

A Landowner's Guide to Prairie Conservation Strips



What are prairie conservation strips?

Prairie conservation strips are a tool for improving the function and integrity of row-cropped farms. Researchers at STRIPS (Science-based Trials of Rowcrops Integrated with Prairie Strips) have found that strategically planting small patches and strips of native prairie in farmland provides multifunctional benefits disproportional to the amount of land converted. In other words, small patches make a big difference.

LEARN MORE about the STRIPS project: www.prairiestrips.org



How will prairie strips improve my farmland's health?

Prairie strips keep vital soil resources in crop fields. Planting just 10% of a row-cropped watershed in native prairie, strategically located on the contours and foot slope, reduces sediment transport by 95% compared to cropland without prairie strips. Deep-rooted prairie plants increase soil organic matter and improve infiltration, while their stiff, upright stems slow surface runoff and help hold soil in place during rain events. Prairie strips protect water quality, reducing overland flow by 60% and nitrogen and phosphorus transport by 90%. They have no impact on crop yield other than the land taken out of production. Healthy soil and clean water provide environmental benefits that protect the future of Iowa agriculture.

READ *A Targeted Conservation Approach for Improving Environmental Quality* for more about protecting environmental benefits: www.extension.iastate.edu/Publications/PMR1002.pdf



How do prairie strips increase biodiversity?

Small prairie strips increase the diversity of plants, insects, songbirds and wildlife in the watershed. Researchers documented a 380% increase in native plant species in cropland planted with prairie strips compared to entirely cropped watersheds. Prairie plants provide year-round habitat and food for beneficial insects, which provide pollination services and prey upon crop pests. Insect diversity in cropland with prairie strips equals that of nearby prairie restorations. Prairie strips also offer habitat to songbirds and wildlife, increasing the land's economic potential as a site for hunting and birdwatching. Greater numbers and species of birds are consistently found in agricultural fields with small patches of prairie, including some species of statewide conservation concern, such as the field sparrow, dickcissel and eastern meadowlark. Studies have found that even small patches of grassland habitat within row-cropped landscapes, especially if several patches are present, can play a big role in maintaining these species.



Why use a diverse native prairie planting?

Prairie strips give farmers flexible management options and provide multifunctional benefits that other conservation practices may not offer when used alone. Because they include warm-season grasses like Indiangrass, big bluestem and switchgrass, prairies resist water and soil movement better than a single-species cool-season planting like smooth brome, which tends to lay flat under heavy rain. Prairies also offer higher quality wildlife habitat than exotic grasses or single-species plantings. The performance and longevity of prairie strips can be improved when partnered with other conservation practices.

Where do I establish prairie conservation strips?

Every farm is unique. Consult a professional to decide on a design for your landscape. The basic design that researchers recommend is a variable-width prairie patch at the foot slope of a watershed, with additional narrow strips following the contour of the slope. Research plots have prairie strips located at various positions in the field, and all offer useful benefits. Consider converting areas where erosion frequently occurs, yields are low, or streams and drainage ditches need extra protection from runoff.

ACCESS Iowa Conservation Practice Job Sheets:
Look for “contour buffer strip standard 332” for the contour
and “filter strip standard 393” for the foot slope:
www.ia.nrcs.usda.gov/wps/portal/nrcs/detailfull/ia/technical

What prairie seed mix should I purchase?

The history of your landscape will help you decide what to plant. Ideally, select seed from a source close to your site or that closely resembles prairie land native to your region. Your mix should include both grasses and broadleaf species (“forbs” or wildflowers). The Conservation Reserve Program offers a basic prairie mix with two forb species that costs less than \$100 per acre. Mixes with more forbs will cost more, but offer better habitat and potentially more environmental benefits.

CONSULT a private lands biologist for help planting your prairie:
» Natural Resource Conservation Service: www.ia.nrcs.usda.gov
» Iowa Department of Natural Resources: www.iowadnr.gov
» U.S. Fish and Wildlife Partners: www.fws.gov/midwest/partners
» Pheasants Forever: www.iowapf.org

How do I prepare the site for planting?

If the site was previously planted with annual row crops and effectively managed for weed control, the soil likely will have a reduced seed bank of annual weeds, so almost no preparation is necessary. If the site was occupied by crops with weeds, pastures or abandoned fields, then you should deplete the seed bank before planting your prairie. This can be achieved with multiple rounds of secondary tillage in the spring following crop harvest, or with judicious use of herbicides. Any established perennial weeds, such as Canada thistle, should be killed before seeding the prairie mix. Be careful that herbicides applied do not carry over and kill or suppress prairie species.



How do I plant and foster prairie?

Prairies can be planted by hand or with mechanical seeding equipment. Broadcast seeders are convenient for large areas and have proven effective at quickly producing diverse prairies, particularly when planting occurs in the dormant season. For springtime planting, you may consider using prairie seed drills, such as Truax® drills, to avoid losing seed to birds and wildlife. Prairie seed can be drilled directly into soybean or corn residue.

Seed should be placed at or near the soil surface with good seed-to-soil contact. If the seeds are sown in autumn or after frost, then freeze-thaw cycles will prepare the seeds for germination and work them into the ground. Spring or summer planting is optimal for encouraging warm-season grasses, but the seeds may need pre-treatment such as cold-moist scarification (some companies will pre-treat the mix for you). Spring plantings take best if conditions are moist for the first 3-6 weeks. For summer planting, herbicides may be required to knock back cool-season grasses and weedy species prior to drilling or broadcasting native seed.

You'll need to suppress weeds during the first growing season. Because prairie plants establish slowly, they will be out-competed by weeds without mowing. Mow the prairie when weeds reach approximately one foot in height, and set the mower to cut at 6 inches. You may need to continue mowing in the second year (at a cut height of 8 inches) if weeds persist. Spot weeding or herbicide application are other options for suppressing weeds until prairie plants are established. Once established, prairie species are generally highly competitive against weeds.

FIND tips on growing prairies: www.iowaprairienetwork.org/education/mgmt/planting_guide.htm

How do I maintain prairie conservation strips?

You can manage established prairie by mowing and removing the top growth once every 1-2 years to prevent thatch from forming. An ideal time to mow is late October, when prairie plants have completed their life cycle and transferred their nutrients below ground. Grazing and burning are more complex options for prairie management that can work well to maintain a healthy mix of prairie species. Historically, fire helped create and maintain the open prairie, but controlled burns may be difficult to implement near cropland. For help with planning a prairie burn or to learn how to manage prairies for better wildlife habitat, contact your private lands biologist.

Will prairie plants encourage weeds in cropland?

Research data has shown no significant difference in weed cover in cropland adjacent to prairie strips compared to cropland without prairie strips. Prairies will harbor annual weeds during establishment years, but frequent mowing will minimize the amount of weed seed produced. Once the prairie is established, the number of annual weeds will greatly diminish. Prairie plants themselves are unlikely to become weeds in cropland that is regularly tilled or where herbicide is applied.

Can I harvest or graze prairie?

There are many opportunities to use prairie strips as part of a multifunctional landscape. After mowing, prairie clippings can be used as livestock bedding or potentially supply future markets for biomass feedstock. These are apt uses for mowed grass that has very low nutrient concentrations at the late stage in its yearly life cycle. Prairies also can be managed specifically for haying, which requires attention to nutrient concentrations. Harvest hay no more than once a year in mid- to late July for a good balance between quality and quantity. In some cases, you may wish to delay haying until August to encourage ground-nesting birds. Rotational or high-intensity grazing can help maintain prairie diversity while producing beef or dairy cattle. Native warm-season grasses planted in "paddocks" or strips will create valuable grazing in the summer when your cool-season pastures need rest and recovery.

What if I want to farm the land again?

Returning prairie strips to farmland is fairly simple. Prairie plants can be killed with tillage and/or herbicides, and any subsequent seeds that germinate can be controlled by tillage or spot application of herbicide. However, remember that some government programs that provide cost-sharing for prairie establishment require you to leave the prairie for a specified number of years.

What equipment will I need?

With the exception of prairie planting equipment, you should be able to establish and maintain prairie strips with standard farm equipment for tillage, herbicide application, and mowing. Arrange the width between strips to match the needs of your farm equipment.

How much will it cost?

The cost of prairie strips compares favorably to other conservation practices that manage nitrogen and sediment. Farmers should consider these primary costs: (1) site preparation, (2) prairie strip establishment, (3) ongoing management, and (4) opportunity costs. Using 2012 Iowa land rental prices, the average total cost of using prairie strips to treat the runoff from an acre of row crops is \$24-55 per year. Within a 15-year Conservation Reserve Program contract, the total cost to a farmer can be reduced by more than 80%. These estimates change depending on land rent, crop prices, soil quality, management, the diversity of the seed mix and other factors. Estimates are discussed in another publication, *The Cost of Prairie Conservation Strips*, available at www.leopold.iastate.edu/pubs/alpha.

Where can I find financial support?

Iowa landowners can receive financial and/or technical assistance from these programs:

- » Farm Service Agency (FSA) offers annual, cost-share, and in some cases incentive payments through Conservation Reserve Program (CRP) 10-15 year contracts.
- » Environmental Quality Incentives Program (EQIP) may assist with prairies you plan to harvest or graze, depending on county: www.ia.nrcs.usda.gov/programs.
- » U.S. Fish and Wildlife Partners Program works with landowners to restore wildlife habitat: www.fws.gov/midwest/partners.
- » Resource Enhancement and Protection (REAP) gives small grants for soil and water protection: www.iowadnr.gov/Environment/REAP.
- » Trees Forever funds community projects: www.treesforever.org.

Where can I learn more about prairie restoration?

The following resources may be helpful: *Incorporating Prairies into Multifunctional Landscapes* by Meghann Jarco and Matthew Liebman (available online from ISU Extension); *The Tallgrass Restoration Handbook for Prairies, Savannas, and Woodlands*, edited by Stephen Packard and Cornelia F. Mutel; and *A Practical Guide to Prairie Reconstruction* by Carl Kurtz.

Where can I see prairie conservation strips in action?

Visit the Neal Smith National Wildlife Refuge at 9981 Pacific Street, Prairie City, Iowa. Contact the Refuge at (515) 994-3400 or NealSmith@fws.gov.



Project partners include the U.S. Fish and Wildlife Service, Neal Smith National Wildlife Refuge, Leopold Center for Sustainable Agriculture, Iowa Department of Agriculture and Land Stewardship, U.S. Department of Agriculture, U.S. Forest Service, Iowa State University, National Science Foundation and Trees Forever. Layout by Melissa Lamberton, Leopold Center. Photos courtesy of Anna MacDonald, Seth Watkins (p. 4, top) and the Leopold Center.

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