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2013

Project # 00108244- Final Report
**Impact of cattle/ winter grazing and irrigation on the following peanut crop,
yield, grade**

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OBJECTIVE

To study the effect of winter grazing and irrigation on peanut yield and quality

Methods: The study was conducted at the North Florida Research and Education Center, Marianna, Jackson Co. Florida. The soil is an Ultisol, Dothan sandy loam composed of sand, loamy coarse sand in the top 80 cm, coarse sandy loam and sandy clay loam at 80-110 cm and sandy clay loam up to 200 cm. This study is part of a long term integrated crop-livestock rotation study comprising of 2 years of Bahia followed by peanut and then cotton with a winter cover crop of rye/oats. Cattle graze the winter cover as well as Bahia in the summer. The study is under a 56 ha center pivot irrigation system divided into 4 equal quadrants. The non-irrigated corners in each quadrant amount to 2 ha each. There are designated caged areas where grazing is not allowed so as to compare effects of grazing on crop yield and soil properties.

On March 21, 2013 grazing was discontinued and on March 26, 2013, Roundup was sprayed at the rate of 2 qt/A to kill the winter cover crop. On April 22, 2013, the plots were strip-tilled and Georgia06G peanuts were planted on April 27, 2013. The plots received 0.5 inches of irrigation on May 10, May 15, and May 21, 2013. Peanuts were inverted on Sep. 17, 2013 and harvested from 3 20 ft long windrows from the grazed and caged areas. These were weighed, tested for moisture content, shelled and graded for sound mature kernels, other kernels and damaged kernels.

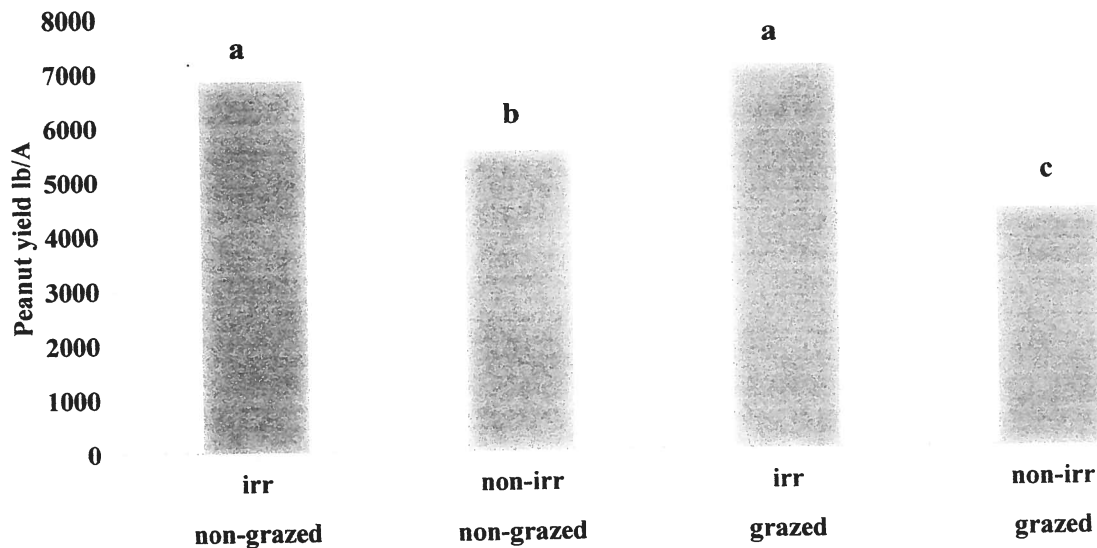
RESULTS

Peanut yield in the grazed-irrigated plots were the highest (7051 lb/A) and was significantly greater than grazed –non-irrigated plots (4369 lb/A). Similarly there was a significant difference in peanut yield between irrigated and non-irrigated non-grazed plots (6859 lb/A and 5511 lb/A) (Fig. 1). The average percentage sound mature kernel for peanuts in the grazed plots was 71% while that for peanuts in the non-grazed plots was 73%. Grazed plots had an average of 0.8% of damaged kernels while the non-grazed plots had an average of 0.7%. Other kernels were about 3.7% for both treatments. None of these differences were statistically significant.

Table 1

| GRAZING | IRRIGATION | YIELD | |
|------------|--------------|--------|---------|
| | | Mean | Std Dev |
| GRAZED | IRRIGATED | 7051.3 | 137.0 |
| GRAZED | NONIRRIGATED | 4369.0 | 639.9 |
| NON-GRAZED | IRRIGATED | 6858.8 | 735.9 |
| NON-GRAZED | NONIRRIGATED | 5511.3 | 381.7 |

Figure 1



irr = irrigated; non-irr = non-irrigated

DISCUSSION

Irrigation was a significant factor with significant yield differences between irrigated and non-irrigated plots irrespective of grazing status. Winter grazing was beneficial to yield in the irrigated plots but not significantly different from the non-grazed plots. There was a high degree of variability in the non-grazed irrigated plots which could likely explain the absence of any statistically significant difference between grazed and non-grazed irrigated plots. Non-irrigated non-grazed had significantly greater yield than non-irrigated grazed plots. Peanut quality in

terms of sound mature kernels, damaged or other kernel etc. was not significantly different between grazed and non-grazed plots.