

## **Executive Summary**

**Research Project Title:** North Dakota Soybeans & Pollinators: Beginning to Investigate Their Potential Interactions and Mutual Benefits

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Soybeans are a crucial part of North Dakota, as are pollinators such as honey bees. However, unlike other plants, soybeans do not require a pollinator visit to successfully produce seeds. Thus, we do not always think soybeans and pollinators should have much to do with each other. Recent research suggests this might be a missed opportunity as sometimes pollinators increase soybean productivity, and flowering soybeans can provide food for pollinators. Yet we need research to discover these relationships in North Dakota.

We surveyed bees in and around soybean fields at the Carrington Research Extension Center (REC) near Carrington, ND and the Central Grasslands REC near Streeter, ND. We used two, complementary sampling techniques. To actively sample pollinators, we freely searched for bees for 30 minutes at a time by walking through soybean fields. Found bees were captured and identified and we recorded its behavior. We also used rows of blue vane traps to determine what other bees are in and around soybeans. Both methods were used together multiple times when soybean plants were flowering.

Our active sampling showed honey bees and bumblebees, and that many were visiting soybean flowers. This was likely feed on nectar and/or pollen from open flowers and is a positive sign that bees may be benefitting from visiting soybeans. The bees seen in our active surveying were a fraction of the bees seen in passive traps and in neighboring rangelands, and we are working to determine how many of those may have also been visiting soybean flowers. Knowing that there are pollinators visiting soybean flowers is a necessary first step for there to be any potential benefits that soybeans may receive from pollinator visitations.

Figure 1. Active sampling from Carrington and Streeter broken down by (A) site and taxonomy, or (B) the behavior of the bee when observed during the sample.

Figure 2. Passive (trap) sampling from (A) Carrington and (B) Streeter. Each graph shows the total number of bees caught at each location at a given date (solid line) and the percent of soybean plants that were flowering at the time of the sampling.