

Single and Dual Shank Subsoiling and Inoculant Rate Evaluation for Twin Row Peanut.

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Bradyrhizobia inoculants for use in peanut production have been extensively researched over the last 20 years. However, there has been minimal research conducted on the use of different use rates of inoculants in twin row peanut, and especially on “virgin” ground (land that has not been planted to peanut in the last 30+ years). Extension specialists throughout the Southeast consistently are asked whether the standard use rate of liquid inoculants (1 oz per 100 ft of row, or 14.5 oz/acre in a standard 36 inch single row planting pattern) is still the recommended rate for twin row, or if the rate per furrow can be cut in half to keep the total use rate the same as a single row pattern to avoid doubling cost. In addition, there are some recommendations that suggest doubling the rate when planting on virgin ground to insure adequate nodulation and *Bradyrhizobia* survival, which on twin rows becomes 4x the standard single row rate.

In addition, UGA extension has received numerous questions in recent years about the use of single shank subsoilers that are used halfway between where each twin row is planted compared to using a double-shank subsoiler that places a shank directly under each individual twin row. This experiment accounts for a factorial arrangement of all possible treatment combinations that include a comparison of single vs twin subsoilers, and using five inoculant treatments consisting of 1) Non-treated check, 2) Water only applied in-furrow (0.0 oz/ac inoculant), 3) 0.5X use rate of inoculant (14.5 oz/ac total), 4) 1.0X use rate of inoculant (29 oz/ac), and 5) 2.0X use rate of inoculant (58 oz/ac). Our experiment was conducted on virgin ground at the UGA Bowen Farm in eastern Tift County, GA that had not been planted to peanut in over 30 years, and all plots were planted with Georgia-06G peanut in twin rows on May 24, dug on October 20, and harvested on October 25, 2016.

There were no differences between subsoil shanks. There were differences between inoculant treatments, as seen in the Table below:

	Active Nods ^a	Yield	SPAD (July 13)	NDVI (July 6)
<u>Inoculant</u> ^b	%	lb/ac		
None	42 a	4302 b	36.1 b	0.424 b
Water Only	41 a	3969 b	36.0 b	0.458 b
14.5 oz/ac	46 a	5213 a	40.4 a	0.555 a
29 oz/ac	42 a	5340 a	40.6 a	0.535 a
58 oz/ac	52 a	5485 a	41.8 a	0.546 a
SE ^c	± 6	± 400	± 1.8	± 0.03

^a Percentage of nodules considered active by visual interior color assessment of each nodule. Sliced 20 nodules per root from 5 roots per plot.

^b Inoculant rates applied with 6.76 gal water/ac as a carrier, directly on top of seed placed in-furrow. Averaged over both single and twin subsoiler treatments.

^c Standard Error of the mean.