel Faircloth, Dennis Coker, Pat Phipps, and Darcy Partridge. Dr. David Jordan conducted a similar trial at the Peanut Belt Research Station located near Lewiston-Woodville, NC. Each variety was planted on three planting dates (May 9, 23, and June 10) and dug at optimum maturity. Starting in early September, all plots were dug with a pitchfork and pod-blasted weekly for 6 weeks to determine pod maturity. Peanuts were placed on the new Virginia-type maturity board introduced in 2004 by Dr. David Jordan and maturity determinations were based on the percentage of pods in the brown-black category from a 150-pod sample. At harvest, a subsample of peanuts was retained for grade determination.

Results

The 2005 growing season started off unusually cold, slowing seedling emergence and development, while August was abnormally hot. By fall, the total (planting to digging) accumulated heat units (hu) had caught up with the 10 year average, ranging from 2659 (June 10) to 2962 hu (May 9). Rainfall from May to August was variable in Virginia, ranging from deficient to adequate depending on location. From August 25 to September 21st, rainfall accumulation totaled less than one inch at TAREC which stalled peanut maturity. This resulted in pod blasted samples rarely reaching the 65-70% maturity level. Based on pod blasting results, peak maturity for all varieties planted on May 9 occurred around September 26-October 3 with the exception of Perry which peaked between October 3- October 10. Peak maturity for all varieties planted on May 23 occurred between October 10- October 17. Examination of yield and accumulated hu's revealed that fewer hu's were required for CHAMPS, Brantley, and Gregory to reach peak yield relative to Phillips and Perry which benefited from additional hu accumulation.

Although not significant for this year, Brantley was numerically the highest yielder in 2005 followed by Gregory and CHAMPS. This is consistent with 2004 results. Also consistent with 2004, there was no difference in yield between the early (May 9) and the middle plant date (May 23) as hu's were adequate, whereas yield was reduced where planting was delayed until June 10 and total hu's were much lower. Similarly, the percentage of sound mature kernels (SMK) and extra large kernels (ELK) were not significantly different for the May 9 and May 23 plant dates, but both dropped off significantly in plots planted on June 10. The ELK percentages was significantly the highest for Phillips and lowest for CHAMPS while percentage SMK was highest for CHAMPS and lowest for Gregory.

The highest incidence of tomato spotted wilt virus (TSWV) was observed in the early planted plots (May 9) while there were no significant differences in the May 23 or June 10 plant dates. In 2004 and 2005, Brantley plots had the highest TSWV incidence and CHAMPS and Gregory had the lowest.

Peak yield for most varieties in 2004 occurred around 2450-2550 heat units, whereas it occurred around 2700-2800 in 2005. This demonstrates the seasonal variability in hu's required to achieve peak yields. Because other environmental factors influence maturity, heat unit accumulation should only be used as a guide for determining when to check maturity through more accurate methods (hull scrape, pod blasting). Based on 2004 and 2005 results, the yield potential for all three new varieties appears to be similar to Perry and Gregory, with Phillips being the highest of all cultivars tested in both years. Optimum digging dates based on yield trended towards later for Perry, Phillips, and Gregory relative to CHAMPS and Brantley which may benefit from slightly earlier harvest. In 2004 and 2005, yield reductions observed in Brantley plots where digging was delayed may be associated with its susceptibility to TSWV.