

Choice of biofuel crop affects yield and pollinator conservation

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-MOTIVATION-

In order to prevent the loss of biodiversity, adapt to climate change, and sustainably support a growing population, biodiversity must be incorporated into working landscapes.¹

Biofuel is most often obtained from annual monocultures such as corn. As an alternative, **perennial biofuel crops have the potential to both produce energy and conserve biodiversity**, but this depends largely on the crop chosen and the land used for planting.²

-QUESTIONS-

- 1) How does biofuel crop management affect pollinator communities?
- 2) What are the tradeoffs between yield and pollinator conservation?

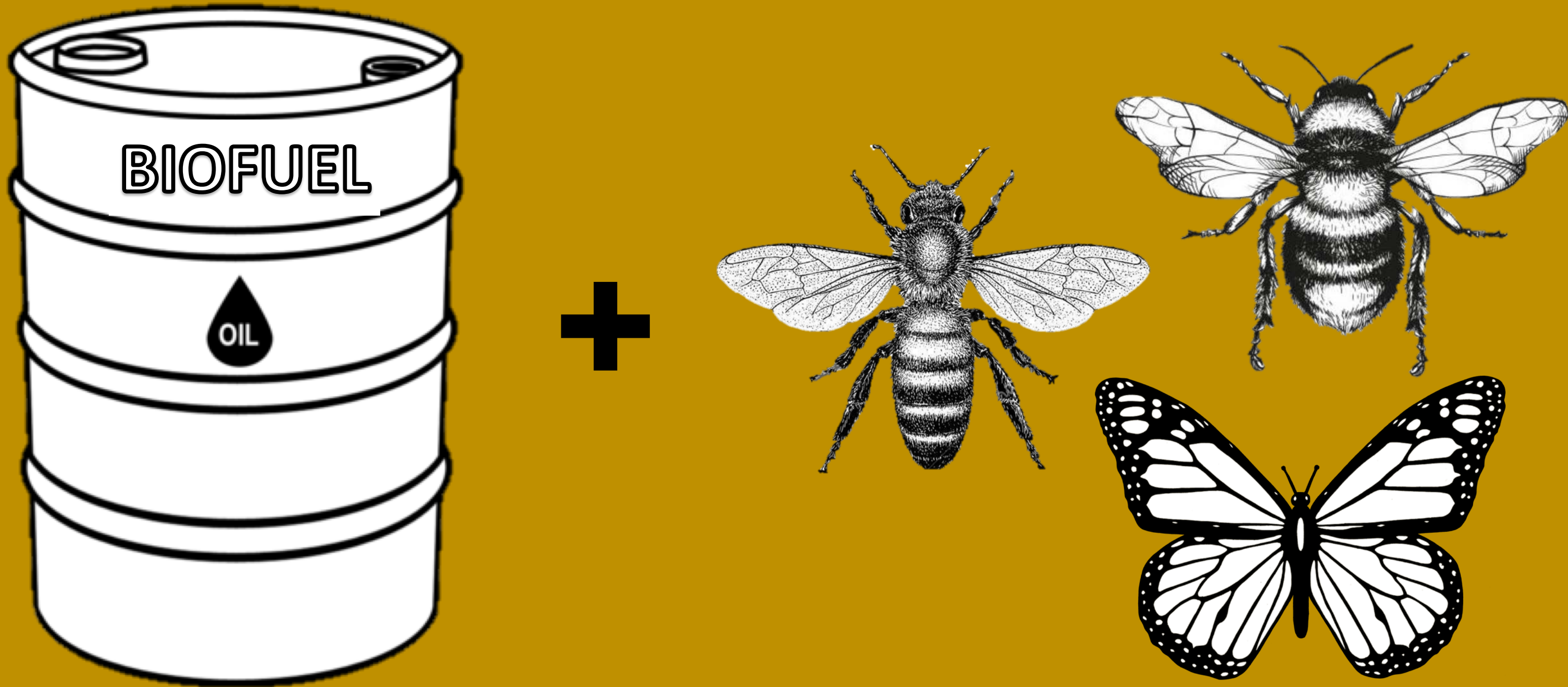
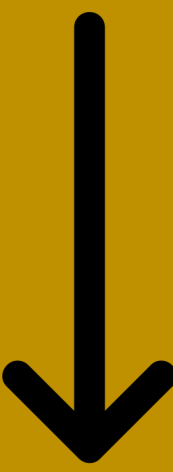
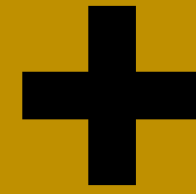


-METHODS-

We worked in an experimental landscape in Michigan, USA with four native, perennial, biofuel crop varieties:

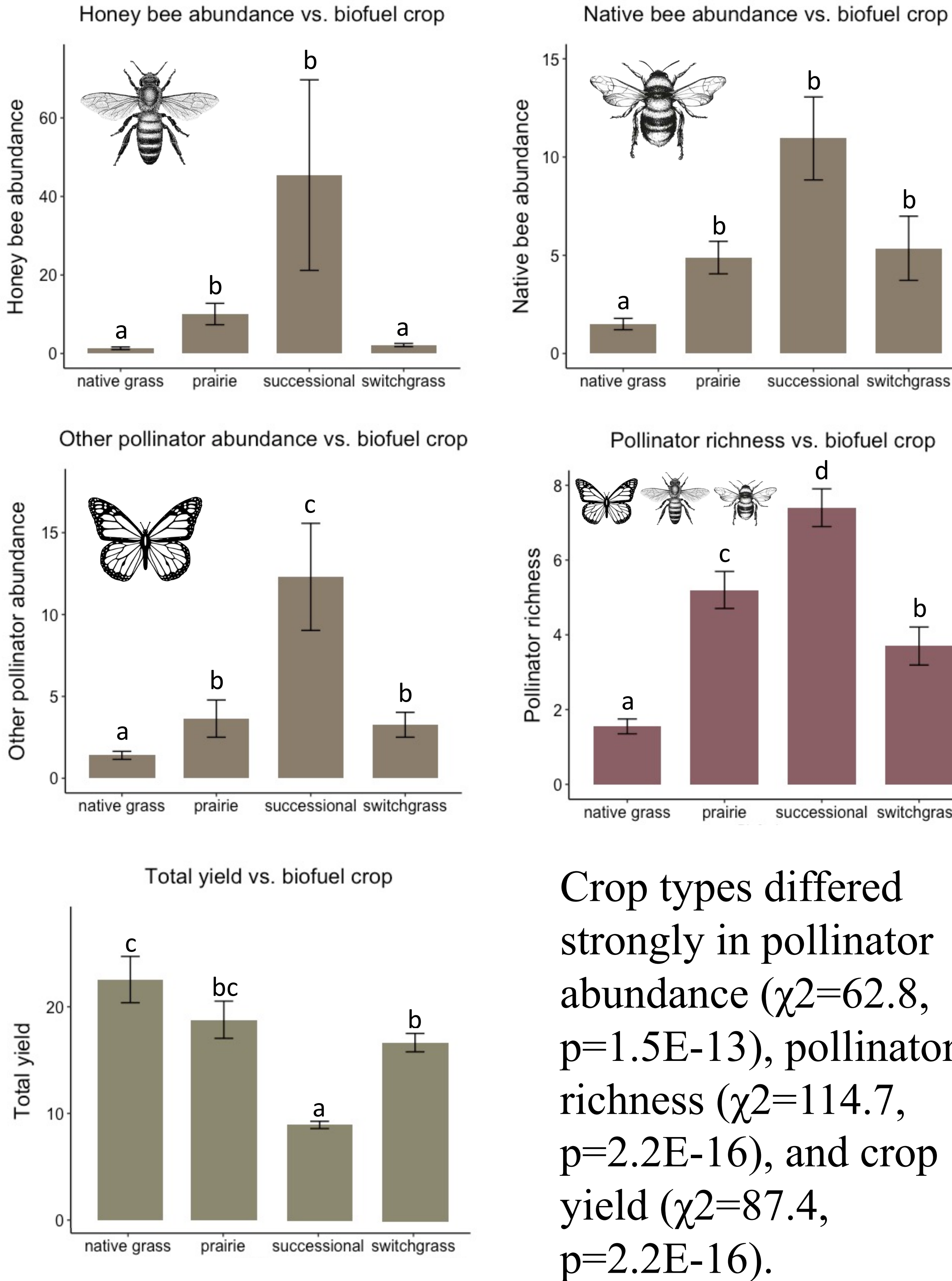
- Switchgrass
- Native grasses
- Successional field
- Restored prairie

We tested the effect of biofuel crop type on crop yield and the abundance and diversity of pollinators, a group of significant conservation interest.



Planting native, perennial, restored habitat as a biofuel crop optimizes yield and conservation of pollinators.

-RESULTS-



Crop types differed strongly in pollinator abundance ($\chi^2=62.8$, $p=1.5E-13$), pollinator richness ($\chi^2=114.7$, $p=2.2E-16$), and crop yield ($\chi^2=87.4$, $p=2.2E-16$).

-IMPLICATIONS-

Biofuels have yet to be adopted as a source of sustainable renewable energy, but it is important to understand these tradeoffs before policies are put into place.²

Understanding tradeoffs between conservation and profit help to inform land management decisions for designing **resilient working landscapes that both support biodiversity and yield goods and services.**²

-LITERATURE CITED-

1. Kremen & Merenlander *Science* (2018).
2. Robertson et al. *Science* (2017).

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