

TITLE:

Nitrogen Fertilizer for Peanut at AG-CARES, Lamesa, TX, 2002, and Summary of Four South Plains On-Farm N Rate Trials for Peanut

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METHODS AND PROCEDURES (for guar planting):

Soil Type: Amarillo fine sandy loam  
 Planting: May 2, 2002  
 Previous Crop: Cotton  
 Seed & Rate: Flavor Runner 458 peanut, ~5.5 seeds/ft. on 40-inch rows  
 Inoculant: Urbana RhizoFlow granular, ~5.5 lbs./A (1X rate)  
 Plot Set-up: Four replicated plots per each N rate, test area per variety 4 rows X 60'  
 Harvest Area: 4 rows X 60'  
 Fertilizer: 0, 50, and 100 lbs. N/A applied by hand broadcast as urea, June 28, 2002, and watered in within 2 hours  
 Rainfall: See summary in AGCARES report, 3.71" from June 28-Oct. 10 (period of physiological growth)  
 Soil test N: Surface soil test N was medium; with subsoil N, tests reported ~65 lbs. available N/A in the top 3'.  
 Date Harvested: October 17, 2002

RESULTS AND DISCUSSION:

Past research on nitrogen fertilizer and peanut yield response at AGCARES has shown no benefit from N fertilizer additions. Unfortunately, much of that work was conducted on ground that had as much as 175 lbs. N/A in the top three feet of soil. Nor was any record of nodulation on peanut recorded. Subsoil N was lower in this trial, although perhaps still enough to cloud possible yield response to N fertilizer. We are disappointed with the result of the nodulation in this trial. In general, 2003 was a "nodulation year" for peanut across the South Plains, with many fields averaging 40 to nearly 100 nodules per plant. No response to N was observed in this trial, which will be repeated on-farm in Dawson Co. in 2003.

Table 1. Nodulation, nodule size, and yield response to three mid-season broadcast N treatments at AGCARES, Dawson Co., TX, 2002.

<b>AGCARES N Rate</b>	<b>Nodule count per plant<sup>^</sup></b>	<b>Avg. nodule Diameter (in.)<sup>^</sup></b>	<b>Yield (Lbs./A)<sup>^</sup></b>	<b>Grade (%SMK+SS)<sup>^</sup></b>
0	9.3 a	0.124 a	3616 a	<i>Not</i>
50	9.7 a	0.124 a	3641 a	<i>yet</i>
100	11.1 a	0.124 a	3655 a	<i>determined</i>
Mean	10.0	0.123	3637	
P-Value	0.7958	0.7823	0.8776	
Fisher's PLSD (0.05)	NS#	NS	NS	
Coeff. of Variation (%)	36.3	5.2	2.8	

<sup>^</sup>Means in the same column followed by the same letter are not significantly different at 0.05.

#Not significant.

In addition, six identical on-farm nitrogen trials for peanut were conducted across the Texas South Plains in 2003. In only one case was any response to nitrogen fertilizer observed, and that was on an uninoculated crop in Gaines Co. For the most part *Rhizobium* nodulation was good to excellent, and soil N levels did not explain why yield response to N would not have occurred (i.e., soil N levels were not unduly high). In contrast, on-farm tests in 2001 indicated significant yield response to mid-season N fertilizer at 50 lbs. N/A, but not always at 100 lbs. N/A. In general, nodulation was not nearly as good in 2001.

Research at the Western Peanut Growers Assn. Research Farm, Gaines Co., did indicate strong response to both inoculant and mid-season N applications. These results occurred where peak yields exceeded 6,500 lbs./A. In general, however, yield increases were slightly higher in response to the best liquid peanut *Rhizobium* inoculant products. Results suggest that farmers' expenditure for good inoculant and its proper application is more valuable than N fertilizer expense.

Table 2. Summary of six identical Texas South Plains on-farm mid-season N fertilizer trials (0, 50, and 100 lbs. N/A) for peanut (for a complete report, contact Calvin Trostle).

<b>On-Farm County Location</b>	<b><i>Rhizobium</i> Inoculation Rate</b>	<b>General Yields (Lbs./A)</b>	<b>Yield Response to N Fertilizer?</b>	<b>Relative Nodulation</b>
Gaines CR	0X	5500	Yes	Good
Gaines CR	1X	6150	No	Excellent
Gaines CR	2X	6150	No	Excellent
Yoakum 1	1X	3300	No	Fairly Good
Yoakum 2 (caliche)	1X	3900	Trend	Good
Terry	1X	5800	No	Very good

Peanut and *Rhizobium* Inoculation Resources: For a full report of 2002 South Plains nitrogen and inoculation research, contact Calvin Trostle. Do you have questions about peanut inoculant products and how to improve your chances for good nodulation of peanut? Are you sure you are getting the nodulation you should on your peanuts? Refer to the above report for product information. For tips on improving *Rhizobium* inoculant use and avoiding common mistakes of just nuisances in peanut inoculation, consult "Questions and Answers about Peanut Inoculation in West Texas," through your county Extension office, Calvin Trostle, or the Texas A&M—Lubbock website at <http://lubbock.tamu.edu>