

# Prairie Strips

February 2020

## Research Highlight: Prairie strips help honey bees and wild pollinators

### Background:

The Science-based Trails of Rowcrops Integrated with Prairie Strips (STRIPS) project completed a multi-year, on-farm experiment to reveal that crop fields with prairie strips improve honey production while maintaining a community of wild pollinators. The STRIPS team worked with farmers and farmland owners to determine if farms with prairie strips helps honey beekeepers (Fig. 1). Furthermore, we explored if prairie strips with hive were also visited by wild pollinators, including Monarch butterflies.

### Goals:

- Measure availability of flowering plants in prairie strips.
- Determine if honey bee health improves with access to prairie.
- Compare the insect pollinator community in fields with and without prairie strips.

### Pollinator Findings:

Prairie strips planted within or adjacent to crop fields provide forage for bees throughout the growing season, especially in late summer for honey bees (Fig. 1). **Hives had more honey (i.e. heavier) and maintained greater populations when kept in farms with prairie strips (Fig. 2).** Over two years of experiment, prairie strips had more flowering plants than control sites (Fig 3-backside), and more adult monarchs in August (Fig. 4-backside), as the adults look for nectar to fuel their fall migration.



Fig. 1: Honey bee hives kept at a farm with prairie strips and control sites were inspected twice a week during the growing season. The population of bees and weight of the hives were measured by students supported by FFAR.

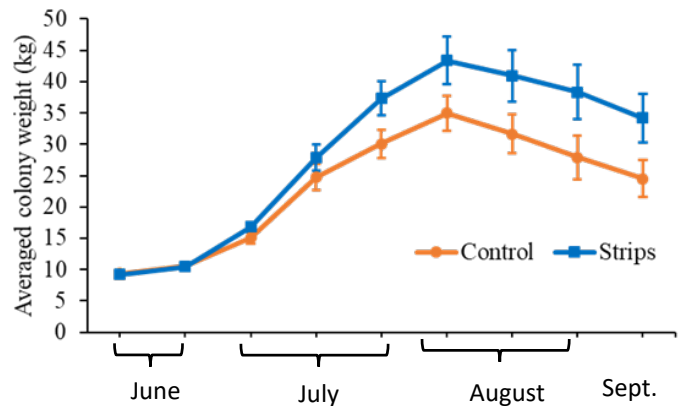


Fig. 2: Honey bee hives at farms with prairie strips were statistically heavier in 2017 and 2018 than hives without a strip (control). Data shown from 2017, 2018, and 2019 ( $p = 0.05$ ).

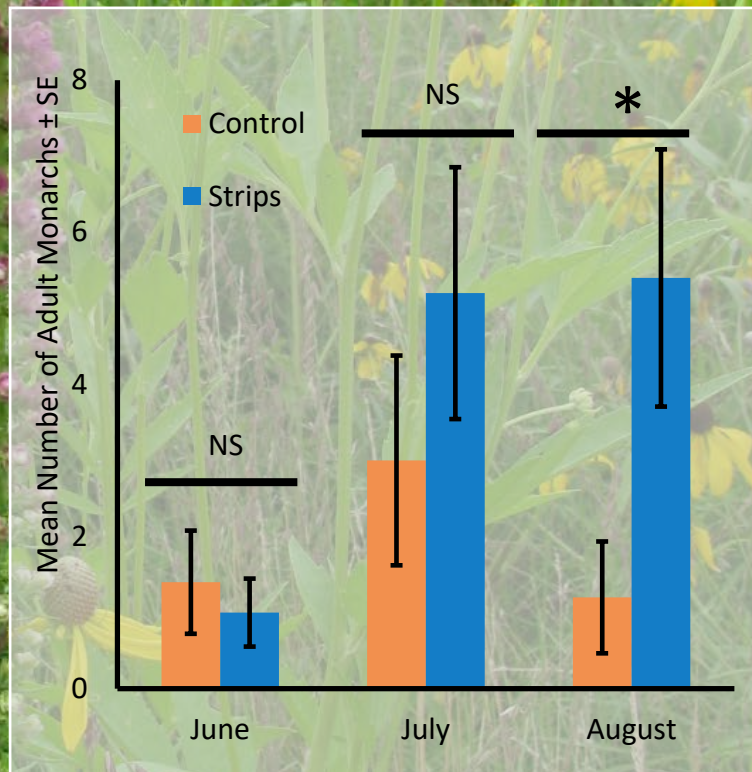
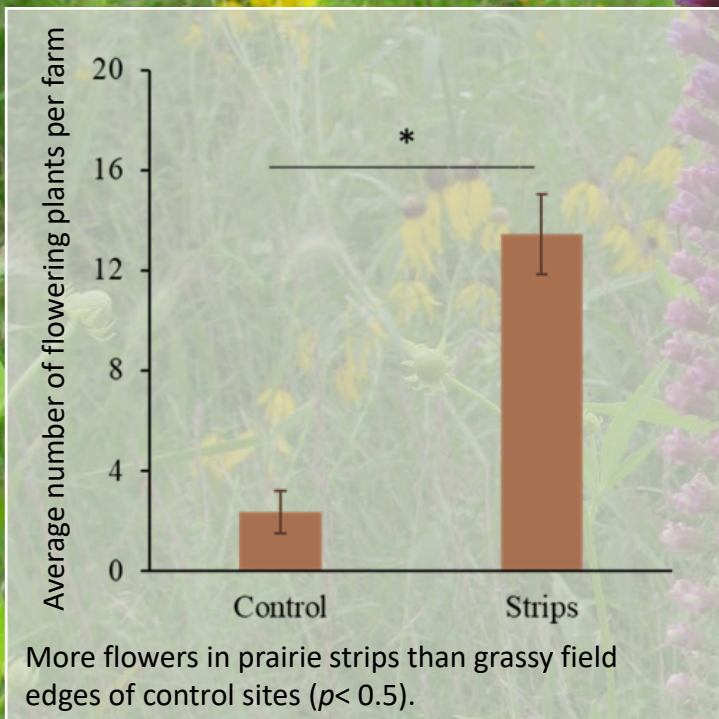
### What it means for farmers:

- Conserving pollinators, especially honey bees, can be achieved by adding prairie into farm land. Prairie strips also reduce the loss of sediment and nutrients from farms. By employing this one tactic, farmers and land owners can achieve multiple conservation goals.
- Beekeepers looking for sites to keep colonies may see improvements in honey production over existing farm site.
- Prairie strips were added to the list of practices eligible for federal funding through the Conservation Reserve Program. See <https://tinyurl.com/rvvj6fd> more details.
- This is an active area of research. Look to [www.prairiestrips.org](http://www.prairiestrips.org) for updates and new findings.

**Next Steps:** These results are being compiled into articles to be shared with the scientist, farmers and the general public. Samples of wild bees are being identified to species, and pollen collected by honey bees is being analyzed for neonicotinoids presence. These results will inform future experiments involving honey bee health. A web-based, decision support tool to help farmers and land owners add prairie strips to farms is also being developed, which will include recommendations on how to incorporate IPM at farms with prairie strips.

This ongoing evaluation is supported by a grant to Iowa State University (ISU) and the University of Illinois Urbana-Champaign (UIUC) from the Foundation for Food and Agriculture Research (grant ID:549025) with matching funds from Bayer Crop Science, DuPont-Pioneer, Syngenta, ISU, and UIUC. Principal investigators include Lisa Schulte Moore, Steve Bradbury, Matt O'Neal, Amy Toth, and John Tyndall from ISU and Adam Dolezal from UIUC. Graduate students Maura Hall, Caroline Murray, and Ge Zhang from ISU, Edward Hsieh from UIUC, and five additional technicians are supported by this grant.





Honey bee hives kept at a farm with prairie strips (left) and those kept at a farm with a grassy border typical of a 'control site' (right). Notice that **each hive at a strips site needed an extra hive box to store the additional honey they produced.**

During June and July we saw no difference in the abundance of monarchs at control and prairie sites. In August, we observed more monarchs at prairie sites than control sites, possibly due to more nectar available at prairie sites for adult monarchs looking to feed.

Photos: Adult monarch butterfly (*Danaus plexippus*)<sup>1</sup> found in a prairie strip. Plant community in the background image<sup>2</sup> 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 Pohl<sup>1</sup>, Anna McDonald<sup>2</sup>.

