

More cash needed to save soil

By ROD SWOBODA

HEAVY rains in June caused substantial erosion damage to many Iowa fields. Iowa Secretary of Agriculture Bill Northey and local soil and water conservation district leaders took a firsthand look on a bus tour of two areas of the state.

On June 12, a tour inspected fields around Creston in southwest Iowa. On June 13, a tour was held near Manchester in northeast Iowa. Both areas had several torrential downpours leading to widespread soil erosion in May and June, when the soil is most vulnerable.

Northey says it will take years of work to repair all of the terraces, grassed waterways and other structures that were damaged. It will also take more conservation cost-share money from the state Legislature.

"It will take several years to rebuild what was damaged," he says. "We'll need new money to do it because all the cost-share money has been spoken for, for this year. You never get enough money for conservation to get all of the work done."

"The number of requests each year from farmers and landowners who want to participate in the cost-share program is always greater than the amount of money available."

Key Points

- Heavy rains, flooding brought severe soil erosion.
- Flooding overwhelmed even the best designed structures.
- More cost-share money will be needed to repair damage.

Iowa's soil conservation cost-share program began in the 1970s and was the first of its kind in the U.S. The soil conservation division of the Iowa Department of Agriculture and Land Stewardship administers the program and makes the funds available to landowners through local soil and water conservation districts.

An infusion needed

Last year, nearly \$37 million was provided by the Legislature and the state ag department, with landowners matching \$20 million of that for soil conservation. A similar amount was spent this fiscal year, which ended June 30.

About 1,350 landowners installed conservation structures such as terraces, grassed waterways, and water and sediment basins last year, protecting 20,207 acres in Iowa.

To determine just how much damage was done to soil conservation structures this spring, an extensive survey



SCARS: Farming too close to grass waterways causes water from big rains to run down the sides instead of the middle. The water cuts gullies, washing away valuable topsoil.

was completed in late June by the soil conservation division of the state ag department.

Some areas of the state lost 7 to 8 tons of topsoil per acre in a 24-hour period. Some had several one-day periods this spring when that much topsoil was lost per acre.

USDA's Natural Resources Conservation Service defines "tolerable" soil erosion levels as 3 to 5 tons per acre per year. However, Rick Cruse, Iowa State University research agronomist, thinks that "tolerable" level is too high.

Soil erosion this year is

worse than in 1993, says Cruse. Flooding came later in June and early July that year, after crops had developed a canopy to protect soil from rain. In 2008, the rains came before crops had a chance to form a canopy. Also making the situation worse in 2008 was the large amount of tillage done last fall that left the soil more open to erode.

"Even so, this spring's erosion could have been worse if farmers hadn't installed soil conservation structures," says Northey. "We saw some fields where soil conservation practices were installed and they provided more protection of the land than they were designed to do."

Combinations work

Paul Goldsmith, district conservationist for USDA's Natural Resources Conservation Service at Creston, says most terraces are designed for 2-inch rainfalls in a 24-hour period. This year, some of the terraces withstood downpours of up to 9 inches of rain in 24 hours.

No-till, which leaves a lot of crop residue on the soil surface, helped prevent soil erosion, notes Goldsmith. "It takes a combination of practices, permanent structures along with conservation tillage or better yet no-till, to really control erosion."

How spring rains took their toll on Iowa soil

Commentary

BY MAHDI AL-KAISI and MATT HELMERS

RAINS have come hard and fast this spring. Rain causes substantial erosion when the soil is most vulnerable because of degraded crop residue cover, tillage and the absence of a crop canopy.

Most of Iowa's soil profiles were already filled to capacity with water when more rain came in late May and early June. The intensity and amount of rain received exceeded the soil's ability to filter water and minimize surface runoff, even in fields with the most adequate conservation practices.

Why is rainfall so destructive to bare cropland? In a normal rainfall, raindrops range from 1 to 7 millimeters in diameter and hit the ground as fast as 20 miles per hour. The impact of millions of rain-

Key Points

- Spring storms hit at a time when fields were vulnerable.
- Evaluate effectiveness of your soil conservation practices.
- No single practice will stop erosion; it takes a system.

drops hitting bare surface dislodges soil particles, splashing them 3 to 5 feet away.

A heavy rainstorm may splash as much as 90 tons of soil per acre. However, most of the splashed soil particles don't leave the field; they clog surface pores, which decreases water infiltration and increases water runoff and soil erosion.

Reduced tillage and crop management systems are critical to lessen the impact of raindrops on the soil because of the crop residue protecting the surface. Excessive tillage can lead to increased soil sealing and soil erosion. On the other hand, conservation systems promote soil aggrega-

tion, infiltration and soil tilth; and high amounts of crop residue provide abundant cover to protect the soil surface from spring rains.

Spring is a good time to assess the amount of residue cover left from last fall's harvest. Was there enough surface residue to prevent soil erosion after winter decomposition?

Producers should consider the effect of any additional tillage on remaining crop residue. If residue cover falls below 30%, field operations should be adjusted to minimize potential soil erosion from spring rains.

Cover crops, permanent vegetation, strip cropping, and planting on the contour can reduce the speed of water runoff and slow soil erosion on steep slopes. Conservation structures such as terraces, grassed waterways and field buffers also slow the water

flow, settle out sediment and direct water away from the field to a suitable outlet.

What lessons are learned?

Intense rains that cause significant soil damage are an opportunity for you to examine what should be done differently in the field to minimize erosion. Some suggestions include:

- Look at the pattern of surface runoff in the field and the placement of buffer strips and waterways to direct surface runoff and minimize sediment transport.

- Evaluate your residue cover, the uniformity of residue distribution and its effectiveness in minimizing soil erosion in your fields.

- Document your field conditions with photos, if possible, and assess water ponding with each tillage system.

- Evaluate your field fertility conditions, especially if

nitrogen was applied in fall. There can be substantial N, phosphorus and potassium loss due to leaching and surface water runoff.

- The amount of N will be highly affected by the tillage system, as well. No-till fields tend to have more soil permeability, which could lead to a greater potential of N leaching.

- Soil testing is critical, especially after heavy rains. No-till fields usually have higher soil moisture content and slower N mineralization. Thus, soil N testing during late spring will be advantageous to overcome any N deficiency through sidedressing.

- Evaluate your corn and soybean plant populations and any erosion damage in your fields this summer, and then determine the alternatives to solve any problems.

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