

PRAIRIE STRIPS

RESEARCH HIGHLIGHT - APRIL 2021

Summary: Prairie strips help honey bees and wild pollinators

Background:

The Science-based Trails of Rowcrops Integrated with Prairie Strips (STRIPS) project has worked with 100+ farmers during the past 13 years to develop a conservation plan that supports annual crop production and wildlife. This led to the development of CP-43 Prairie Strips, a new practice under the USDA Conservation Reserve Program (CRP). This project tested in a multi-year, on-farm experiment if the prairie strip practice improves honey beekeeping while maintaining a community of wild pollinators compared to farms without them.

Goals:

- Measure availability of flowering plants in prairie strips.
- Determine if honey bee productivity improves with access to prairie.
- Compare the insect pollinator community in fields with and without prairie strips.
- Provide farmers and landowners tools to take advantage of this new practice.

Pollinator Findings:

Prairie strips within or adjacent to crop fields provided forage for pollinators throughout the growing season, especially in late summer for honey bees (see reverse side). New findings show prairie strips increased wild plant-bee interactions (Fig. 1), increasing the opportunity for pollination, supporting specialist plant and bee species, while reducing the foraging effort of select bee species. Overall, prairie strips provide a more balanced diet and better nutrition for native bee species and honey bees.

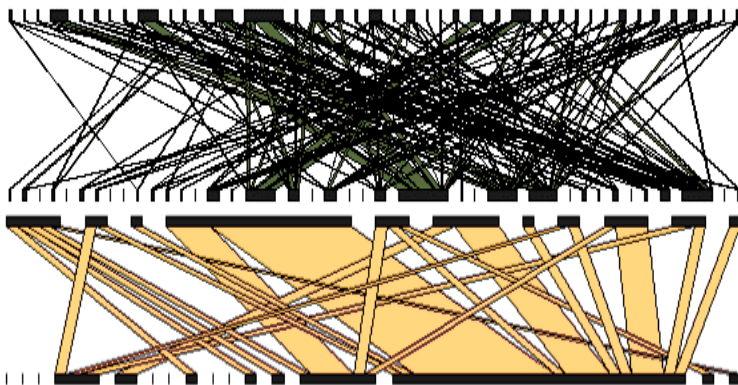


Fig. 1: Greater richness and complexity exists among bee-plant networks on farms with prairie strips (top) compared to those without (bottom). Black boxes indicated bee (top) and plant taxa (bottom). Lines represent interactions, with width representing relative abundance within a network.

Products:

- Zhang, G. 2020. Honey bee nutritional health in agricultural landscapes: Relationships to pollen and habitat diversity. PhD Dissertation. Iowa State University, Ames, Iowa. <https://lib.dr.iastate.edu/etd/18257/>
- Zhang, G, AL St. Clair, AG Dolezal, AL Toth, ME O'Neal. 2021. North American prairie is a source of pollen for managed honey bees. *Journal of Insect Science* 21 (1): 1-11. <https://doi.org/10.1093/jisesa/ieab001>
- The Prairie and tree Planting Tool (PT2), a decision support tool developed to facilitate planting prairie strips on farms, was released: <https://pt2.nrem.iastate.edu/>

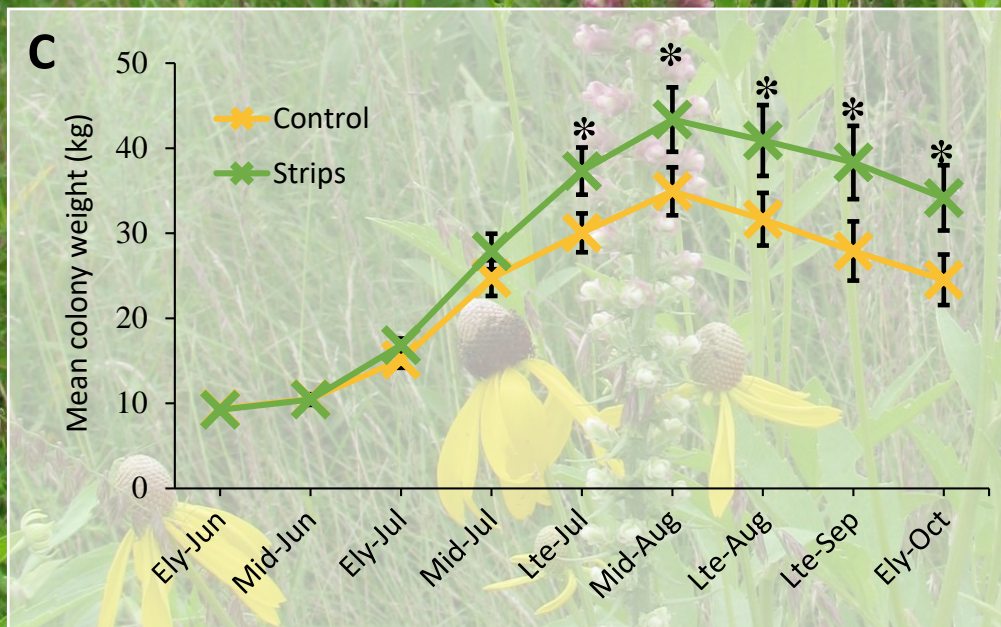
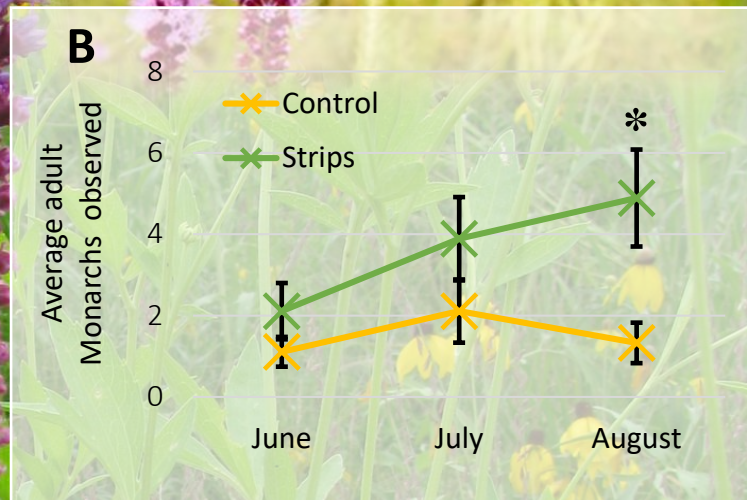
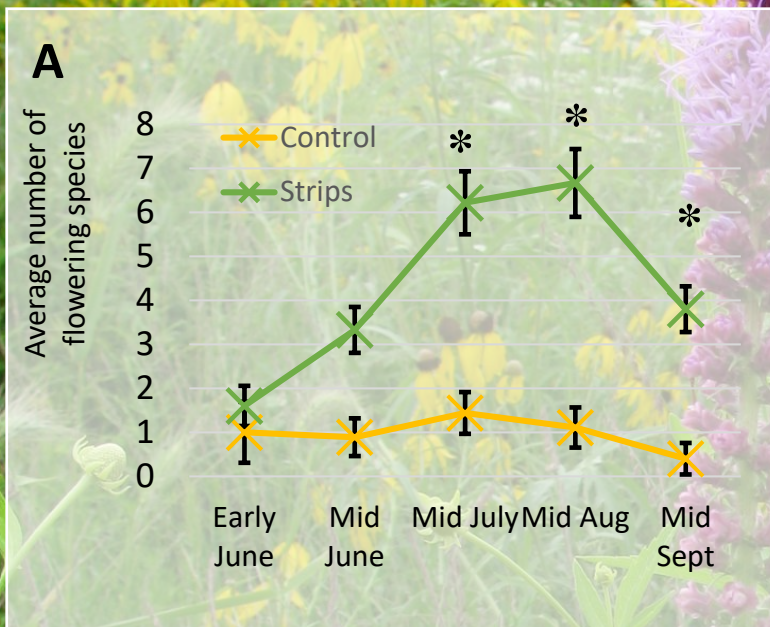
What it means for farmers:

- Conserving pollinators, especially honey bees, can be achieved by integrating prairie into farm land. Prairie strips also reduce the loss of sediment and nutrients from farms. By employing this one practice, farmers and land owners can achieve multiple conservation goals.
- Federal funding for establishing prairie strips is available through the Conservation Reserve Program and Environmental Quality Incentives Program. Contact a local USDA Service Center to sign up for cost-share.
- Our online support tool (PT2) can help landowners get the most out of this practice.
- Beekeepers in need of sites to keep colonies may see improvements in honey production on farms with prairies strips compared to farms without native plants.
- This is an active area of research. Look to www.prairiestrips.org for updates and new findings.

Next Steps: Field work is complete. Lab experiments exploring impacts of interacting stressors on bee health are nearly done. Data summarized in articles will be shared with scientist, farmers and the general public. These results will inform future efforts to improve honey bee health.

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Prairie strips produced more flowering plants (A), especially in the late summer when more Monarch butterflies (B) were observed in farms with strips than without (control). This seasonal dynamic was observed in the honey produced by honey bees kept at farms with and without prairie strips (C). Stars (*) indicate dates with statistically significant differences.

Photos: Adult monarch butterfly (*Danaus plexippus*)¹ found in a prairie strip. Plant community in the background image² is dominated by gray-headed coneflower (*Ratibida pinnata*), blazing star (*Liatris spicata*), and Canada wild rye (*Elymus canadensis*). Corn is visible beyond the prairie. Photo credits: Jacqueline Pohl¹, Anna McDonald².



Small Changes = BIG impact!