

**ARKANSAS CORN AND GRAIN SORGHUM PROMOTION BOARD**  
**END OF YEAR PROGRESS REPORT – January 2015**

**Title:** Developing Profitable Irrigated Rotational Cropping Systems

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**Objectives:**

1. Evaluate grain yield and resulting economic response for eight crop rotations.
2. Monitor how nematodes (Soybean Cyst, Root-knot and Reniform) and foliar diseases change over time based on crop rotation.

**Progress:** The following rotations are being evaluated:

1. Corn-Soybean-Corn-Soybean, 2. Corn-Wheat- Double Crop Soybean-Corn,
3. Soybean-Wheat-Double Crop Soybean-Wheat, 4. Grain Sorghum-Wheat-Double Crop Soybean-Grain Sorghum, 5. Continuous Corn, 6. Continuous Soybean, 7. Grain Sorghum-Soybean-Grain Sorghum-Soybean, 8. Soybean-Wheat-Double Crop Grain Sorghum –Soybean

**Wheat:** Yields of wheat harvested in 2014 are shown in Table 1.



**Figure 1.** View of plots prior to wheat harvest

<b>Table 1.</b> 2014 Wheat yield when planted following various summer crops.	
Previous Crop	Wheat Yield (bu/a)
Full-Season Soybean in 2013	75
Corn in 2013	72
Grain Sorghum in 2013	69
LSD (0.05)	No Significant Difference

Wheat was planted in October 2014 into conventionally tilled plots that were previously planted to full season soybean, corn, grain sorghum, and double crop soybean in 2014 and will be harvested in June 2015.

**Corn, Soybean, and Grain Sorghum:**

Corn (DKC 62-08), full-season soybeans (LL, 4.94), and grain sorghum (Pioneer 84G62) were all planted in April following recommended production practices for each crop. Wheat harvest was delayed by the lateness of the crop and rainfall at harvest. Following wheat harvest, the initial plan was to no-till double-crop soybeans and double crop grain sorghum into wheat plots. Due to heavy straw, tillage was done to help establish good stands. Plots were re-bedded and double-crop soybean (LL 4.4) and double-crop grain sorghum were planted July 7<sup>th</sup>. Corn, full-season grain sorghum, and full-season soybeans were harvested in August/September and double-crop soybeans were harvested in October. Yields of corn, full-season soybean, double-crop soybean, and full-season grain sorghum are shown in Tables 2-5 below. Double-crop grain sorghum was not harvested due to poor yield potential caused by sugarcane aphids. Economic analysis will be conducted to determine profitability level of each rotation. Nematode samples were taken from each plot October 2014 and results are not available yet.

<b>Table 2. 2014 corn yields when planted following corn or soybean.</b>	
Previous Crop	Corn Yield (bu/a)
Full-Season Soybean in 2013	250
Corn in 2013	245
LSD (0.05)	No Significant Difference

<b>Table 3. 2014 full-season soybean yields when planted following various summer crops.</b>	
Previous Crop	Full-Season Soybean Yield (bu/a)
Full-Season Soybean in 2013	43
Corn in 2013	64
Grain Sorghum in 2013	64
LSD (0.05)	13

<b>Table 4. 2014 double-crop soybean yields when planted following wheat and various summer crops.</b>	
Previous Crop	Double-Crop Soybean Yield (bu/a)
Full-Season Soybean in 2013	30
Corn in 2013	39
Grain Sorghum in 2013	40
LSD (0.05)	4

<b>Table 5. 2014 grain sorghum yields following soybean</b>	
Previous Crop	Grain Sorghum Yield (bu/a)
Full-Season Soybean in 2013	143
*all grain sorghum was planted following soybeans. In 2015, grain sorghum will be planted following full-season soybeans and double- crop soybeans	