

Preliminary Estimates of Arkansas Crop Losses from Poor Harvest Conditions in 2009 - Updated 11-13-2009

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Throughout the 2009 cropping season Arkansas producers have been challenged by a wet spring, dry June, and then excessive rainfall again from July through harvest. Although some crops were predisposed to lower yields from late planting, this report provides preliminary estimates of yield and quality losses and fieldwork costs related to poor weather conditions during fall harvest as of November 8 and season losses for grass hay within the state.

Based on data from the USDA, National Agricultural Statistical Service, current marketing prices, quality loss estimates from local elevators, and yield loss and additional fieldwork from University of Arkansas extension specialists, the estimated losses in gross receipts for crops and grass hay as of November 13, 2009 is estimated to be \$309.4 million. Some of the losses have been offset by rises in commodity prices as markets have responded to the NASS Crop Progress and Condition reports that have indicated declining crop conditions. Cotton and sorghum are estimated to have experienced the largest negative impact per acre but total loss is greatest for soybeans and cotton.

Table 1. Estimated Reduction in Arkansas Gross Receipts from Poor Harvest Conditions, 2009.

Crop	USDA		September Estimated Gross Receipts ² (\$1,000)	Reduced Gross Receipts ³ (\$1,000)	Percent Loss from Estimated Total Gross Receipts ⁴	Per Acre Loss by Total Acreage ⁵
	Estimated Harvested Acreage ¹ (1,000)					
Corn	410		\$190,072	-\$4,346	-2.3%	-\$11
Cotton	500		\$310,306	-\$96,048	-31.0%	-\$192
Cottonseed	500		\$68,400	-\$19,494	-28.5%	-\$39
Grass Hay	1,400		\$200,200	-\$7,808	-3.9%	-\$6
Rice	1,475		\$1,277,377	-\$50,035	-3.9%	-\$34
Sorghum	35		\$9,472	-\$4,477	-47.3%	-\$128
Soybeans	3,370		\$1,166,627	-\$127,144	-10.9%	-\$38
Total	7,190		\$3,222,453	-\$309,351	-9.6%	-\$43

¹ Estimates to be harvested from the November NASS Arkansas Crop Production Report.

Grass Hay estimates come from the October NASS Crop Production Report released Oct. 9, 2009.

² September estimates of Arkansas crop value going into harvest.

³ Preliminary yield, quality, and additional fieldwork losses from poor harvest conditions.

⁴ Equals Reduced Gross Receipts divided by Estimated Gross Receipts

⁵ Equals Reduced Gross Receipts divided by USDA Estimated Harvested Acreage

Data Sources and Analysis

Using the NASS September (October for grass hay) Arkansas yield estimates and the weekly Arkansas Crop Progress and Condition report, yield reductions below the September estimate were made based upon the crop left to harvest at the point when crop conditions started to deteriorate. Those dates are listed below in the discussion for each crop along with the Arkansas cash prices reported in the Arkansas Farm Bureau Daily Commodity Report which includes some commodity prices reported by USDA Agricultural Marketing Service.

With reports of deteriorating crop conditions at harvest, prices have responded positively. Two prices are estimated for the analysis. The first is an average Arkansas harvest cash price before each crop condition declined and the second is the average harvest cash price following the point of declining crop condition. The first price is used along with the estimated NASS Arkansas crop acreage and September crop yield forecast to estimate a gross receipts baseline going into harvest (Table 1). At the point when each crop condition declined NASS reported the percent of acreage harvested. Using the percent harvested to the point when crop conditions declined, estimates of gross receipts for that percent of the crop were calculated. Gross receipts for the remaining unharvested crop were estimated by deducting a yield and quality loss by using the updated Arkansas cash price following the NASS Arkansas Crop Progress and Condition report that estimated a decline in the condition of the specific crop. The sum of the two estimates of gross receipts including commodity price changes, yield loss, quality loss, and additional fieldwork are subtracted from the baseline to estimate gross receipt loss from poor harvest conditions. Table 3 presents detailed results from the analysis.

Corn. Poor harvest conditions are estimated to have a negative impact of \$4.3 million on corn producers from yield and quality loss and additional fieldwork. The NASS Crop Progress and Condition report indicated that on September 20 conditions started to deteriorate. At that point 56% of the crop had been harvested. It is estimated that 37% of the remaining unharvested acreage had a yield loss of 10% and 7% of the remaining acreage had a 25% yield reduction from the September yield estimate and a quality discount of \$0.15/bu for high moisture content. Average cash price before September 20 was \$3.03/bu. Since that date the average cash price has increased to \$3.50/bu. The increase in price has helped offset the loss of yield and quality discount. As of November 8, NASS reports that 97% of the corn crop has been harvested.

Cotton. Arkansas cotton producers have been hit the hardest as a percentage of gross receipts compared to the other crops. The economic loss from poor yield and quality and additional fieldwork on cotton and cotton seed combined is estimated to be a \$115.5 million drop in gross receipts. The NASS Crop Progress and Condition report indicated that on October 12 conditions started to deteriorate. At that point only 5% of the crop had been harvested. The 95% remaining was estimated to have a yield loss of 30% from the September yield estimate and a quality discount of \$0.04/lb. Average cash price before October 12 for cotton fiber was \$0.5877/lb.

Since that date the average cash price has increased to \$0.634/lb. The increase in price has approximately offset the quality discount but has not alleviated reduced gross receipts resulting from lost yields and additional fieldwork costs. As of November 8, NASS reports 46% of the cotton crop has been harvested which is well below the 5-year average of 90%.

Grass Hay. Hay producers have lost an estimated \$7.8 million from poor conditions throughout the growing season. Estimates come from the October 9, 2009 crop production and crop prices reports released by USDA NASS. It is estimated that there were 1.4 million acres of grass hay with a normal yield of 2.2 ton/acre. The weather has reduced yield by approximately 4% according to unpublished estimates from the Arkansas Farm Service Agency. Losses on hay pastures are concentrated in the south and southwest part of Arkansas. No losses in quality have been included in this report. Furthermore, reductions in pasture forage for grazing has not been included, although preliminary reports suggest that the cloudy and wet weather has had negative impacts on pasture conditions.

Rice. Rice producers in Arkansas have seen moderate losses from poor harvest conditions, varying from none to substantial depending on location. Gross receipts are estimated to be reduced by \$50 million from yield and quality loss and additional fieldwork costs. The NASS Crop Progress and Condition report indicated that on September 27 conditions started to deteriorate. At that point 32% of the crop had been harvested. The 68% remaining was estimated to have a quality discount of \$0.15/bu for high moisture content. As of October 26, 20% of the rice crop was unharvested and is estimated to have a 10% yield loss relative to the September estimated yield. Reports of head rice yields are good so far this year and reported to be similar to last year. Average cash price has increased only by \$0.03/bu since reports of declining crop condition. On the week ending November 8 approximately 6% of the rice crop remains to be harvested.

Sorghum. Arkansas sorghum producers have lost approximately 47% of their gross receipts from reduced yield, quality and additional fieldwork from poor harvest conditions. The estimated loss in gross receipts from reduced yield, quality, and additional fieldwork costs will be \$4.5 million. The NASS Crop Progress and Condition report indicated that on September 20 conditions started to deteriorate. At that point 35% of the crop had been harvested. Abandonment or rejection from elevators is estimated at 5% of the crop. The 60% remaining was estimated to have a yield loss of 30% from the September yield estimate and a quality discount of \$1.80/bu for high moisture content and grain damage. Average cash price before September 20 was \$2.91/bu. Since that date the average cash price has increased to \$3.26/bu. The increase in price has not been enough to offset yield loss and quality discount. As of November 8, NASS reports that 100% of the sorghum crop has been harvested.

Soybeans. It is estimated that soybeans producers have lost \$127.1 million from decreased yield, quality, and additional fieldwork. The NASS Crop Progress and Condition report indicated that on October 11 soybean conditions started to deteriorate. At that point only 19% of the crop had been harvested. It is estimated that the remaining 81% of the crop had a 5% yield reduction with an average quality discount of \$1.04/bu. As of November 8, 34% of the crop remains to be harvested.

Value-Added. The economic loss as a result of the damage to crops is estimated to reduce value added (Arkansas gross state product) by nearly \$162 million. The loss from crop damage is estimated for three activities. First, crop damage results in less farm revenue which is estimated to reduce farm household spending for consumer goods and services. Second, since crop output is reduced, there are fewer grains and oilseeds (corn, rice, sorghum and soybeans) to process. This reduces milling and processing activity, which in turn has negative impacts on the transportation, wholesale and many other industries that supply goods and services to the processing industries. Similarly, since cotton production is diminished there will be less cotton to gin which requires fewer workers and, therefore, less paid in wages and salaries and less value added to the state economy. Less cotton to gin also affects those industries that supply goods and services to operate the gins, including transportation.

Initial estimates of the economic loss due to crop damage are a decline of nearly 3,000 full and part-time jobs, a reduction of approximately \$83 million in wages and salaries, and a decline of nearly \$162 million in value added (Arkansas Gross State Product).

Table 2. Estimated Arkansas Value-Added Impacts from 2009 Crop Damage.

	Employment	Wages*	Value Added*
Corn, Soybean, Rice Processing	-374.60 \$	(15,206) \$	(27,198)
Cotton Ginning	-280.30 \$	(6,529) \$	(8,258)
Reduced Household Spending	-2281.22 \$	(61,214) \$	(126,302)
Total	-2,936 \$	(82,948) \$	(161,758)

* Figures are in \$1,000

Table 3. Detailed Analysis of Calculating Loss of Gross Receipts from Poor Harvest Conditions by Commodity, 2009.

Crop	USDA Estimated Acreage (1,000)	USDA September Yield Estimate	Unit	Price Before Crop Condition Decline	Unit	Price After Crop Condition Decline	Unit	Total September Estimated Value of Production ¹ (\$1,000)	Percent Harvested Before Crop Condition Decline ²	Percent Harvested After Crop Condition Decline ²	Estimated Value of Harvested Crop Before Crop Condition Decline ³ (\$1,000)	Estimated Value of Harvested Crop After Crop Condition Decline ⁴ (\$1,000)	Quality Discount ⁵ (\$1,000)	Costs of Additional Fieldwork ⁶ (\$1,000)	Loss of Crop Value from Harvest Crop Condition Decline ⁷ (\$1,000)
Corn	410	153	bu	\$3.03	bu	\$3.50	bu	\$190,072	56%	44%	\$106,440	\$84,638	\$2,639	\$2,713	-\$4,346
Cotton	500	1,056	lb	\$0.5877	lb	\$0.6340	lb	\$310,306	5%	95%	\$15,515	\$222,610	\$14,045	\$9,823	-\$96,048
Cottonseed	500	0.76	tn	\$180.00	tn	\$180.00	tn	\$68,400	5%	95%	\$3,420	\$45,486	na	na	-\$19,494
Grass Hay ⁸	1,400	2.20	tn	\$65.00	tn	\$65.00	tn	\$200,200	na	na	na	\$192,392	na	na	-\$7,808
Rice	1,475	152.2	bu	\$5.69	bu	\$5.72	bu	\$1,277,377	32%	68%	\$408,760	\$847,514	\$22,898	\$6,034	-\$50,035
Sorghum	35	93	bu	\$2.91	bu	\$3.26	bu	\$9,472	35%	60%	\$3,315	\$4,457	\$2,461	\$316	-\$4,477
Soybeans	3,370	38	bu	\$9.11	bu	\$9.86	bu	\$1,166,627	19%	81%	\$221,659	\$971,626	\$102,484	\$51,318	-\$127,144
Total	7,190							\$3,222,453			\$759,110	\$2,368,723	\$144,527	\$70,204	-\$309,352

¹ = USDA Estimated Acreage * USDA September Yield Estimate * Price Before Crop Condition Decline

² Estimates of harvested crop in the weekly USDA Crop Progress Report that coincided with the decline in crop conditions at harvest.

³ = USDA Estimated Acreage * USDA September Yield Estimate * Price Before Crop Condition Decline * Percent Harvested Before Crop Condition Decline

⁴ = USDA Estimated Acreage * (USDA September Yield Estimate - Estimated Yield Loss) * Price After Crop Condition Decline * Percent Harvested After Crop Condition Decline

⁵ Quality discount per bushel on crop harvested after crop condition decline: (Corn and Rice at \$0.15/bu, Sorghum at \$1.80/bu, Soybeans at \$1.04/bu on 81% of acreage, and Cotton at \$0.04/lb)

⁶ = Assuming two passes with a disk and landplane at \$37.60/acre

⁷ = Value of Crop Harvested Before and After Crop Condition Decline - Pre Harvest Estimated Value of Crop - Quality Discount

⁸ Grass hay acreage and yield estimates come the Oct. 9, 2009 Crop Production report. Price estimate is the Missouri price for Other Hay in the Oct. 9, 2009 USDA NASS Crop Prices report.

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