

# **CONSERVATION EFFECTS ASSESSMENT PROJECT (CEAP)**

## **UPPER MISSISSIPPI RIVER BASIN CROPLAND STUDY**

### **MESSAGES AND TALKING POINTS**

#### **Big Picture Messages**

Good progress has been made on reducing sediment, nutrient and pesticide losses from farm fields through the implementation of conservation practices in the Upper Mississippi River Basin, but there are significant opportunities for improvement.

Conservation practices on cropland work. This shows that farmers who maintain good conservation and strive to enhance it see benefits from applying conservation practices. The Upper Mississippi River Basin is an example of that.

Suites of conservation practices that work together to address multiple resource concerns are more effective than single-practice solutions.

The most critical conservation concern in the region is loss of nitrogen through leaching. Treatment of erosion alone can worsen the nitrogen leaching problem because reducing surface water increases infiltration and, therefore, movement of soluble nitrogen through the soil before reaching surface water supplies.

There needs to be a concerted effort to target cropland with high levels of sedimentation and excess nitrogen and phosphorus levels with the most appropriate combination of conservation practices and management techniques.

#### **Talking Points**

##### **What does this report tell us? – Key Findings of the Report**

Complete and consistent use of nutrient management (proper rate, form, timing and method of application) is generally lacking throughout the region. About 60 percent of the cultivated cropland acres require additional management to reduce the loss of nitrogen or phosphorus from fields.

The most critical conservation concern in the region is loss of nitrogen through leaching. Treatment of erosion alone can worsen the nitrogen leaching problem because reducing surface water increases infiltration and, therefore movement of soluble nitrogen through the soil before reaching surface water supplies.

About 60 percent of the cropped acres require additional nutrient management to address excessive levels of nitrogen loss.

Suites of practice that include both soil erosion control and consistent nutrient management are required to simultaneously and effectively address soil erosion and nitrogen leaching loss.

### **Conservation practices on cropland work.**

Farmers have demonstrated good stewardship by reducing soil erosion and sedimentation and by reducing the movement of nutrients and pesticides residues offsite—a major success story for USDA, NRCS and producers.

Erosion and sediment-control practices are in place on most cropland acres and they have done their job by reducing water runoff and soil displacement.

### **Suites of practices that work together to address multiple resource concerns are more effective than single-practice solutions.**

The appropriate combination of conservation practices and management techniques tailored to specific landscapes will most precisely address these specific resource concerns and the character of the landscapes.

### **The use of conservation practices has significantly reduced erosion and sedimentation in the Upper Mississippi River Basin.**

Structural practices, such as terraces, waterways and diversions, are in use on 45 percent of the cropland acres in the UMRB.

Farmers use some form of reduced tillage on at least one crop in the rotation on 95 percent of the cropped acres in the region.

**Although nutrient management practices are being applied on most cropland acres, their application is incomplete and inconsistent. This presents an opportunity for NRCS to work with landowners to increase the use of nutrient management practices on cropland in the basin.**

Conservation practice use has reduced total nitrogen losses from fields by about 9 pounds per acre per year—about 18 percent—and total phosphorus losses by almost 3 pounds per acre per year—about 50 percent.

Although phosphorus losses have been better contained than nitrogen losses, about 60 percent of the cropped acres in the UMRB need additional nutrient management to further reduce the loss of nitrogen or phosphorus.

The most critical conservation concern in the basin is the loss of nitrogen through leaching. Excessive nitrogen leaching occurs on half of the cropped acres in the UMRB.

**Conservation practices have reduced environmental risks associated with pesticide residues for humans and aquatic ecosystems.**

Pesticide risks to human health are very low. On average, between one and two percent of the pesticides applied are leaving fields.

Conservation practices have reduced the pesticide threats to human health by 48 percent.

Much can be done to further reduce pesticide losses, including rotations, scouting and precision application of pesticides.

**Soil quality, as measured by changes in soil organic carbon is improving.**

Soil organic carbon is a key indicator of soil quality because it enhances production and slows loss of sediment, nutrients and pesticides.

Cropland in the Upper Mississippi River Basin sequesters about 7.5 million tons of carbon dioxide equivalents annually.

The greatest gains in soil organic carbon content occur where structural practices are used with reduced tillage practices.

**The most effective way to improve environmental quality is to target assistance to the most vulnerable cropland first.**

There needs to be a concerted effort to target cropland with high levels of sedimentation and excess nitrogen and phosphorus levels with the most appropriate conservation practices and management techniques.

## **Next Steps**

A critical function of the CEAP-Cropland Study is provide input into the Soil and Water Resources Act (RCA) process. The RCA Appraisal and the subsequent National Conservation Program will inform development of the conservation title of the 2012 Farm Bill.

USDA has regional initiatives currently underway that address the nutrient problem in the Mississippi River Basin, the Chesapeake Bay Watershed and the Great Lakes Watershed.

USDA is focusing attention and resources to these specific areas to help landowners improve water quality.

CEAP cropland reports cannot be used to identify problem areas at the small watershed scale. Targeting will require input from diverse stakeholders, more refined modeling, or use of other tools such as runoff and leaching vulnerability maps.

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