

Prairie Strips

February 2019

Research Highlight: Prairie strips provide late-summer forage for bees

Background: Preliminary results from the Science-based Trails of Rowcrops Integrated with Prairie Strips (STRIPS) project reveal that crop fields with prairie strips support a more numerous and diverse community of beneficial insects, including 3.5 times more pollinator species, than crop fields without prairie strips. The STRIPS team is now working with farmers and farmland owners to determine if these results can be achieved in commercial corn and soybean fields (Fig. 1). Furthermore, we want to know if prairie strips improve abundance and diversity of pollinators as well as the health of honey bees.

Goals:

- Compare the insect pollinator community in fields with and without prairie strips.
- Determine if honey bee health improves with access to prairie.
- Advance early season Integrated Pest Management (IPM) in annual crops.

Pollinator Findings: Surveys reveal a community of >50 pollinator species in corn and soybean fields. This community is primarily ground nesting, solitary bees, and rarely honey bees unless hives are placed near a field. When honey bees are placed next to soybean fields, they gain weight from honey production but lose this weight as soybean and clover stop blooming. Without prairie, there are few late-summer plants blooming in a farm. Prairies provide forage for bees throughout the growing season, especially in late summer for honey bees (Fig. 1). **Honey bees produced more honey and maintained higher weight in farms with prairie strips (Fig. 2).** Our 2018 survey of pollinators in these strips revealed diverse community, including monarch butterflies.



Fig. 1: Honey bee hive in a prairie strip and a grassy border typical of a 'control site' with bee bowls used to measure the diversity of bees at a farm.

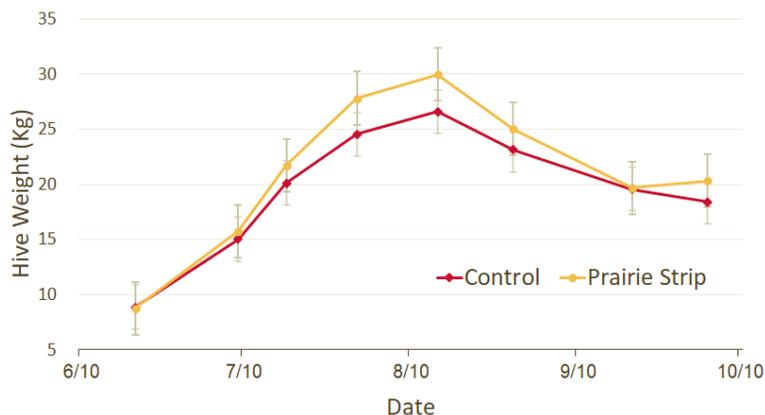


Fig. 2: Honey bee hives at farms with prairie strips were statistically heavier in 2017 and 2018 than hives without a strip (control). Data shown from 2018 ($p = 0.05$).

What it means for farmers:

- Farmers interested in conserving pollinators, especially honey bees, can see benefits by adding prairie into their farm land. Prairie strips also reduce the loss of sediment and nutrients from farm environments. By employing this one tactic, farmers and land owners can achieve multiple conservation goals.
- Prairie strips were added to the list of practices eligible for federal funding through the Conservation Reserve Program in the 2018 farm bill.
- This is an active area of research. Look to www.prairiestrips.org for updates and new findings.

Next Steps:

Field research will continue in 2019. 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.

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Butterfly and bee species found in prairie strips, clockwise from bottom left: bicolored striped-sweat bee (*Agapostemon virescens*)³, eastern tiger swallowtail (*Papilio glaucus*)³, eastern comma (*Polygona comma*)¹, Monarch butterfly (*Danaus plexippus*)², and a bumble bee (genus *Bombus*)³. The plant community in the background image¹ is dominated by gray-headed coneflower (*Ratibida pinnata*), blazing star (*Liatis spicata*), and Canada wild rye (*Elymus canadensis*). Corn is visible beyond the prairie. Photo credits: Anna McDonald¹, Jacqueline Pohl², Adam Varenhorst³.



Small Changes = BIG impact!