

SOUTHERN PEA VARIETY TRIAL FOR FRESH MARKET PRODUCTION IN MISSISSIPPI

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Southern Pea Variety Trial for Fresh Market Production in Mississippi

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INTRODUCTION

Southern peas, *Vigna unguiculata* (L), are an easy-to-grow, nutritious, and highly marketable crop in the southeastern United States. Southern peas are also called cowpeas, purple hull peas, pinkeye or blackeye peas, crowder peas, cream peas, field peas, zipper peas, or just peas. Despite the many types and cultivars,

basic cultural practices are similar. Southern peas belong to the legume family and can form nitrogen-fixing nodules on their roots; therefore, little nitrogen fertilizer is needed for good yields. They fit well into most vegetable crop rotations, and a few cultivars are commonly used as a cover crop.

FERTILIZATION

Depending on the soil fertility levels, nitrogen requirements for peas range from about 20 to 50 pounds per acre. Although a relatively low amount of nitrogen fertilizer is needed, peas do require substantial amounts of potassium and phosphorus for optimal

yields. All fertilizer is usually band-applied at a depth of 3/4 inch and 2 to 3 inches away from the seed. Fertilizer can also be broadcast and incorporated into the soil before planting.

PLANTING

The optimum soil temperature for germination ranges from 70 to 95°F. Seeding too early in the season can result in poor stands due to cool, wet soil. Also, cool temperatures in early spring can cause slow growth and prolong the growing season. Growers should wait until the soil has reached the appropriate temperatures

before seeding. It is important to plant the seed at an appropriate depth and spacing. Seeds should be planted at a depth of 0.75 to 1.0 inches. Seeds are usually spaced 3 to 4 inches apart in a row, and rows are typically spaced 36 to 40 inches apart.

COMMON CULTIVARS

The Mississippi Pinkeye Purple Hull, Top Pick, or Quick Pick are three of the most popular cultivars due to their high yield potential, large pea size, and an erect pod growth habit that aids in both hand and mechanical harvesting. It is recommended that cultivar selection be based on disease resistance, yield potential, and the

local market demand. Southern pea is a major vegetable crop in Mississippi by land area; however, information on production practices and cultivar trial selection is limited. This trial evaluated the yields of commercially available bush-type southern pea cultivars in Mississippi.

MATERIALS AND METHODS

In 2023, three southern pea cultivars—QuickPick PEPH (Pink Eye Purple Hull), Top Pick PEPH, and Top Pick Crowder—were planted in May and again in June at the North Mississippi Research and Extension Center in Verona. The study was repeated twice to determine seasonal differences in plant performance. A randomized complete block design with 8 replications was used. Preplant fertilizer was applied according to soil test results at rates of 30 lb per acre of nitrogen, 70 lb per acre of potassium, and 50 lb per acre of phosphorus. After fertilizer application, beds were formed using a

four-row bed roller set on 38-inch row spacing. Seeds were planted 1 inch deep using a four-row John Deere MaxEmerge 2 vacuum planter calibrated at a rate of 4 to 5 seeds per foot. Each four-row plot measured 50 feet in length. The two outer rows of each bed served as guard rows and were excluded from data collection. Immediately after seeding, herbicide S-metolachlor (1.43 lb a.i. per acre; i.e., 1.5 pints per acre) was mixed with glyphosate (2% tank solution) and sprayed for weed control.

HARVEST AND DATA COLLECTION

Pods were harvested on 7 July and 21 August for the first and second plantings, respectively. All harvests were done using a tractor-pulled one-row pea picker (BH100 PixAll). Harvested pods were weighed (whole pod weight) and then shelled and cleaned using a one-bushel drum sheller (Wellborn Devices Inc.). The

corresponding shelled weight was also recorded. All data were analyzed using R statistical software v. 2024.12.1 (R Foundation for Statistical Computing, Vienna, Austria). Differences among treatments were determined using the Tukey HSD test.

RESULTS AND DISCUSSION

Average daily temperatures were 87°F and 65°F for high and low temperatures, respectively, during the first planting and 92°F and 71°F for the second planting (Figures 1 and 2). Total rainfall was higher at the second planting date (7.04 inches) compared to the first planting date (5.69 inches). At the second planting date, a total of 3.29 inches of rainfall was received within

the first 30 days after planting, while only 1.66 inches of rainfall was received within the first 30 days for the first planting date. Thus, indicating that plants in the second planting date experienced higher available soil moisture to meet their daily evapotranspiration needs compared to those in the first planting date.



Figure 1. Local climate information. Daily high temperatures (blue line), low temperatures (orange line), and rainfall (green bars) from planting to harvest at the first planting.

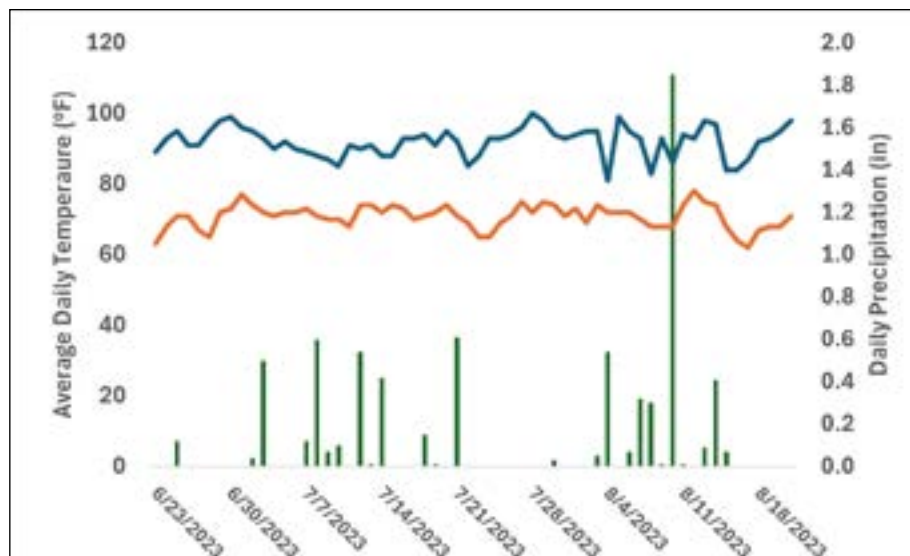


Figure 2. Local climate information. Daily high temperatures (blue line), low temperatures (orange line), and rainfall (green bars) from planting to harvest at the second planting.

Harvest results were similar at both planting dates. Whole pod yield was higher for Top Pick Crowder at both planting dates than for the Quick Pick and Top Pick cultivars (Figure 3). The same trend was observed for shelled pod weight at the second planting date, where Top Pick Crowder was highest; however, there

were no differences among cultivars for the shelled pod weight at the first planting date (Figure 4). Additionally, the yield was slightly higher at the second planting date compared to the first. Top Pick Crowder increased whole pod yield by an average of 23% compared to the other two cultivars, making it an excellent option

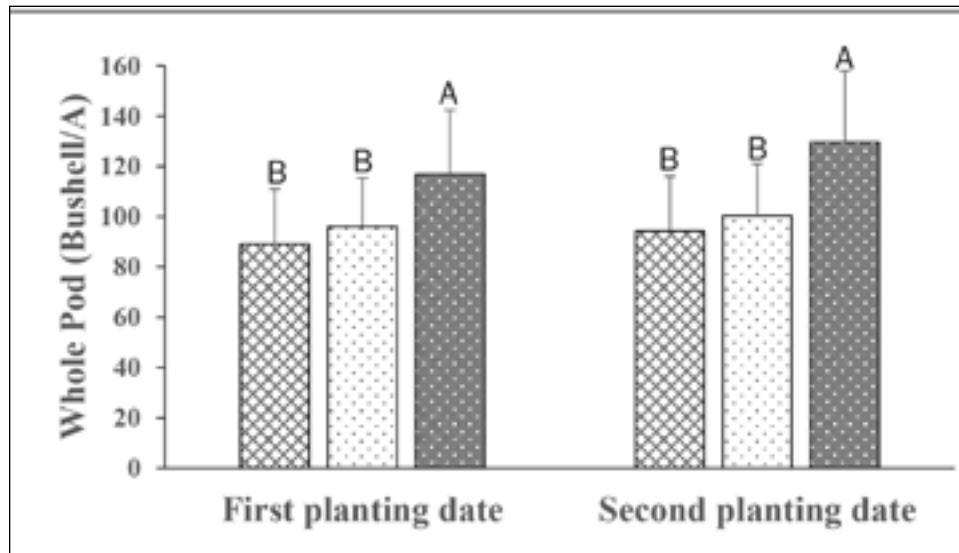


Figure 3. Whole pod weight for three southern pea cultivar trials conducted at the North Mississippi Research and Extension Center, Verona. Bars with different letters indicate statistically significant differences at $p \leq 0.05$. Error bars represent one standard deviation.

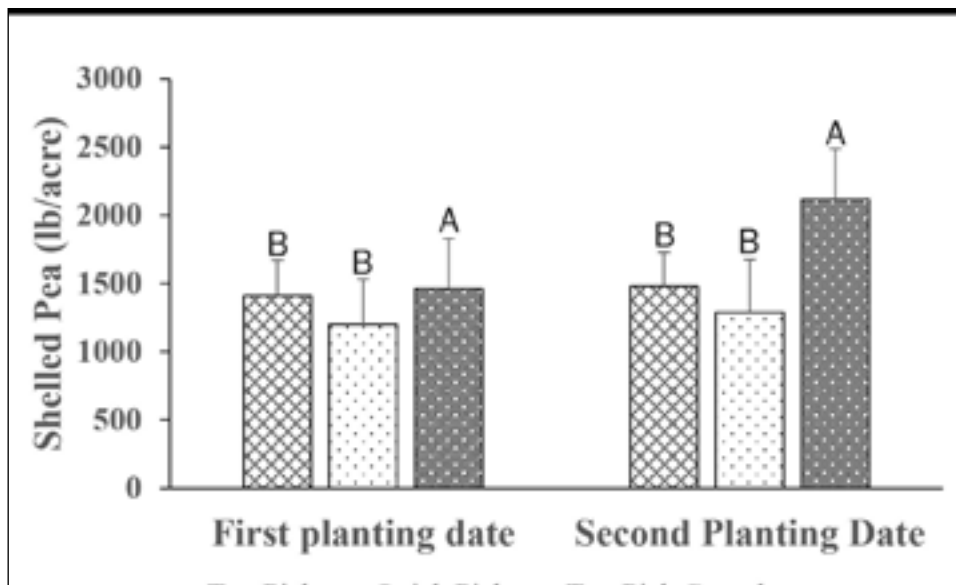


Figure 4. Shelled pod weight for three southern pea cultivar trials conducted at the North Mississippi Research and Extension Center, Verona. Bars with different letters indicate statistically significant differences at $p \leq 0.05$. Error bars represent one standard deviation.

for commercial pea production in Mississippi. However, growers are recommended to consider local market demand when deciding on cultivars. Similarly, a slightly higher yield during the second planting date could be attributed to the higher rainfall received during the growing season. Although peas are relatively more

drought-tolerant compared to many other vegetable crops, increasing the plant-available soil water content either by rain or irrigation during the growing season may improve yield.

Visual differences in the pods and plant architecture were observed among the cultivars in the trial at harvest (Figure 5). At maturity, Quick Pick retained a typical purple hull color, while the pea hull color for the Top Pick ranged from pink to light purple. Hulls from Top Pick Crowder, on the other hand, exhibited pink coloration at maturity. It could also be observed

that both Quick Pick and Top Pick Crowder presented a uniform pod color at maturity compared to the Top Pick. The lack of uniformity in pod maturation suggests that Top Pick may not be ideal for mechanical harvest. Therefore, in addition to yield potential and local market preferences, the harvest method should be considered during pea cultivar selection.



Quick Pick



Top Pick



Top Pick Crowder

Figure 5. Visual comparison of the three cultivars of the test plot during harvest.

Visual differences among shelled pea seeds by cultivar were also observed (Figure 6). Seeds from both the Top Pick and Quick Pick were similar in size and appearance. Seeds from both cultivars exhibited colors that ranged from light green (for more tender seeds) to white (for more mature seeds), with the characteristic pink eye

pigmentation. On the other hand, the color for the Top Pick Crowder seeds ranges from green (for the tender seeds) to brown (for the more mature seeds). Similarly, the Top Pick Crowder produces bigger seeds compared to those from Top Pick and Quick Pick cultivars.



Figure 6. Visual comparison of pea seeds after shelling.

This trial demonstrated that southern peas can perform well under Mississippi's production conditions, with noticeable differences among cultivars in yield potential, seed characteristics, and suitability for mechanical harvest. Among the three evaluated cultivars, Top Pick Crowder consistently produced the highest whole pod and shelled pea yields across both planting dates, suggesting its strong potential for commercial fresh-market production. The slightly higher yields observed during the second planting also indicate

that adequate soil moisture, either from rainfall or irrigation, can enhance productivity. Additionally, cultivar differences in pod color uniformity and maturity timing highlight the importance of aligning cultivar choice with the intended harvest method and market preference. Overall, these findings provide growers with regionally relevant information to guide cultivar selection, optimize planting time, and improve profitability in southern pea production systems across Mississippi.

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