

ARKANSAS CORN AND GRAIN SORGHUM PROMOTION BOARD – January 2016

Title: Evaluation of High Yield Practices to Increase Corn and Grain Sorghum Yields

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Objectives: (1) Compare yield of corn and grain sorghum using current extension recommendations to a high yield system that is utilized by some yield contest winners. (2) Compare each individual input to see which input creates a yield response within the high yield system compared to current recommendations and (3) Compare economics of the two production systems

Results: Corn and grain sorghum trials were conducted at Marianna and Rohwer in 2015 evaluating the impact of impact of deep tillage, in-furrow starter fertilizer, increasing plant populations, seed insecticide rates, foliar fungicides, and additional fertilizer individually and when combined together in a “High Yield System”. Results are shown below in Tables 1 and 2.

Table 1. Corn Yields at Marianna and Rohwer in 2015.

| | Marianna | Rohwer |
|---|--|------------|
| Treatment Comparisons | Yield Response to treatment and yield (bu/a) | |
| Deep Tillage vs None | +3 (234) | --- |
| In-furrow starter fertilizer vs None | +2 (237) | +7 (231)* |
| Plant Population 39K vs 34K | -6 (222) | +5 (224) |
| Seed Insecticide 1250 vs 250 | +6 (228) | +1 (224) |
| Foliar Fungicide V5&R2 vs None | -3 (229) | +0 (237) |
| Micro Nutrients (Zn, others) at V6 vs None | +6 (238) | -5 (236) |
| Fert: 390-60-140-44-10 vs 220-60-90-24-10 | +20 (253)* | -3 (234) |
| Pioneer 1739 High Yield system vs Extension | +25 (259)* | +20 (240)* |
| Dyna-Gro 57VP51 or DKC 64-69 High Yield system vs Extension | +15 (268)* | +4 (223) |
| * = Significant impact on yield, P value = 0.10 | | |

Corn:

Corn yields were lower in 2016 than previous years, but were still relatively high. Results were similar to previous years that corn yields were significantly increased by the high yield management treatments compared to current extension recommendations at both Marianna and Rohwer. Factors that increased yield varied by location with additional fertilizer being the only factor that statistically increased yield at Marianna. At Rohwer, in-furrow starter fertilizer had the greatest impact on corn yield. While corn yields were increased by adding additional inputs, (economic analysis still ongoing), profit level was greatest with current extension recommendations.

| Table 2. Grain Sorghum Yields at Marianna and Rohwer in 2015. | | |
|--|--|--------|
| | Marianna | Rohwer |
| Treatment Comparisons | Yield Response to treatment and yield (bu/a) | |
| Deep Tillage vs None | -5 (155) | -- |
| In-furrow starter fertilizer vs None | +4 (153) | -- |
| Plant Population 100K vs 80K | +4 (156) | -- |
| Foliar Fungicide V10 & Flower vs None | +7 (162)* | -- |
| Micro Nutrients (Zn, others) at V6 vs None | -2 (158) | -- |
| Fert: 227-60-150-24-0 vs 160-60-90-0-0 | +3 (155) | -- |
| Pioneer 84P80 High Yield system vs Extension | +8 (164)* | -- |
| DKS 53-67 High Yield system vs Extension | +17 (163)* | -- |
| * = Significant impact on yield, P value = 0.10 | | |

Grain Sorghum:

Grain sorghum yields at Marianna were increased 8 to 17 bu/acre, depending on hybrid, by adding additional inputs compared to current extension recommendations. The only input that statistically increased grain sorghum yield was foliar fungicides (7 bu/acre). Added inputs increased yields, but economic analysis will show that current extension recommendations were the most profitable.

At Rohwer, plots were impacted by midge and midge damage was more pronounced in the high yield plots. The in-furrow starter fertilizer, additional fertilizer plots, and high yield plots all flowered slightly earlier than surrounding plots, and had greater midge damage. Plots that received in-furrow starter fertilizer yielded 11 bu/acre less than plots that received no starter fertilizer. In reality, they may have been 11 bu/acre better as there were dramatic differences in growth.