

Conservation

Prairie grass strips control erosion

By LYNN BETTS

STRATEGICALLY placed strips and patches of prairie grass are showing promise as a new tool to reduce soil erosion and nutrient loss on sloping crop fields, with a bonus benefit of big gains in biodiversity. That's what researchers are finding in the cooperative STRIPs project in central Iowa. STRIPs stands for Science-based Trials of Rowcrops Integrated with Prairies.

"The idea we've been testing here for four years is that small changes in the landscape can have big effects," says Matt Liebman, an agronomist at Iowa State University and one of more than 30 researchers and scientists involved in the project. "We've found that just a 10% addition of prairie in corn and soybean fields yields proportionally a much greater change in erosion control and biodiversity."

Researchers divided a large crop field into 14 small watersheds, comparing watersheds with 10% of the area in prairie at the lower end of converging slopes; 10% in contour prairie strips; 20% in contour prairie strips; and 100% in crops, in a corn-soybean rotation.

Sediment reduction

"We're seeing up to 95% reduction in sediment from the watersheds with prairie in them," says Iowa State University agricultural engineer Matt Helmers. "The lower prairies are placed in areas with concen-

Key Points

- Prairie grass strips show promise in reducing erosion.
- Research shows even 10% prairie grass in a corn or soybean field helps.
- Prairie grass strips are a vegetative alternative to terraces.



MATT HELMERS



GARY VAN RYSWYK

trated runoff, and have been shown to be very effective for sediment reduction. We also have less runoff from the fields with prairies integrated. Now, we need to see what's going on within the field."

A mixture of 32 prairie plants was seeded in the narrow contour strips and patches in 2007. "Three years later, the prairies had 126 plant species," Liebman says. "We also saw a clear shift from annual to perennial species."

That perennial plant diversity brings

with it more insects, something Gary Van Ryswyk is very interested in. Van Ryswyk cash rents the land from the U.S. Fish and Wildlife Service. It's part of the Neal Smith National Wildlife Refuge, and its rules for farming don't allow spraying for insects.

"I want to know all the ways these prairies can help me," Van Ryswyk says. "I want to know if they produce good bugs or bad bugs within the prairies. I'd like to know if they have ladybugs and other beneficial insects that might keep spider mites and soybean aphids below the threshold level, and how far those beneficial insects might move into the field."

Beneficial insects and bird and other wildlife habitat are known benefits of prairies; preliminary results show birds are responding to the new habitat. Those areas are being studied as part of the project, as well as the economics of adding small areas of prairie to corn and soybean fields and the attitudes of farmers toward increasing biodiversity on their farms.

Vegetative alternative to terraces

Liebman says the prairie patches and strips are a vegetative alternative to terraces and water and sediment control basins, and that they differ from cool-season grasses like brome grass and bluegrass.

"Brome grass tends to lay flat under heavy runoff, but native tall-grass prairie plants like big bluestem and the broadleaf plants have stiff,

upright stems that give more resistance to water and soil movement," Liebman says. "Their deep roots also promote infiltration and hold soil in place during heavy rains."

Van Ryswyk doesn't think many farmers will take 5% or 10% of their land out of production right now, with today's high corn prices, but he does believe when all the data is compiled and explained, there will be interest in prairie strips.

"I can see the benefits from these small prairie areas, and I don't mind farming around them," he says.

"We want to remember that not all land is equal," Liebman says. "You can place prairie areas on the steepest or wettest and least-productive soils and do a lot of good."

In addition to Iowa State University and the Fish and Wildlife Service, others involved in the study include the Leopold Center for Sustainable Agriculture, Iowa Department of Agriculture and Land Stewardship, USDA, U.S. Forest Service, and the National Science Foundation.

Learn more online at www.nrem.iastate.edu/research/STRIPs.

Betts writes from Johnston, Iowa.



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