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The flood of 1993: The economic aftermath



Frustrated by the seemingly non-stop rain and high water during the spring and summer, a St. Louis resident painted the following message on the side of a building in three-foot letters: "Wanted: Large, Large Sponge." It would have taken a large sponge, indeed, to soak up the flood of 1993. At St. Louis, the Mississippi River crested 6 feet above the highest level ever recorded and at one time was estimated to be flowing at a rate of over 8 million gallons per second. To battle this torrent, the U.S. Army Corps of Engineers distributed more than 31 million sandbags in the Midwest.

Last summer's flood actually had its beginnings the previous fall and winter. Abundant moisture during those seasons diminished the capacity of the ground to absorb the heavier rains when they began to fall in the spring. A combination of weather factors in the spring set up a pattern of heavy and frequent rainfall in the Midwest which caused many towns along the Mississippi and Missouri Rivers to experience record high river stages throughout late spring and summer.

It is extremely rare for major floods to occur simultaneously on these two rivers, which together drain over a mil-

by Dan Cassidy and Rickert Althaus



Dan Cassidy is the director of public affairs and development for the Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri-Columbia; Rickert Althaus is an associate professor of political science at Southeast Missouri State University.

lion square miles of the central United States. Because of the agricultural importance of this region, those interested in the nation's crops are concerned when the weather goes awry. The Corn Belt typically supplies about 70 percent of the nation's corn and soybean production.

Any natural disaster in the Midwest is likely to affect national agricultural production. However, flood damage to crops is almost always more localized than damage from drought. The 1951 flood, a past benchmark, reduced corn and soybean production four to six percent. The more widespread 1988 drought dropped production of those crops by 14 to 30 percent (figure 1).

What the flood of 1993 means to agricultural production

The flood of 1993 took a tremendous toll on the Midwest. Though the human toll of this natural disaster cannot be quantified, direct losses in agriculture, in terms of loss or damage or injury to crops, machinery, buildings and livestock, were extensive. The flood also caused significant damage to agricultural infrastructure such as levees, ditches, roads, and bridges.

The flood hurt spring-seeded crops

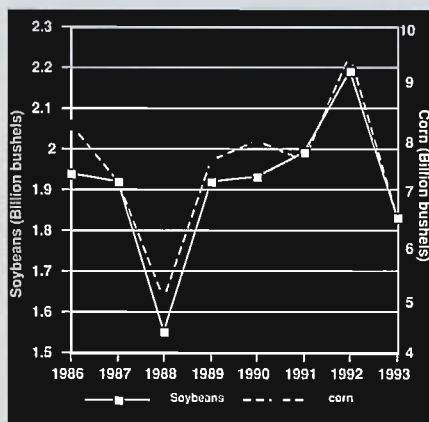


Figure 1. Corn and soybean production.

such as corn and soybeans the most. By November of 1993, flood waters had consumed 386 million bushels of corn and 112 million bushels of soybeans on more than 6 million acres—an area the size of New Hampshire (Figures 2 and 3). In comparison to the more normal years 1989 to 1991, abnormal weather conditions in 1993 in the corn belt and elsewhere reduced U.S. corn production by 31 percent and soybean production by 16 percent.

The flood damaged many other commodities. For some crops, like hay, the flood greatly reduced crop quality.

Throughout last summer, commodity prices reacted quickly to USDA's monthly crop reports. As production estimates fell, prices rose. USDA expects 1993 national season average prices to increase \$.50 per bushel to \$2.60 for corn and \$.95 per bushel to \$6.50 for soybeans as a result of the flood and other weather related factors.

Assuming normal weather for the 1994/95 crop, the Food and Agricultural Policy Research Institute (FAPRI) estimates that corn and soybean prices will fall relative to the 1993/94 crop but remain above pre-flood estimates. For the 1994/95 corn crop, total supply is expected to increase almost a billion bushels with the season average price falling to \$2.28 per bushel. For soybeans, total supply is expected to increase by approximately 170 million bushels with the season average price subsequently dropping to \$5.92 per bushel. In other words, crop prices are expected to return to more normal levels in 1994/95.

Inflation, disaster relief, and deficiency payments

Initially, the news media expressed considerable concern about possible flood-caused food price inflation.



However, large price hikes didn't materialize, and the national interest waned.

As with other recent natural disasters, Congress responded by passing federal disaster-assistance legislation. The 1993 Emergency Supplemental Appropriations For Relief From the Major Widespread Flooding in the Midwest Act authorized \$5.8 billion in assistance with over \$2 billion targeted for agricultural losses. The legislation made disaster assistance available to federal program participants and nonparticipants, and for both program and nonprogram crops. Eligibility was not conditional on enrollment in the federal crop insurance program; however, the payment factor was five percent higher for producers who had purchased federal crop insurance. As a rule of thumb, crop disaster payments averaged about 40 percent of expected cash receipts.

Increased crop prices which resulted from the adverse weather conditions will reduce federal deficiency payments. For example, a 1993/94 season average corn price of \$2.60 per bushel would reduce deficiency payments by

57 cents per bushel from USDA's expected deficiency payment and reduce corn deficiency payments by more than \$2.6 billion. In fact, if corn prices average \$2.60, producers who received advance deficiency payments may be forced to return a portion of the payment. The combination of a lost crop and the return of advance deficiency payments would have a severe effect on some producers.

Land reclamation along the Missouri River

The Soil Conservation Service (SCS) in Missouri estimated the flood left 60 percent (455,171 acres) of the previously cropped Missouri River floodplain covered by sand. The flood left over 9 inches of sand on half (277,585 acres) this land and deposits averaged 24 inches on 91,000 acres. SCS estimated that the flood left a total of 338,430 acre feet of sand (one acre covered with a foot of sand) on land cropped prior to the flood.

It is unlikely that farmers will ever crop land now covered by heavy sand deposits. Landowners face a difficult position when the cost of reclamation exceeds the land's productive value. For example, it costs approximately \$3,200 to physically remove an acre foot of sand. Turning the sand under by deep plowing (up to five feet in depth) costs

less, though it is still an expensive option. Large plows must be pulled by two or three bulldozers at a cost of approximately \$600 an acre.

Some landowners looking for alternatives to costly land reclamation have shown an interest in federal conservation programs. SCS developed the Emergency Wetlands Reserve Program (EWRP) to provide a management option for land heavily damaged by flooding. Under the program, landowners would grant the government a permanent easement in exchange for a monetary payment. Landowners would retain the title and most property rights to the land, but must agree to a wetland restoration plan which precludes annual crop production.

Perhaps the most critical component of land reclamation is levee repair, at least according to 900 flood victims called together by FAPRI and University of Missouri Extension. Although an exact figure is unknown, the flood damaged several hundred levees throughout the Midwest. Absent repair and flood protection, some landowners are reluctant to invest in sand and debris removal or even plant a crop.

Following the flood, discussion of levee repair took place within the context of a broader debate about the management of the Mississippi and Missouri River systems. Some environ-

mental groups, such as the National Wildlife Federation and the Missouri Coalition for the Environment, argued that the rivers should be left to follow a more natural course without the constraints of levees. In fact, some people argued that the flood of 1993 was actually made worse by existing river management policies.

"This flood was a man-made catastrophe, because many of the levees were made at a time when we did not recognize a river's need to spread out into storage areas," said Richard Gaffney, of the Missouri Department of Natural Resources.

Referring to the flooding, Roger Pryor of the Missouri Coalition for the Environment, stated "This is human-caused, and that's the real disaster here."

Defending the existing flood control system, the Corps blamed the extent of the damage on unique meteorological conditions that exceeded the design specifications of many of the structures. In testimony presented before the U.S. Senate Environment and Public Works Committee in November, Dr. Edward Dickey, Acting Assistant Secretary of the Army for Civil Works stated, "Nevertheless, the Corps flood-control infrastructure, including flood-control reservoirs, levees, walls, and other structures, performed extremely well during the crisis, preventing billions of dollars in damages."

The SCS and the Corps share responsibility for repairing levees. Specific responsibilities differ among affected states; in Missouri, the Corps is focusing on the Missouri and Mississippi Rivers and SCS has assumed responsibility for their tributaries. For affected landowners, there were two basic issues regarding levee repair. The first was whether or not specific levees were eligible for federal cost-share as-

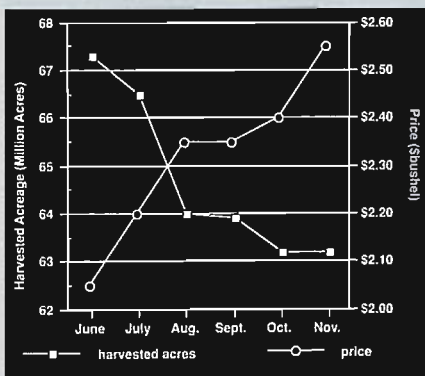


Figure 2. A flood chronology: harvested acreage and prices of corn.

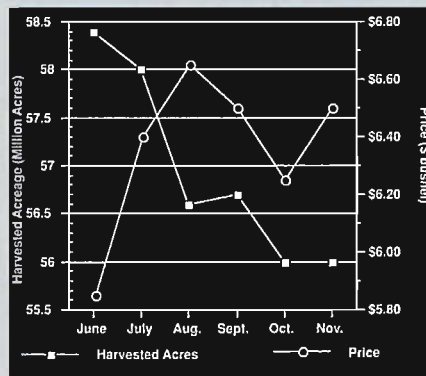


Figure 3. A flood chronology: harvested acreage and prices for soybeans.

sistance. The second was timing—how quickly would eligible levees be repaired?

The Corps is obligated to repair those levees which met certain criteria at the time of the flood: those which were constructed to Corps specifications, were properly and regularly maintained, and which were sponsored by a public entity such as a levee or drainage district. However, the Corps determined that of approximately 465 damaged levees on the Missouri River in its Kansas City District, only 110 were eligible for federal cost-share funds. Efforts to loosen the flexibility criteria became the subject of intense debate within both the Executive and Legislative branches of the federal government.

FAPRI was asked to quantify the economic implications at the producer, local, and statewide levels of not repairing these 355 "inactive" levees. The study was not intended to be a comprehensive cost/benefit analysis and therefore did not estimate the cost of levee repair or possible environmental consequences. The analysis found the following:

- Approximately 478,000 acres of cropland in 25 counties along the Missouri River would be at risk from further flooding if these levees were not repaired. The estimated value of the annual crop production on this land is \$96 million.
- For every \$100 reduction in the assessed value of this cropland there would be a \$2.4 million reduction in property tax collections in the 25 counties.

Using a state input/output model, University of Missouri agricultural economist Dr. Curtis Braschler calculated that crop loss of \$96 million would translate into a decrease of \$208 million in economic activity in Mis-

souri and a potential loss of more than 3200 jobs statewide.

The President of the Missouri Farm Bureau Federation, Charles Kruse, testified before the U.S. Senate Environment and Public Works Committee on the Flood of 1993. He stated that, "It is critical for Missouri's rural communities that our flood protection be rebuilt. If broken levees are not repaired, the flood damage of this past summer will occur with greater regularity. Ultimately, we will find the decision not to help flood victims rebuild levees as a very short-sighted public policy with costly implications for landowners, rural communities, consumers and taxpayers."

As one might expect, landowners protected by damaged levees that are eligible for federal assistance are anxious for the repairs to be completed. Without levee protection, farmers are reluctant to borrow operating capital

legislation requiring the Corps to conduct two separate studies, one addressing national policies on flood control and the other focusing on flood management in the upper Mississippi and lower Missouri Rivers. A report on these studies is due by mid 1995.

Controversy surrounding the levees damaged by the flood of 1993 is likely to last well into 1994. Local officials, representatives of farm organizations, and environmental groups will continue to lobby both the Administration and Congress over levee rebuilding. The debate will intensify if the arrival of spring rains in the midwest are accompanied by rising river levels.

1993 was quite a year for agriculture in the United States. Agricultural producers experienced conditions across the entire weather spectrum—from flooding in the Midwest to drought in the Southeast. The additive affect of these events resulted in

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or even use private funds to plant 1994/95 crops. Ultimately, lenders may find themselves stressed by a combination of asset devaluation, reduced farm income, and land reclamation expenses.

Summary

For some it will take years to recover from the flood of 1993. Others may never recover. Like any natural disaster, the economic aftermath of the flooding will last much longer than the event itself.

Also longlasting will be the renewed debate on managing our nation's extensive network of rivers and waterways. The President has already signed

significant declines in the production of many commodities. It is true that some may have benefitted from the higher prices which resulted. Yet as one farmer stated, "High prices don't mean a thing if I don't have anything to sell."

It will take time before the final toll of last year's flooding is known. However, it is clear that 1993 will be both a year to remember and a year to forget.