Impact of the August 2016 Rains and Floods on Arkansas Crop Production

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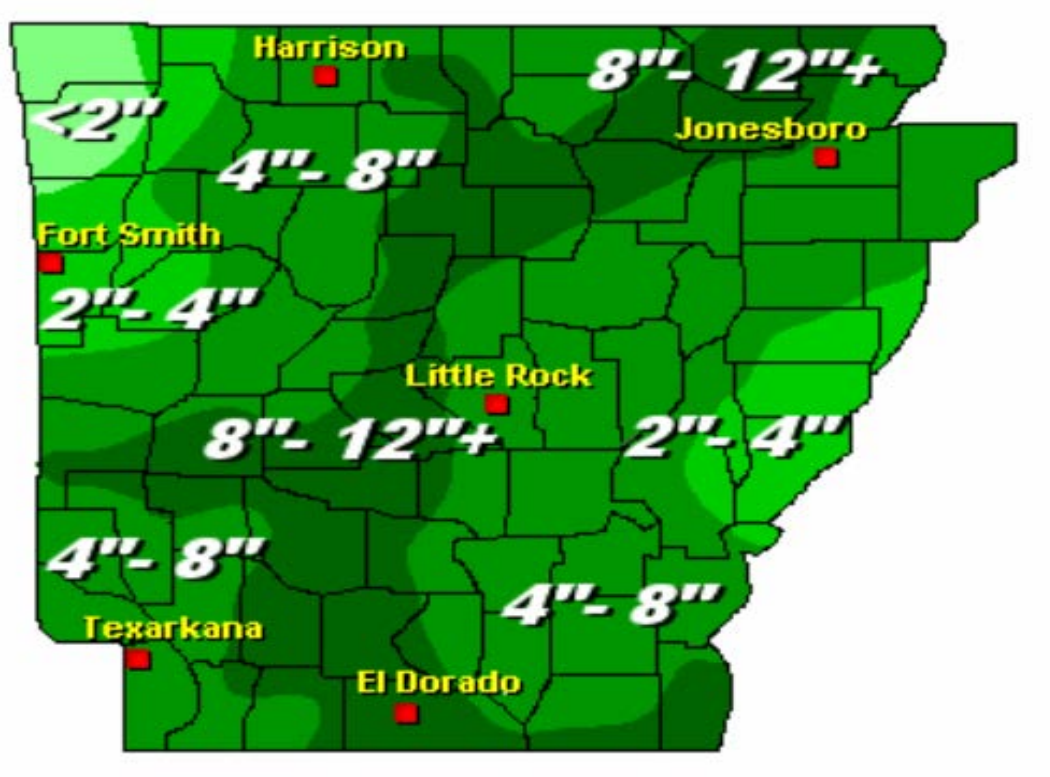
Introduction

- Excessive rainfall in August, particularly during the third week of August, resulted in serious damage to Arkansas crops
- Many of the crops were at or near harvest stage when the rains and flooding occurred
- Sustained submergence of fields by flood water has either destroyed or severely damaged both crop output and quality
- Physical damages and quality losses have occurred from excess rainfall and long sustained cloudy conditions.

Damage Estimates and Sources of Information

- This presentation reports on preliminary estimates of the extent of physical and monetary damage to Arkansas crops resulting from the rains and flooding occurring in August.
- The total value of damage is estimated in a range of **$45.6 to $50 million**.
- University of Arkansas Extension agronomists identified with their crop specialization have contributed greatly to the information that will be presented.

Precipitation Across Arkansas, August 2016



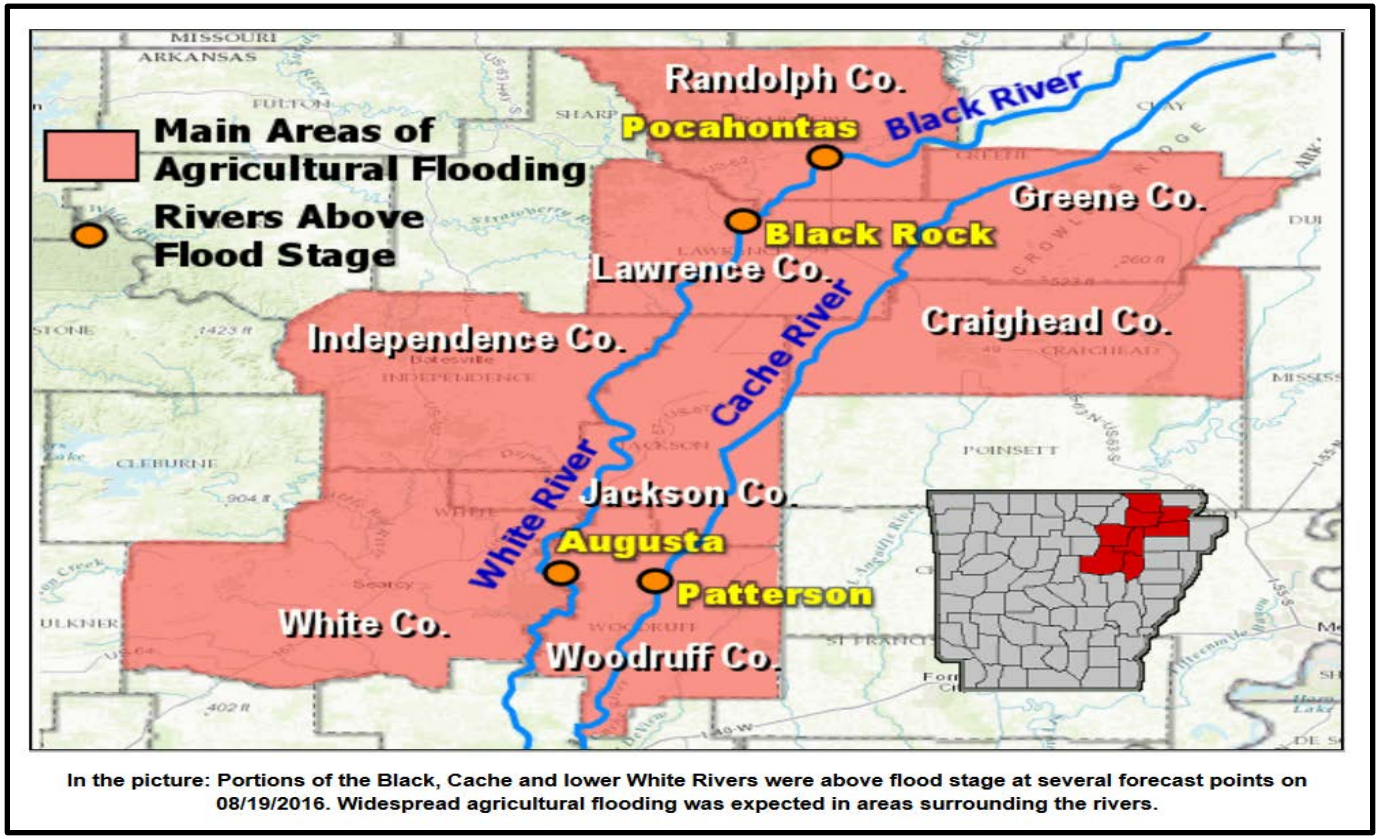
Normal August Precipitation:

2.17 to 3.58 inches
(Arkansas)

2.22 to 3.44 inches
(Northeast Arkansas)

Source: National Weather Service Weather Forecast Office, Little Rock, Arkansas, August 2016 Storm Report

Main Areas in Arkansas Affected by Flooding, August 2016



In the picture: Portions of the Black, Cache and lower White Rivers were above flood stage at several forecast points on 08/19/2016. Widespread agricultural flooding was expected in areas surrounding the rivers.

Source: National Weather Service Weather Forecast Office, Little Rock, Arkansas, August 2016 Storm Report

Flooding of Fields in Northeast Arkansas

Photo courtesy of Dustin Geurin and pilot Blake Propst (Delta Farm Press, September 16, 2016, p. 8)

Submerged Rice Field in Northeastern Arkansas, August 2016

Fig. 1. Flooded field with rice underwater and slightly higher elevation field behind.

Source: Dr. Jarrod Hardke, Arkansas Rice Update, August 26, 2016

Sprouting of Crops Widespread Throughout Eastern Arkansas

Sprouting Rice

Various stages of sprouting rice kernels from standing rice.

Source: Dr. Jarrod Hardke, Arkansas Rice Update, August 19, 2016

Sprouting Sorghum

Sprouting grain in head

Source: Dr. Jason Kelley, Arkansas Crop Update, August 22, 2016

Split Soybean Pods and Sprouted Soybean Seed

Two pictures showing split soybean pods with sprouted seed.

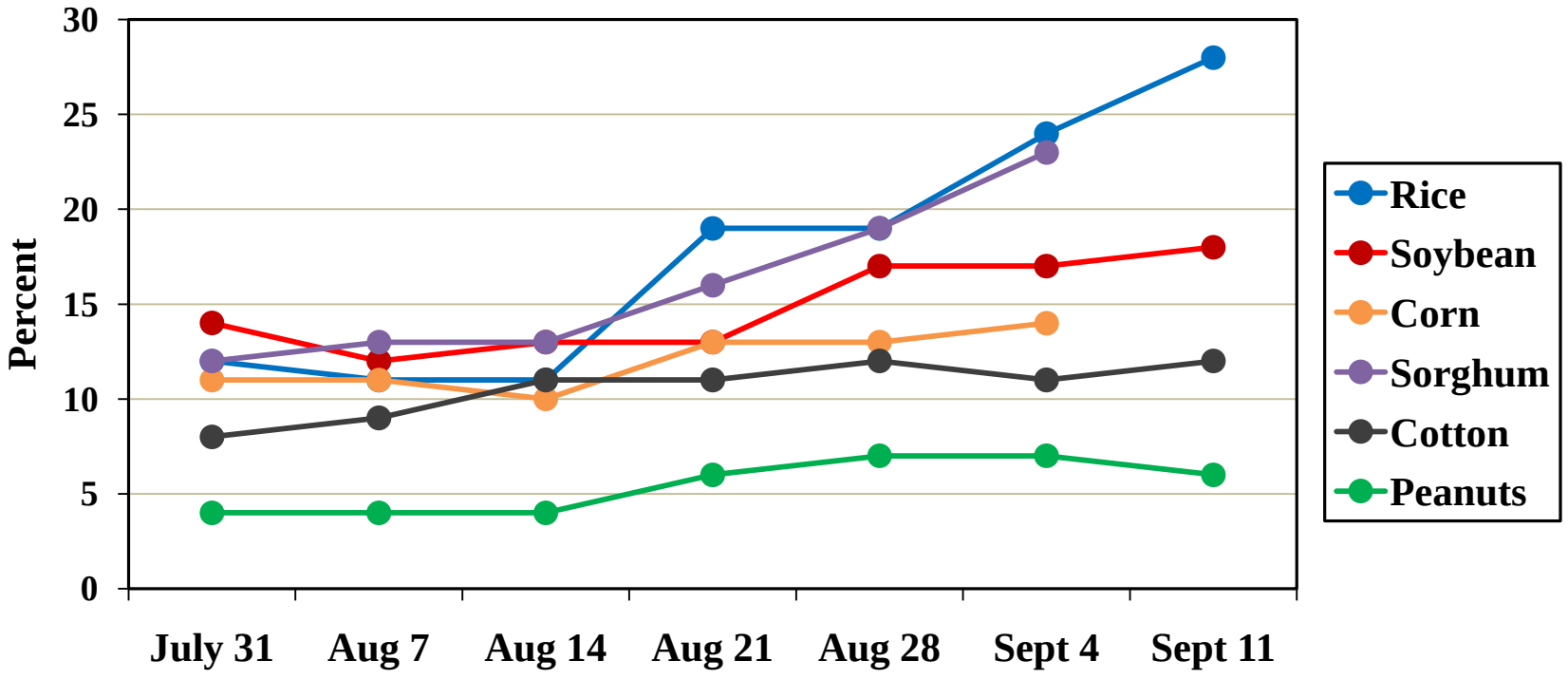
Source: Dr. Jeremy Ross, Arkansas Crop Update, August 24, 2016

Sprouting Corn

Source: Dr. Jarrod Hardke, Arkansas Rice Update, August 19, 2016

Crop Conditions During August Deteriorated for most Major Crops

Percent of Each Crop Rated Poor or Very Poor, Weeks Ending July 31 - September 11, 2016



Source: USDA, NASS, Arkansas Crop Progress and Condition Reports

Percent of Each Crop Rated Poor or Very Poor Based on Latest Crop Condition Reports

Rice: *28%* (16% Poor; 12% Very Poor)

Soybeans: *19%* (10% Poor; 9% Very Poor)

Sorghum: *23%* (18% Poor; 5% Very Poor)

Corn: *14%* (8% Poor; 6% Very Poor)

Cotton: *12%* (6% Poor; 6% Very Poor)

Peanuts: *6%* (5% Poor; 1% Very Poor)

Week ending September 11, 2016 for rice, soybeans, cotton, and peanuts; week ending September 4, 2016 for sorghum and corn.

Source: USDA, NASS, Arkansas Crop Progress and Condition Reports

Impacts of Excess Rainfall and Flooding on Rice

The Rice Crop

- The August 12 USDA-NASS Crop Production Report forecasted 2016 Arkansas rice acres at 1.575 million and a yield of 167 bushels per acre.
- Rice harvest had progressed only 2% before 10 consecutive days of rainy conditions began on August 13th.
- Significant flooding occurred in eastern Arkansas, and several rice acres were submerged for long stretches of time.
- Grain quality deterioration became an issue over a wider-than-expected area and will likely remain a concern as the rice harvest progresses.

Estimated Rice Acres Affected by August 2016 Flooding

County	*Planted Acres*	*Estimated Acres Affected by Flooding*	*Percent Acres Affected by Flooding*
Randolph	35,072	16,000	45.6%
Lawrence	104,971	8,000	7.6%
Craighead	70,027	10,000	14.3%
Clay	82,535	2,500	3.0%
Jackson	113,431	2,000	1.8%
Woodruff	61,176	750	1.2%
Total	**467,212**	**39,250**	**8.4%**

Source: Dr. Jarrod Hardke, Rice Extension Agronomist

Estimated Value of the Rice Crop Lost to August 2016 Flooding

Type of Loss	*Crop Acres Affected*	*Percent of Loss*	*Estimated Yield Loss (Bu)**	*Value of Crop Lost ($)#*
Limited Loss	19,250	25%	802,244	3,610,097
Total Loss	20,000	100%	3,334,000	15,003,000
Total	**39,250**		**4,136,244**	**18,613,097**

*USDA-NASS yield estimate of 7,500 lbs/acre (167 bu/ac)
#$4.50 per bushel ($10 per cwt)

Source: Dr. Jarrod Hardke, Rice Extension Agronomist

Other Factors Affecting Losses in Rice Value

- Sprouting rice kernels – will not significantly affect yield loss but will effect quality loss through lower milling yields. Sprouting kernels when milled will break, resulting in a larger number of broken kernels relative to whole kernels.
- Late season diseases, such as panicle blight, blast, and sheath blight became evident after the rains began. Management options (such as fungicide) were no longer available or simply nonexistent at this stage of production.
- Will know more about these value losses as the harvest continues to progress.

Impacts of Excess Rainfall and Flooding on Soybeans

The Soybean Crop

- The August 12 USDA-NASS Crop Production Report forecasted 2016 Arkansas soybean acres at 3.12 million and a yield of 47 bushels per acre.
- Looked to be a good crop until rainy and cloudy conditions occurred from August 13 through August 22.
- Excessive rains caused significant flooding of soybean acres in northeast Arkansas.
- Rains and cloudy conditions also caused widespread occurrences of split pods, seed sprouting, and increased late season disease pressures.

Estimated Soybean Acres Affected by August 2016 Flooding

County	*Planted Acres*	*Estimated Acres Affected by Flooding*	*Percent Acres Affected by Flooding*
Clay	107,000	2,500	2.3%
Jackson	117,000	5,000	4.3%
Lawrence	65,000	12,000	18.5%
Randolph	33,000	8,000	24.2%
White	32,000	3,000	9.4%
Total	**354,000**	**30,500**	**8.6%**

Source: Dr. Jeromy Ross, Soybean Extension Agronomist

Estimated Value of the Soybean Crop Lost to August 2016 Flooding

County	*Estimated Acres Affected by Flooding*	*Percent of Loss*	*Estimated Yield Loss (Bu)**	*Value of Crop Lost ($)#*
Clay	2,500	75%	88,125	881,250
Jackson	5,000	75%	176,250	1,762,500
Lawrence	12,000	75%	423,000	4,230,000
Randolph	8,000	75%	282,000	2,820,000
White	3,000	75%	105,750	1,057,500
Total	**30,500**		**1,075,125**	**10,751,250**

*USDA-NASS yield estimate of 47

#$10.00 per bushel

Source: Dr. Jeromy Ross, Soybean Extension Agronomist

Impacts of Excess Rainfall and Flooding on Corn and Sorghum

Flooded Impacts on Corn and Sorghum

- Few acres of corn and sorghum were affected by the flooding in eastern Arkansas.
- Only Lawrence and Randolph Counties reported some flooding of corn and sorghum acres:
  - Lawrence County: 1,500 acres corn and 300 acres sorghum
  - Randolph County: 1,600 acres corn and 350 acres sorghum
- The biggest problem by far was grain sprouting, and this was primarily with the sorghum crop.

The Sorghum Crop

- The August 12 USDA-NASS Crop Production Report forecasted 2016 Arkansas sorghum acres at 37 thousand acres (much smaller than 440 thousand acres in 2015) and a yield of 88 bushels per acre.
- Rainfall during the week of August 13 – August 20 was detrimental to the sorghum crop. An estimated 1% of the crop had been harvested, but a considerable percent of acres were ready to be harvested during the week of the rain.
- Excessive rains on mature sorghum caused widespread sprouting, causing significant quality losses to the crop.

Extent of the Drop in Sorghum Quality

- Current sorghum grading guidelines state that kernel damage greater than 10% results in “sample grade,” which is poor quality and generally not marketable in export markets.
- Levels of quality damage have varied considerably, but most loads are reporting from 5 to 30% damage due to sprouting heads.
- Some terminals are buying the damaged grain but at a significantly reduced price ($1.75 per bushel versus $3.25 per bushel for good grain).
- Sprouting damage occurred on an estimated 80% of the sorghum crop. Reduced value due to sprouting damage is estimated at approximately **$5.6 million** assuming the $1.75 per bushel price, and estimated yield of 100 bushels per acre, and a 40 thousand acre sorghum crop.

The Corn Crop

- The August 12 USDA-NASS Crop Production Report forecasted 2016 Arkansas corn acres at 735 thousand acres and a yield of 189 bushels per acre.
- Corn fared much better from the rains than sorghum. Some grain sprouting occurred with corn, but not as widespread as with sorghum.
- The main impact of the rains on corn was delayed harvest. Corn harvest was 8% complete during the week ending August 21 (the week of the rains), well below the 5-year average of 23% for the same week.
- Other impacts of the rain on corn were increased ear molds and greater occurrence of stock rot and lodging. Lodging may become more of a problem as harvest progresses.

Impacts of Excess Rainfall on Cotton

The Cotton Crop

- The August 12 USDA-NASS Crop Production Report forecasted 2016 Arkansas cotton acres at 365 thousand acres and a yield of 1,052 pounds lint per acre.
- Cotton escaped flooding from the August rains, largely because most cotton acres were located away from affected flooded areas and on well drained sandy soils.
- Main impacts on cotton was extended cloudy and wet conditions affecting the crop. These conditions have resulted in significant carbon stress, increased disease pressure, and hard locking of bolls.
- Carbon stress has led to significant fruit shed (shedding associated with the plant's inability to produce the energy needed to keep small bolls)

Extent of the Damage in Cotton Resulting from Cloudy, Wet Conditions

- Approximately 5% of cotton acres have been affected by the August rain event based on preliminary estimates of hard lock and boll rot.
- Preliminary estimates of the value of the damage assuming a lint price of $0.60 per pound, the expected yield of 1,052 pounds per acre, and the 5% loss in acres is approximately **$11.5 million**.

Impacts of Excess Rainfall on Other Crops

The Peanut Crop

- A significant number of peanut acres are located in the northeast portion of the state.
- Peanuts were largely unaffected by the August rains. Most peanut acres are located on higher ground with good drainage or on sandy ground and escaped water damage
- Some peanut fields might have been partially under water in Randolph, Lawrence, and Clay counties, but damage assessments cannot be made yet as these peanuts are still underground.

Specialty Crops

- The August rains are believe to have damaged vegetable and melon farms.
- One producer reported a complete loss of 500 acres of cantaloupes with a market value of $1.5 million
- Other small farmers with cooperative contracts with grocery stores and market local produce had significant losses and could not deliver on their contracts.