

Chapter 5: Sunflower Insect Pollinators



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Introduction

In South Dakota, sunflowers are visited by a pollinator community that is composed of species of bees, wasps, flies, butterflies, and moths. The most important pollinators visiting sunflowers are bees. On average, there are 12 major species of bees visiting sunflowers each year (Figs. 5.1-5.9). In South Dakota, the most abundant bee species visiting sunflower is *Melissodes trinodis* (Fig. 5.1). The pollinator community in central South Dakota includes several bee species that are sunflower specialists. The bee community visiting sunflowers is mainly composed of native species.

Hover flies can also pollinate sunflower (Figs. 5.10-5.13). During years with increased aphid pressure near the sunflower fields or within the fields, hover flies can become very abundant. Numerous species can be observed within a field and the adults will actively visit the sunflower head.

Although commercial varieties of sunflowers are capable of self-pollination, they still benefit from pollinator visitations. One study that included data from South Dakota determined that pollinators increase confection sunflower yields by as much as 45%. Another study conducted in South Dakota determined that pollinators improve yields of both commercial confection and oilseed varieties. These findings suggest that pollinators are important component in sunflower production.

Identification

One of the key characteristics that can be used to distinguish bees from flies is the number of wings. Bees will have two pairs of wings where flies will only have one pair. Characteristics used to distinguish one species of bee from another vary greatly but can include the presence of hair, coloration, size, and the patterns of veins on the wings. Determining the identification of bees often requires the use of a microscope to view some of these unique characteristics. However, visual observations can be used to determine the identity of some species. Because many of the native bees are not well studied or frequently discussed they do not have common names such as bumble bee or honey bee. Due to the difficulty associated with the identification of some of the smaller species we will list them as the Genus spp. This indicates that there are likely multiple species present but identification would require a specialist.

Another major pollinator group in sunflowers are hover flies. Hover flies, also called flower flies, are a diverse group of flies that often mimic bees or wasps with their appearance. These mimics will look and sound like a bee or wasp but do not bite or sting as they do not have a stinger. As mentioned previously, hover flies, like all other flies, only have one pair of wings. This is a characteristic that can be used to easily distinguish them. Other characteristics include very short antennae

and proportionately larger eyes, compared to bees, that are placed close together or touching near the top of the head. The larvae are predatory, so hover flies are more common near plants where prey (e.g., aphids) are abundant.

Conservation

During flowering, sunflowers are often sprayed with insecticides to manage insect pests. Any pollinators present on the head are also negatively affected by the insecticide. Before spraying sunflower, it is important to check BeeCheck.org (sd.beecheck.org/map) to determine how close honey bee hives are to the field. The beekeepers listed for nearby hives need to be notified so that they can cover the hive and reduce the likelihood that the bees will be exposed to the applied insecticide.

Selected References

Berglund, D. R. 2007. Sunflower Production. NDSU Extension Service. A-1331



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Bees



Figure 5.1. *Melissodes trinodis*.
Photo courtesy of Adam Varenhorst.



Figure 5.2. *Melissodes bimaculata*.
Photo courtesy of Johnny N. Dell, Bugwood.org.



Figure 5.3. *Melissodes agilis*.
Photo courtesy of John Baker, BugGuide.net.



Figure 5.4. *Andrena* spp.
Photo courtesy of Cheryl Moorehead, Bugwood.org.



Figure 5.5. *Lasioglossum* spp.
Photo courtesy of David Cappaert, Bugwood.org.



Figure 5.6. *Agopostemon texanus*.
Photo courtesy of Adam Varenhorst.

Bees



Figure 5.7. *Agopostemon virescens*.
Photo courtesy of Adam Varenhorst.



Figure 5.8. Honey bee (*Apis mellifera*).
Photo courtesy of Patrick Wagner.



Figure 5.9. Bumblebee.
Photo courtesy of Adam Varenhorst.

Hoverflies



Figure 5.10. Hoverfly.
Photo courtesy of Janet Smith.



Figure 5.11. Hoverfly.
Photo courtesy of Patrick Wagner.



Figure 5.12. Hoverfly.
Photo courtesy of Adam Varenhorst.

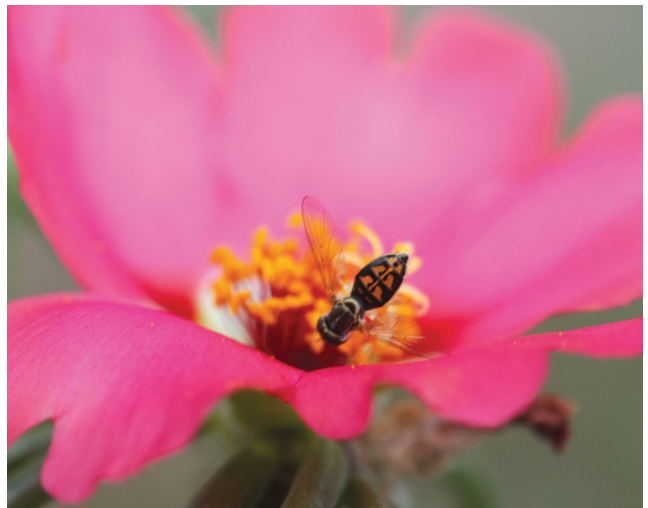


Figure 5.13. Hoverfly.
Photo courtesy of Adam Varenhorst.