Final Report for Kansas Soybean Commission 03-15-2016

Managing Important Components of Intensive Production Systems in Soybean.

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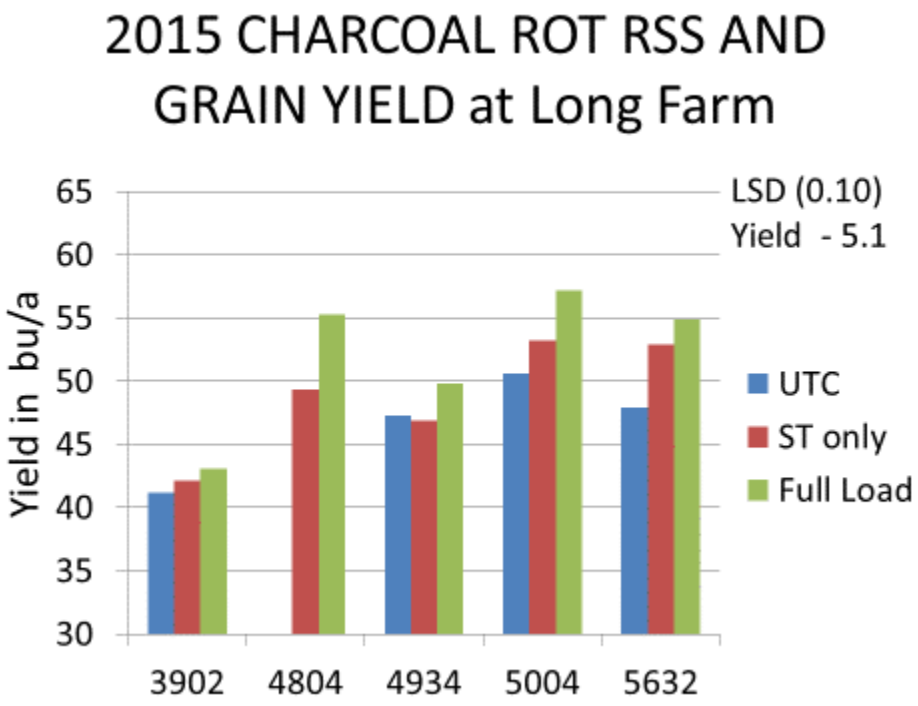
Activity for the year ending February 29, 2016 in the project included combining plots and data analysis for 8 objectives in the proposal.

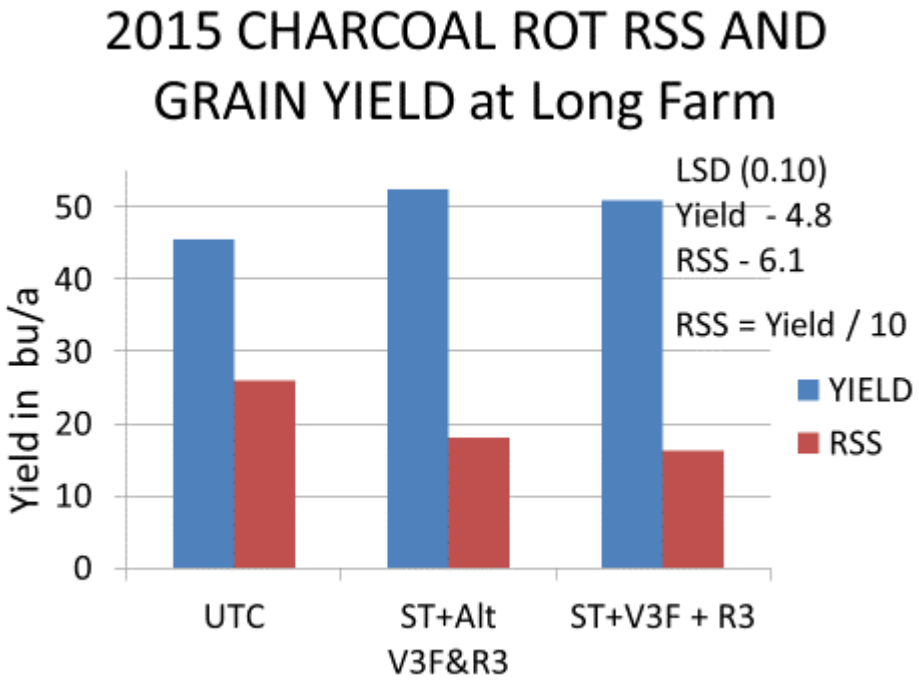
Intensive management is not a new or really different concept but is already used on farms in Kansas. For instance compare how animal agriculture uses a complex system of preventative vaccination and management (care) for cattle. In plants, insects, and diseases we use IPM (Integrated Pest Management.

Objective 1 - Genetic Potential for Response. Flooding caused loss of the twenty variety study but a 5 variety/seed treatment study was replanted. Seed were planted June 11, 2016. Maturities ranged from MG III to MG V5. Varieties included NK 3902 and 4804, Asgrow 4934 and 5632, and KS 5004. Seed treatments were the treatments that were applied by each company while the full load treatments included low cost fungicide and insecticide treatments at V4 and R3. Total costs of foliar treatments were less than $10 per acre. Plots were harvested in on November 15, 2016. Yields were excellent.



Objective 2 – BMP's for fungicides. A second study with a variety that responds to intensive management, KS 5004, has different treatments at V3/4 and at R2/3. The use of low cost fungicide +

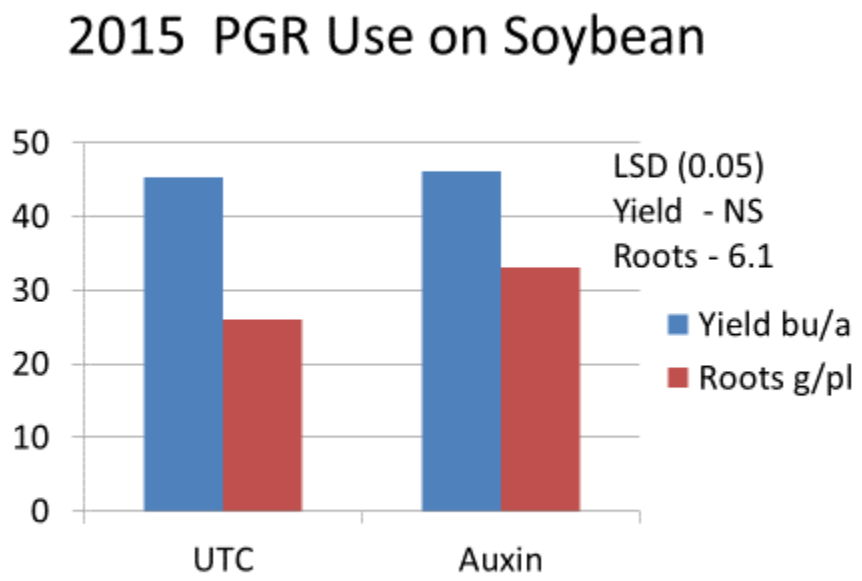
insecticide (Alt) compared to standard fungicide + insecticide at each stage was compared. Alternate treatments totaled less than $10 per acre while standard treatments cost nearly $30 per acre. Treatment effects on plant health, grain yield, and charcoal rot will be assessed during the season. This study was planted on June 24 and harvested on November 13, 2015 and preliminary results were presented to commission in December.



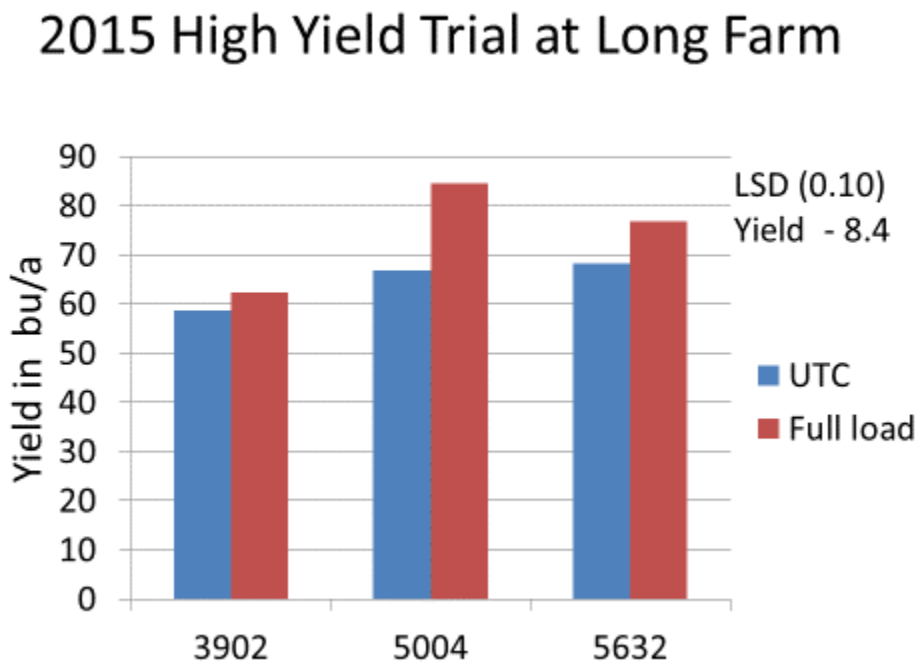
RSS = 1

RSS = 5

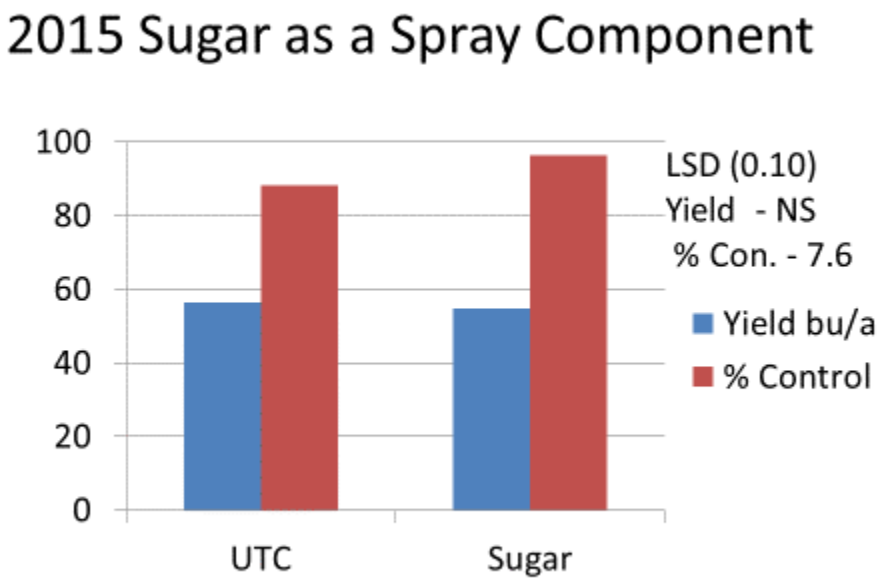
Objective 3 – PGR use on soybean .Another study was planted and treatments completed that will compare PGR use on soybean to enhance soybean growth especially early in the season. In addition early application and late application of N fertilizer will be evaluated with this study. This study was planted on June 25 and harvested on November 12 and indicate that although root mass increase there was little effect on grain yield in 2015. Rainfall in 2015 was more than adequate for crop growth.



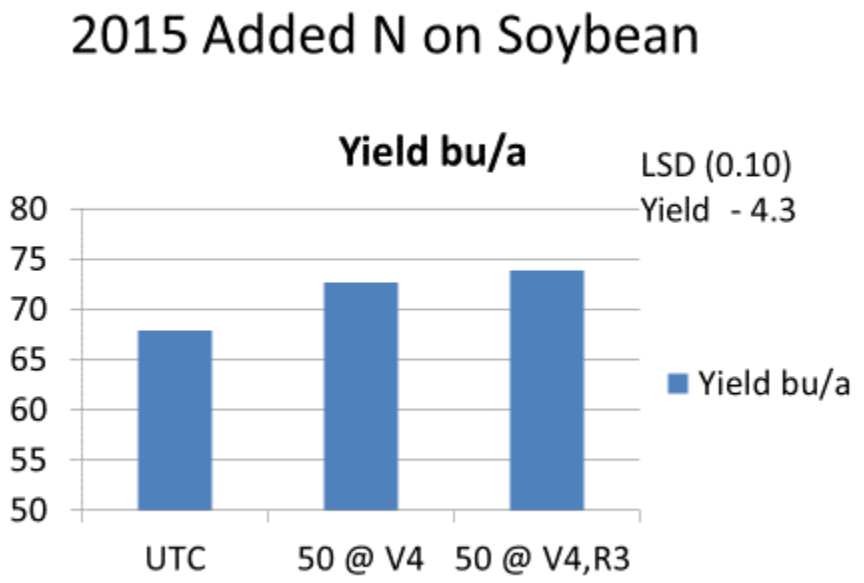
Objective 4. - Continue high Yield work under irrigated and non-irrigated conditions. This study was planted June 24, 2015, and treated to compare intensive management under irrigation in Kansas. This st This study was harvested on November 13, 2015. Yields were excellent but there were expectations of 100 bushel per acre yields. Next year added nitrogen will be included to push yields to that level.

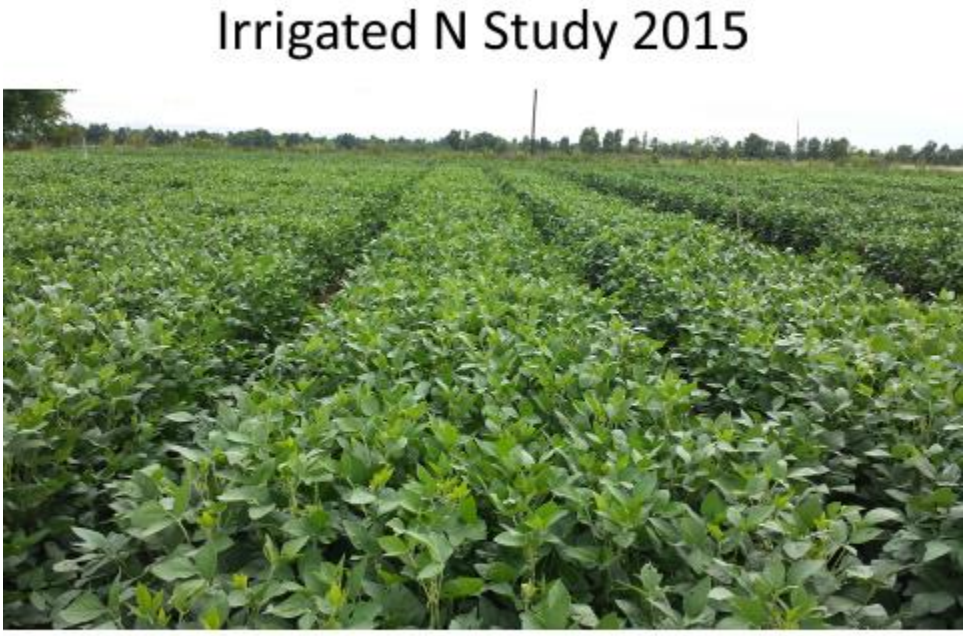


Objective 5. - Explore the use of novel compounds like sugar and aspirin added to spray components to determine if there is an effect and what that effect might be. Plots were planted in late June and sugar was added to fungicide treatments applied at R3. Plots were harvested on November 17 and indicate that the sugar increase disease control of foliar diseases but had little effect on yield.



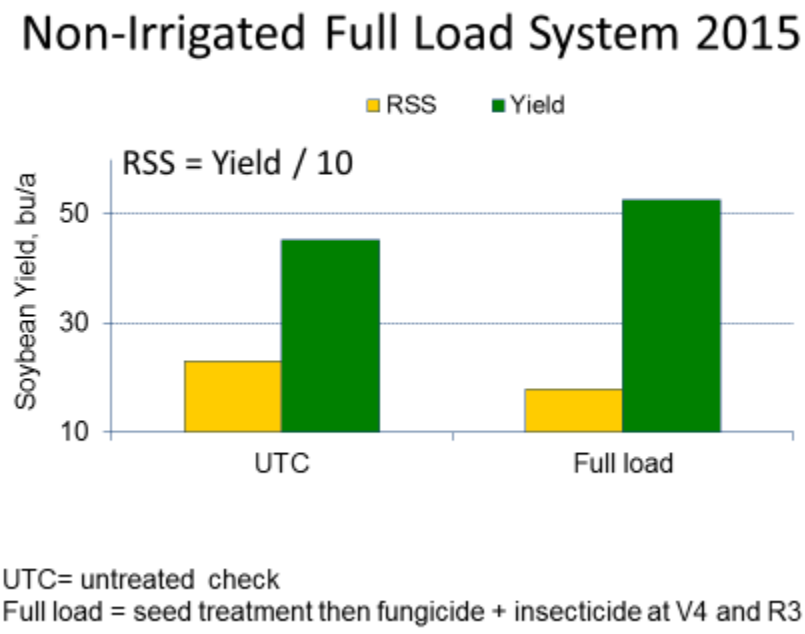
Objective 6. - Explore the use of added nitrogen to a high yielding environment and determine the effect on effect on grain yield. Plots were planted on June 24 and harvested on November 15, 2016. Results indicate that the early use of 50 pounds of actual N increased grain yields under irrigation but that an additional 50 pounds of N at R3 did not significantly increase grain yield.





Objective 7. - Put a complete package of treatments together and see if effects are merely additive or are synergistic. The key to the complete package is component and overall cost. This will be done with several studies that have comprehensive treatment plans in them. Full load included seed treatment and V4 and R3 foliar treatments. Results in 2015 with KS 5004, a high yielding full season variety indicate that managing charcoal rot through season long treatment can increase yields by 16 percent. Next year an irrigated study will be added.

Intensive Farming Techniques



UTC= untreated check
Full load = seed treatment then fungicide + insecticide at V4 and R3

Objective 8. - Work on new delivery methods of research data for my project and determine if it is applicable to other projects. I have begun work with a computer programmer to determine best methods of data delivery. These include data delivery through incorporation into existing web pages, development of new web pages, and application development for both computer and phone delivery. Work is in early stages with development of programming and use of data started. Results indicate that data incorporation on the Soybean Commission web page with a live and clickable subject can be utilized on existing pages. This represents the most efficient delivery with the widest soybean grower audience.