



## Free Pollination Services from Native Pollinators *What's In It for Agriculture?*<sup>i</sup>

Insect pollination is critical for the production of many important crops in the United States including alfalfa, almonds, apples, blackberries, blueberries, cherries, canola, cranberries, pears, plums, squash, sunflowers, tomatoes, and watermelons. Native pollinators, most importantly wild bees, provide “free” pollination services and enhance grower productivity and profitability through increased yields and improvements in crop quality. Native pollinators supplement services provided by managed pollinators and are an increasingly important resource in 21<sup>st</sup> Century production agriculture.

### **Why Are Native Pollinators Important To Farming Operations Today?**

#### ***1. Native Pollinators Can Increase Crop Yields.***

If natural habitat is nearby, native bees can provide much of the pollination necessary for many crops, and in some cases all of it if sufficient habitat is present. For example:

- Fifty-one species of native bees have been observed visiting watermelon, sunflower and tomato crops in California.
- Over forty-five species of bees have been recorded pollinating berry crops in Maine and Massachusetts.
- Sixty-seven species of bees have been observed pollinating berry crops in Nova Scotia.
- Native pollinators have been shown to nearly triple the production of cherry tomatoes in California.
- Studies show that wild native bees improve the pollination efficiency of honey bees in hybrid sunflower seed crops by causing them to move between male and female rows more often. Only the fields with abundant native bees and honey bees had near 100 percent seed set.
- Research suggests that, in the absence of imported honey bees, canola growers in Alberta, Canada make more money from their fields if 30 percent of the land is left in natural habitat, rather than planting it all. This natural habitat supports populations of native bees close to fields and increases bee visits and seed set in adjacent crops. Similar benefits have been shown with watermelon and coffee.

#### ***2. Native Bees Are Effective and Efficient Pollinators For Commercial Operations.***

Native bees are more effective than honey bees at pollinating flowers on a bee-per-bee basis. For example, only 250 female orchard mason bees (also called blue orchard bees) are required to effectively pollinate an acre of apples, a task that would need 1.5 to 2 honey bee hives—approximately 15,000 to 20,000 bees.

Why can native bees sometimes be more efficient?

- Selected native bees, like mason and bumble bees, are more active in colder and wetter conditions than honey bees.
- The range of foraging behaviors is more diverse among many species of native bees than in European honey bees. For example, nectar foraging honey bees often never contact the anthers (pollen-producing structure) in many orchard crops, unlike orchard mason bees that forage for both pollen and nectar. Alfalfa flowers are shaped in a way that makes it hard for honey bees to reach the nectar and pollen; the native alkali bee can easily forage on these flowers.
- Some native bees specialize in one type of flower. Squash bees visit primarily cucurbits. Female bees begin foraging before dawn and males may even spend the night in the flowers, which results in efficient pollination and larger fruits.

- Unlike honey bees, bumble bees and many other native bees perform buzz pollination (the bee grabs onto a flower's stamens and vibrates its flight muscles, releasing a burst of pollen from deep pores in the anther). This behavior is highly beneficial for the cross-pollination of tomatoes, peppers, cranberries and blueberries, among other plants. Although tomatoes don't require a pollinator to set fruit, buzz-pollination by bees results in larger and more abundant fruit.

### ***3. Native Pollinators Can Save Growers Money.***

Farms with strong populations of native pollinators can save money because they have less need for imported hives of honey bees.

### ***4. Native Bees Can Be a Buffer Against Pollinator Losses.***

If populations of one bee species decline because of natural cycles of parasites or disease, other native bee species can fill the gap and provide a stable, reliable source of pollination. Furthermore, if the beekeeping industry continues to have trouble because of pests and diseases, or the mysterious Colony Collapse Disorder, native bees can fill in when managed honey bees are in short supply or more expensive to import.

### ***5. Native Pollinators Can Provide Additional Farm Revenue Opportunities.***

- Some species of wood nesting bees may be reared in nest tubes and sold at local farmers markets or produce stands for home gardeners looking for efficient, local, and gentle (non-stinging) pollinators.
- Farms that provide habitat for native bees may promote themselves as wildlife-friendly or sustainable. When faced with many choices about where and from whom to purchase produce, many consumers will choose farms that are "pollinator-friendly" or "wildlife-friendly" over others.
- If a small farm is open to tours or u-pick—an increasing trend, especially at vineyards and pumpkin patches — beautiful hedgerows and other improvements for wildlife can be promoted. A farm could even host a tour showcasing its resident, beneficial insects.
- Many federal and state agencies need large amounts of native seed for habitat restoration efforts. Native shrubs and wildflowers could be grown as a source of seed or cuttings and provide forage for native insects and a source of revenue for the farm.

### ***6. Native Pollinator Habitat Improvements Can Provide Other Benefits for Farming Operations.***

In addition to pollination, restoring or creating habitat has other benefits. If placed along drainage ditches or field edges, conservation plantings can:

- Reduce soil erosion and the cost of cleaning out ditches or tail-water ponds.
- Reduce the loss of irrigation water and improve water quality.

Native plant habitat created adjacent to fields can reduce weed seeds sources adjacent to crops. The habitat will also support other wildlife, and beneficial insects, such as parasitic wasps and predaceous beetles that help combat pest insects on crops.

Snags (dead standing trees) left along stream banks or field edges for tunnel-nesting bees will also provide perches and nest sites for woodpeckers and other birds. Owls and other raptors may take up residence in restored habitat and can help control rodent populations. Protecting, enhancing, restoring, and creating habitat for pollinators will have benefits for both a farmer's bottom line and wildlife.

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<sup>i</sup> This Fact Sheet was developed in part from information contained in the Xerces Society's "Farming For Bees" publication.