

**TELONE – NITROGEN INTERACTION IN THE PRESENCE OF COTTON NEMATODES****A. Greer****University of Arkansas****Monticello, AR****T. Kirkpatrick****University of Arkansas****Hope, AR****N. Slaton****University of Arkansas****Fayetteville, AR****J. Barham and R. Bateman****University of Arkansas****Hope, AR****Abstract**

Over the last 10 years, the use of soil fumigation for nematode management in cotton has become increasingly popular. While soil fumigation is relatively expensive, lint yields have consistently and sufficiently improved to make this treatment profitable in fields with severe nematode pressure. Growers in this area have observed changes in cotton growth patterns when severely infested fields are fumigated. The most noticeable change has been rank growth resulting in an increased need for growth regulators, especially where the nitrogen fertilization had historically been higher than standard recommendations. In 2007, a study was initiated in a commercial field near Portland, AR with a history of high nematode pressure. Twelve row strips that had received Telone II (*1,2 dichloropropene*) at 3 gal/a were alternated with equivalent sized strips that received no fumigation. Within each strip, five nitrogen rates (30, 90, 110, 130, and 200 lbs/a) were applied in 100 ft long plots that were randomly assigned in four replications. Data collected in 2007 included pre-fertilizer application and post-harvest soil samples for nutrient analysis and nematode population density measurement, subsoil nitrate samples, full-season weekly Cotman data collection, end of season box mapping, root gall ratings, and lint yields. In 2008, the study was repeated on a different field on the same farm. Preliminary evaluation of the data indicate that nematode control may change the level of nitrogen fertilization that is required for optimum yields. Effects of nematode control on plant growth, development, and yield will be discussed.

**Materials and Methods**

In 2007, a field at the Ashley county farm was selected based on soil uniformity, nematode populations, and location of the Telone strips. Nutrient and nematode soil samples were pulled prior to the nitrogen application. Nitrogen was applied into the Telone strips using a variable rate applicator at rates of 0, 60, 80, 100, and 170 units. Another 30 units of N was applied by air in July across the entire field giving total rate ranges of 30, 90, 110, 130, and 200 units. The plots were monitored throughout the season using Cotman and included stand counts, height measurements, node counts, square counts, and boll counts. An end of season plant map was done to give a final map of height and boll locations. Seed-cotton was hand-harvested and bagged per plant map. Nematode gall ratings were done at harvest. After harvest, deep core samples were pulled using a Giddings soil sampler. The cores were divided into 6 inch sections and sent to the soil lab for nitrate analysis. Post-harvest nutrient and nematode soil samples were pulled. The seed-cotton was ginned and lint yields obtained.

In 2008, this test was planned to be replicated back into the same field. Due to an application error, the trial had to be moved to another field. Nitrogen was applied to the Telone strips in the new field by manually switching a variable rate applicator to the desired rates of 0, 60, 80, 100, and 170 units. Another 30 units of N was applied by air in July across the entire field giving total rate ranges of 30, 90, 110, 130, and 200 units. The 2008 plots were monitored throughout the season using Cotman as in the previous year. End of season plant mapping, gall ratings, deep core samples for nitrate analysis, pre-nitrogen nutrient samples, post-harvest nutrient samples, and pre/post nematode samples were also repeated. The seed-cotton will be ginned for lint yield.

In 2009, because the trial had been moved to a new field for 2008, the trial will be replicated in the 2008 field.

**Figures and Tables**



Figure 1: August 18, 2007



Figure 2: August 22, 2008



Figure 3: At harvest 2007



Figure 4: At harvest 2008

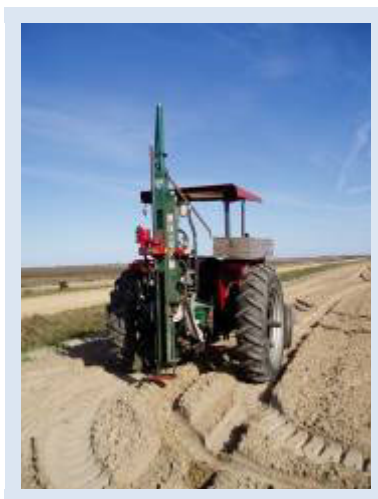


Figure 5: Gidding's Sampler

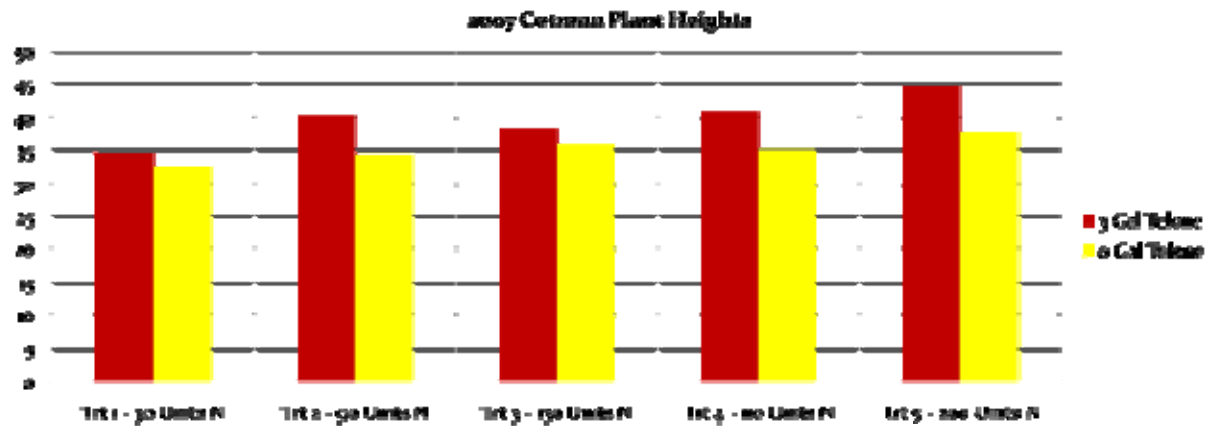
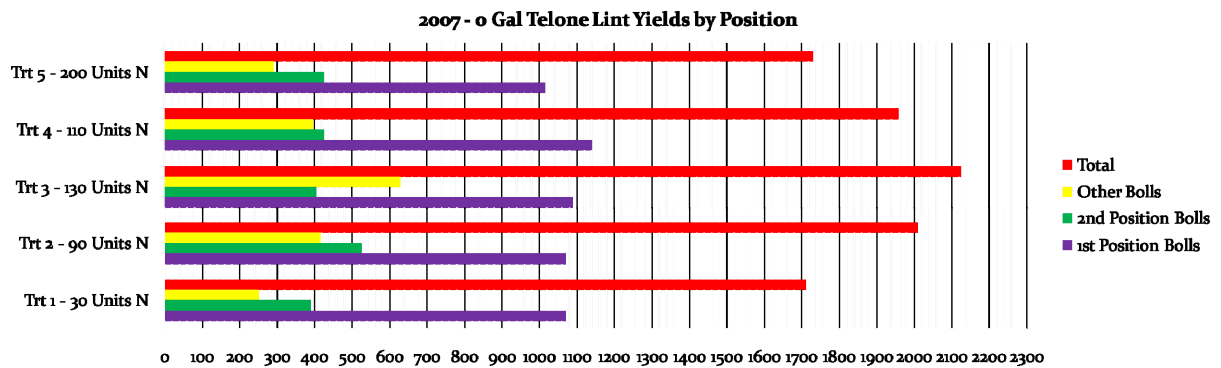
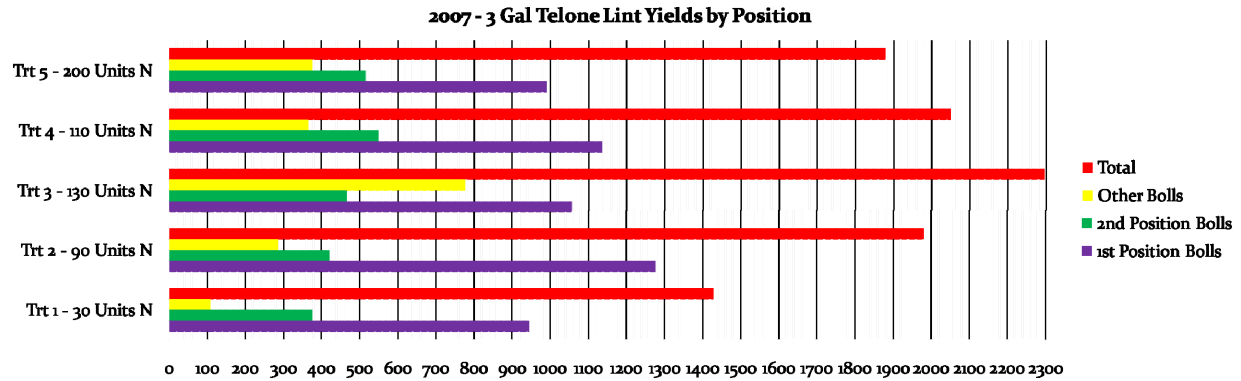


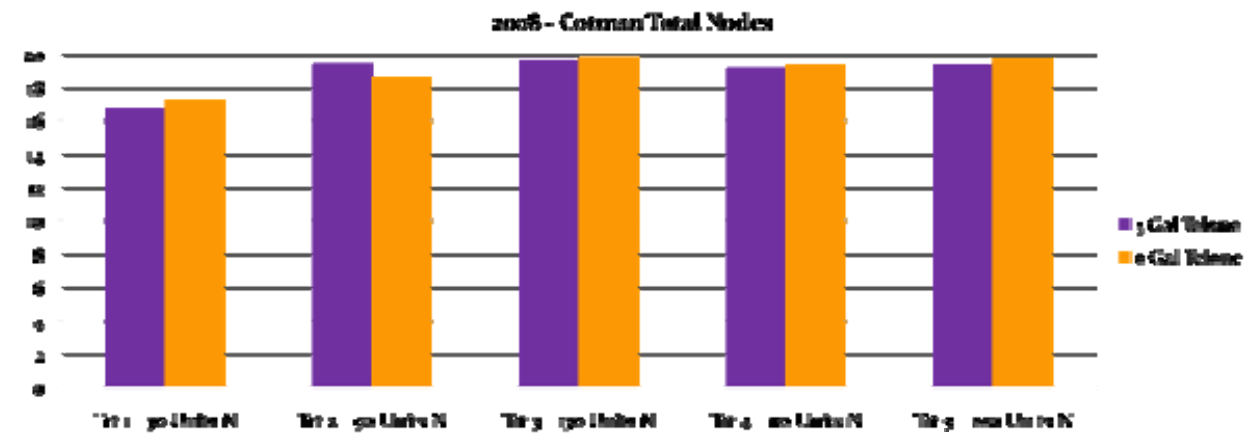
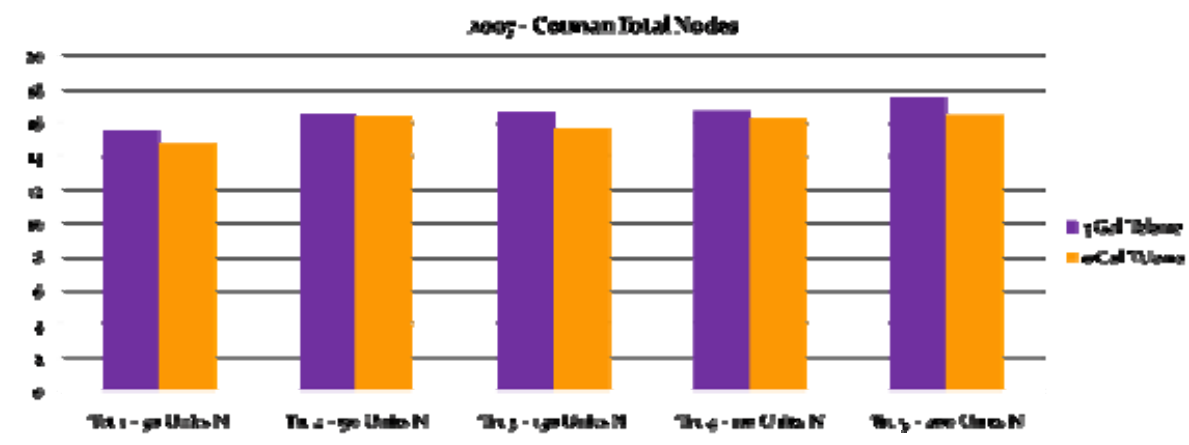
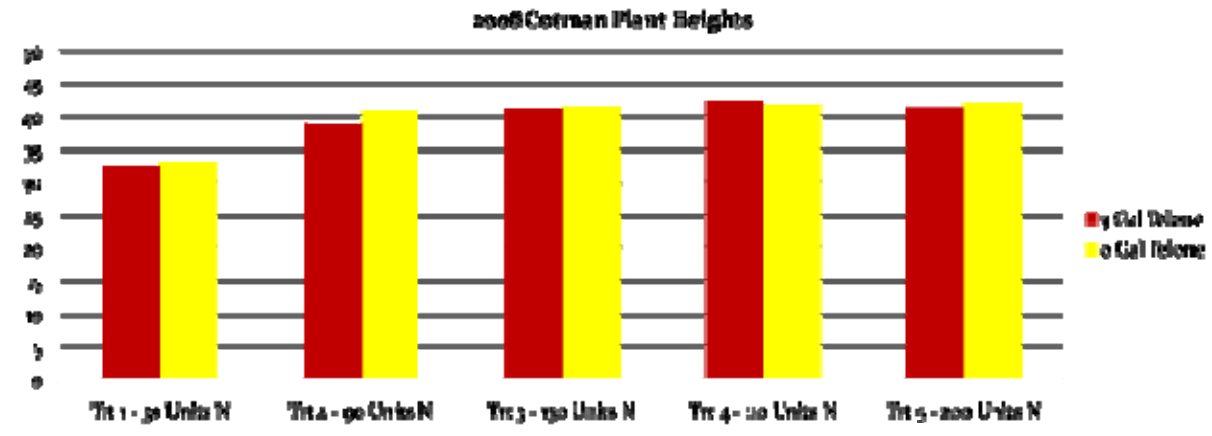
Figure 6: 2008 Telone Application



Figure 7: 2008 Nitrogen Application







### Results and Discussion

Two years of the three year on-farm trial have been completed. A preliminary look at the first fruiting node, total plant nodes, and heights from Cotman for 2007 and 2008 and lint yields for 2007 show the necessity of a third year of field data. In 2007, total lint yields were higher for treatment 3 in both 3 gal and 0 gal Telone strips and were highest in the 3 gal Telone. There also appears to be differences between positions, particularly in the outside boll location. Lint yields are not yet available for 2008. 2007 plant heights trended higher in the 3 gal Telone strips. In 2008, the plant height differences were very small and trended slightly in favor of the 0 gal Telone. 2007 total nodes

per plant trended slightly higher in the 3 gal Telone. 2008 total nodes per plant trended slightly towards the 0 gal Telone. Weather played a major role in the 2008 crop and seemed to have had much more impact on the trial than either the Telone or nitrogen applications. 2008 was a difficult year for production with part of the season being very dry and then turning excessively wet. This trial is to be repeated in 2009 and hopefully will confirm any shifts towards either 3 gal Telone or 0 gal Telone and between the nitrogen rates. Also, since the data has not been analyzed and this is just a preliminary look of a few chosen aspects, further data analysis may indeed confirm differences.