Objective: Identify and map existing nectar resources on PFI member farms; identify temporal and geographic gaps in nectar resources throughout the year.

Hypothesis: We expect to find gaps, either geographically or temporally, in nectar resources on farms.

Farmer-Cooperator will:
- Follow Research Protocols for study
- Take photos throughout the project
- Keep in contact with PFI with updates and questions
- Turn in all data by November 2020

Practical Farmers of Iowa will:
- Help design research protocol
- Monitor progress and provide support as needed
- Publish results in a PFI research report, on PFI website, and potentially other outlets
- Will assist with Geographic Information Systems work
- Provide $550 cooperator payment at the conclusion of project year

Project Design:
- Areas to be observed will be divided into zones with established observation points; zones may not be comprehensive or inclusive of all areas of the farm. Each cooperator will travel a consistent route at least twice per month (every two weeks), observing nectar resources at each observation point.
- Nectar resources will be identified as the number of discrete colors of blooms (e.g., 3 types: yellow, green, and red), approximate percentage of ground cover in bloom, and number of types of different blooms. Blooms persisting across multiple observations should be recorded each time they are observed.
- Cooperators will record observations on data sheets provided by PFI.
- At each observation point, it is recommended that cooperators take at least one picture.
Sample zones with observation points (black dots)

Photo List
- At least six total photos from each observation point taken throughout the year
- Any particularly noteworthy observations (e.g., a very diverse flowering; contrariwise, an observation point with no nectar resources present)
- Bonus for photos of pollinators/invertebrates
- Bonus for photo of cooperator collecting data in the field

Data to Collect
- See attached data sheets

Information to Report
- Approximate locations, shapes, and areas of zones
- Locations of observation points
- Dates of observations
- Approximate length of time needed to complete route
- Photos from observation points

Project Timeline:

<table>
<thead>
<tr>
<th>April / May</th>
<th>Review research protocol</th>
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<tr>
<td></td>
<td>Complete MOU and pre-project Survey</td>
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<tr>
<td>May – October</td>
<td>Work with PFI staff to identify zones and observation points / finalize data sheets</td>
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<td>Begin collecting observations</td>
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<tr>
<td>October/November</td>
<td>Collect observations of nectar resources per data sheets</td>
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<tr>
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<td>Take photos</td>
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<td></td>
<td>Provide completed data sheets and photos to PFI staff</td>
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<tr>
<td></td>
<td>Complete post-project survey</td>
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