Cropping sequence and row pattern adjustments in rotation with peanut. 2025 crop season. R.S. Tubbs

Rotation is often considered the most important management decision a grower makes with regard to its influence on so many variables. The current economic environment for farming is forcing many farmers to grow peanut (PN) in shorter rotation in order to secure loans and maximize net revenue since traditional rotation partner crops like corn (MZ) in some cases, but especially cotton (CT) are not economically viable options. The impact of changing rotations can increase pest pressure and reduce yield potential.

In addition, these 3 primary agronomic row crops respond differently to various row patterns, and the best option for one crop may be less beneficial for another crop in rotation. Determining the total system effect of growing all crops in the same row spacing/pattern may show that benefits for one crop are offset by creating a disadvantage for one of the rotation partner crops. Other growers may have the ability to consider changing the row spacing/pattern for the individual crop entering the rotation for the upcoming growing season. Testing each row spacing/pattern individually among all rotation options vs altering the row spacing/pattern for each leg of the rotation is an important consideration in this type of research to determine whether the row spacing/pattern or the rotation or the combination of variables cause differences.

Row spacing/patterns tested include 30-inch single rows, 36-inch single rows, and 36-inch twin rows (outer twin to outer twin). Rotations evaluated include continuous PN, 2-yr rotations of CT-PN or MZ-PN, a 3-yr sequence of CT-MZ-PN, or 4-yr series of MZ-CT-MZ-PN or CT-CT-CT-PN. Each crop is assigned a "Standard for Crop" row pattern including 30-inch single for MZ, 36-inch single for CT, and 36-inch twin for PN. In the "Standard for Crop" sequences, these row patterns stay with the crop and are not held constant within the plot when the crop enters the rotation, unlike the treatments where the row spacing/pattern treatments is held constant and all crops in the order are planted in that row spacing/pattern every year.

In 2025, all rotation sequences (except for continuous MZ) completed a first full cycle where all were planted to PN for direct comparisons. For ease of reporting, analyses were performed for each individual row spacing/pattern to compare different rotations. There were no statistical differences in yield among the rotations for the 30-inch single, 36-inch single, and 36-inch twin row patterns when held consistent. However, when the row spacing/pattern was altered to what was "Standard" for the crop being planted, a rotation effect was observed as follows for pod yield, represented in lb/ac, (means followed by different letters are significantly different): i. Continuous PN = 6008 (B); ii. 2-yr CT-PN = 6081 (B); iii. 2-yr MZ-PN = 6361 (AB); iv. 3-yr CT-MZ-PN = 6882 (A); v. 4-yr MZ-CT-MZ-PN = 6646 (AB); vi. 4-yr CT-CT-CT-PN = 6274 (AB). Previous iterations of rotation research have demonstrated that more pronounced rotation effects are typically observed in the second subsequent cycle of the rotation, but the results above also show that reduced yield is consistently associated with shorter rotations, similar to previous research results. A minimum of 3-yr rotation will typically maximize yield for PN.