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by C. Robert Taylor, John B. Penson, Jr., and Klaus Alt ■

In Short

## A Wetland/Floodway Reserve from the Great Flood of 1993: What Effects?

The great Midwest flood of 1993 caused people to wonder if cropped flood plain lands should be converted to a floodway/wetland reserve, or if levees should be repaired to restore the land to its previous use. Land converted to a floodway reserve would provide some wetlands and idle other land for environmental benefits such as wildlife habitats. Restoration costs and levee repairs, whether public or private, would be saved. We analyzed the economic effects of taking 7.8 million acres of cropland flooded or affected by the 1993 flood in Minnesota, North Dakota, Iowa, Illinois, and Missouri out of crop production and placing it in a noncropped floodway/wetland reserve.

Wetlands in the United States now total 100 to 110 million acres, which is about one-half of the 215 to 221 million acres at the time of the first European settlers. Agricultural development, stimulated by tax laws, drainage programs, farm programs, and expectations of higher farm profits, accounted for 87 percent of the 13.8 million acres of wetlands lost from the mid 1950s through the mid 1970s. Between 1982 and 1991, agricultural development removed a more modest 513,000 acres of wetlands, with an additional 205,000 acres of wetlands converted to other uses.

Several legislative efforts, prompted in part by recent environmental concerns, curb wetland conversion and encourage expansion of wetlands. Swampbuster provisions of the 1985 Farm Bill eliminated crop subsidies on converted wetlands. The 1986 Tax Reform Act, while not aimed at wetlands preservation, eliminated many tax incentives for wetlands development. The 1990 Food, Agriculture, Conservation and Trade Act (FACTA) helps restore

wetlands under the Wetland Reserve Program (WRP). The WRP pays farmers for easement of thirty years or more on enrolled wetlands. Since the flood, farmers have swamped USDA with offers to enroll over seven times the USDA enrollment goal of 75,000 acres. FACTA also forbids paying farm program benefits to individuals who converted wetlands after 1985. New legislation gives the U.S. Army Corps of Engineers responsibility for permitting development of wetlands.

A provision in the 1994 aid bill for California earthquake victims provides SCS \$340 million for flood relief, part of which is expected to go to the Emergency Wetlands Reserve Program. With this money, the reserved wetland acreage may be expanded from the current 25,000 acres to over 100,000 acres.

What are the effects of removing 3.8 million acres of land from crop production in the Corn Belt, 1.6 million acres from the Lake States region, and 2.4 million acres from the Northern Plains region—the acreage flooded or affected by the flood in 1993?

### Effects on the agricultural economy

Our simulation analysis (see Penson and Taylor, and Taylor) indicates that removing these acreages from agricultural production would increase the index of all crop prices by about 2 percent, and the index of livestock prices by less than 1 percent. Prices of corn and soybeans, which are the major crops in the flooded region, increase by about 7 percent and 5 percent, respectively, during the 1995–2000 period. Dynamic market adjustments reduce the corn and soybean price impact to about 2 percent after 2000.

Placing the 7.8 million acres of crop

land in a wetlands/floodway reserve affects crop input prices (fertilizer, pesticides, fuel, etc.) very little, and feed prices increase about 2 percent, nearly the same as the crop price index increase. U.S. crop production declines almost 3 percent over the 1995–2000 time period. U.S. livestock output, responding to higher feed prices, decreases by about 1 percent.

Crop producers in flooded states stand to gain most from a reserve because of the direct rental payments for reserve participation, estimated to average \$125/acre annually (based on a composite of simulation model results, crop budgets, soil productivity data, CRP enrollment experience, and land values in flooded areas), and because of higher prices for crops grown outside the reserve area. Returns above variable costs would increase by 35, 25, and 22 percent in the Corn Belt, Lake States, and Northern Plains regions, respectively. Returns over variable costs for crop producers in other regions would increase by 18 percent over the 1995–2000 time period. The percentage effect on returns over variable costs is much higher than the percentage effect on crop prices (and thus on gross revenue) because variable costs are close to gross revenue under anticipated economic conditions.

We estimate the gross cost of rental payments for the wetlands/floodway reserve to the U.S. Treasury to be almost \$1 billion annually, if annual rental payments average \$125/acre. However, due to crop price increases, farm program deficiency payments will decrease. The net effect of the wetlands/floodway reserve on government costs (reserve costs less the reduction in deficiency payments) would be \$700 million in 1994, but would approach zero

toward the end of the decade.

The wetlands/floodway reserve would also affect the cost of repairing levees damaged by the 1993 flood. Various proposals place the federal cost of levee repair without the wetlands/floodway reserve somewhere between \$100 million and \$1 billion, depending on whether the government repairs all levees or only levees under federal programs.

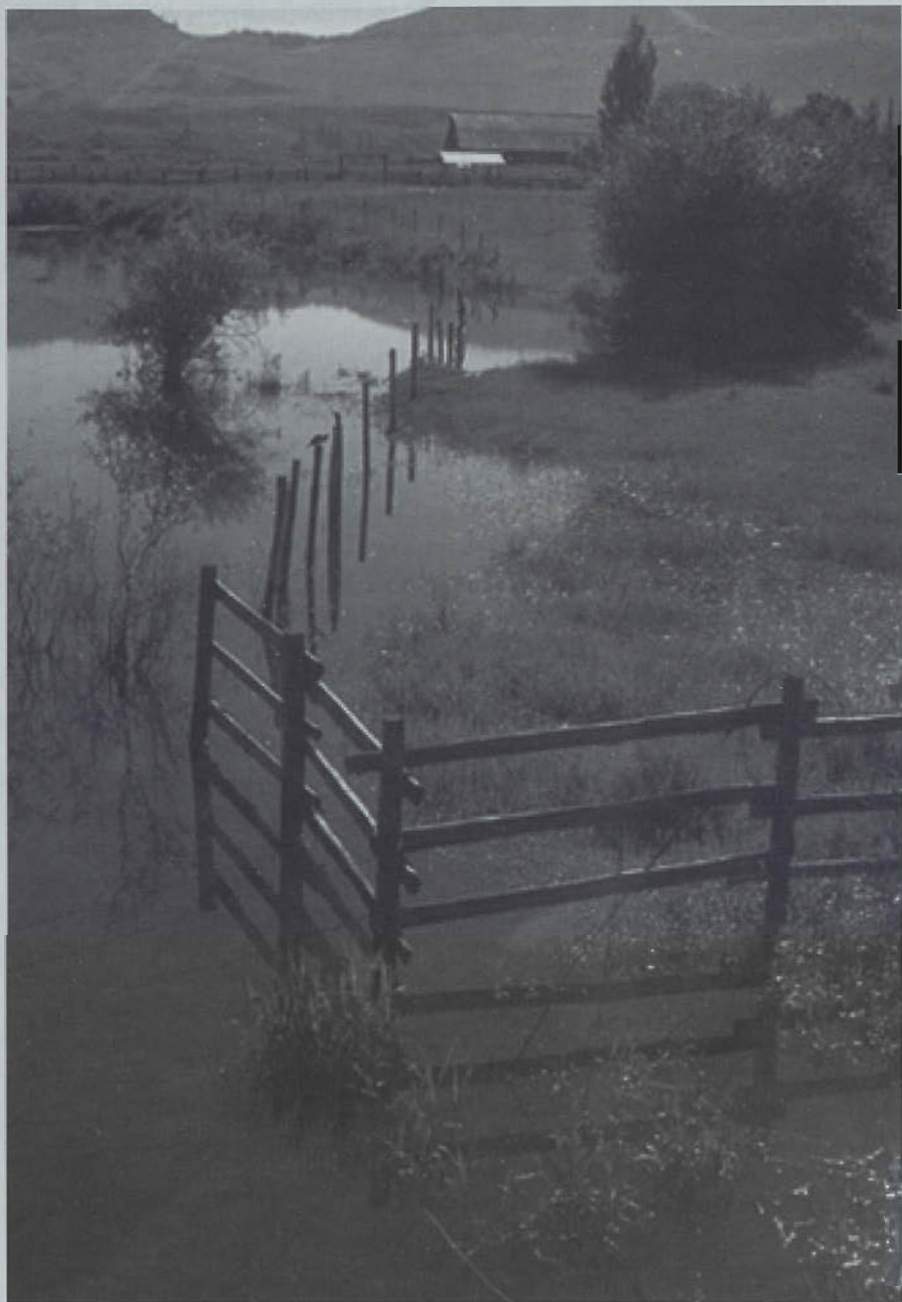
Effects of the wetlands/floodway reserve on the retail price of food are slight, averaging less than 0.5 percent initially, then declining to about 0.25 percent. Consumer benefits associated with domestic food and fiber use would decrease by about \$ 1.9 billion annually, or about \$21 annually per household.

### A unique opportunity

The flood of 1993 provides a unique opportunity to create a wetland and floodway reserve. Placing 7.8 million acres flooded or affected by the flood into a reserve increases annual net crop income of farmers by about \$600, \$450, \$375, and \$350 million in the Corn Belt, Lake States, Northern Plains, and all other regions, respectively. But net income for livestock producers nationally would decrease by about \$700 million annually, due largely to slightly higher feed prices. Retail food prices, as measured by the CPI for food, would increase by no more than 0.5 percent.

Government rental payments to farmers for floodway/wetlands easements would total almost \$1 billion annually. However, higher crop prices induced by taking land out of production would lower farm program subsidies, making the net Treasury cost about \$700 million initially, and declining to less than \$100 million annually. Not rebuilding all levees further reduces Treasury costs.

The social desirability of a 7.8 million acre wetlands/floodway reserve depends on how positives, such as higher crop income and enhanced environmental and ecological effects that many associate with wetlands, are perceived to stack up against the negatives, such



as increased Treasury costs, higher food prices, and lower livestock income. ■

### ■ For more information

Penson, J.B., Jr., and C.R. Taylor. "United States Agriculture and the General Economy: Modeling Their Interface." *Agricultural Systems* 39(1992):33-66.

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