

### The Importance of Pollinators

Pollinators play an essential role in the health of wild and agricultural lands. Over 75% of the crops that feed the world and many plant-derived medicines rely on pollination by insects or other animals. Fruit and vegetables that have been insufficiently pollinated are lopsided, misshapen, smaller, and unripe. Seeds may also be withered or poorly developed. Crop production decreases, and some plants become endangered because they fail to produce viable seeds and flowers. Habitat loss is a threat to pollinators. Some wild pollinators require undisturbed habitat for nesting and foraging, so they are susceptible to habitat degradation and fragmentation. Ultimately, fewer pollinators mean fewer plants.

Pollination, the transfer of pollen from one flower to another, is critical to successful field-crop production and forage production for the dairy and beef industries. It is a fundamental service provided by bees, butterflies, some bats and birds, and other wildlife species. Some plants are wind-pollinated or self-pollinated, but the majority depend on insects or other wildlife for pollination. Wild pollinators are important, but many farmers also use domesticated honey bees.

### Honey Bees

Honey bees are important to many crops in Florida. Watermelons are especially dependent on these bees for pollination. At least 1000 grains of pollen need to be evenly deposited on the Stigma to produce a uniform melon. The honey bees are necessary to provide saturation pollination. It is helpful to propagate nectar plants for their use. The best native nectar-producing plants for honey bees are gallberry, tupelo, saw palmetto and cabbage palm. A non-native that provides nectar to bees is citrus. Some other trees and shrubs that are beneficial to bees are American Holly, Southern Magnolia, and Ligustrum.

Managed honey bee colonies that are used for pollination are declining in the United States. One quarter of all managed honey bee colonies have been lost since 1990. This is due to the spread of mites and diseases, pesticides, the Africanized honey bee invasion, and elimination of subsidies for beekeepers.

## Alternative Pollinators

Our dependence on honeybees and the problems associated with their decline have helped focus attention on the potential of alternative, native pollinators. Alternative pollinators play an important role in crop pollination. Bumblebees, leafcutter and mason bees are providing more pollination services where honey bees were once the primary pollinator. Blueberry farmers in the southeast depend on southeastern blueberry bees for pollination. One female bee can pollinate enough blooms for four to five gallons of blueberries during her lifetime (Ingram et. Al., 1996). Squash and gourd bees are native pollinators that nest in squash and pumpkin fields around the country. Bumblebees are useful in pollinating the many acres of tomato crops in Florida.

### Create a pollinator-friendly environment

A lack of pollen and nectar plants available through all seasons poses a problem to wild bees. Many native plants that offer food and shelter to these bees can be cultivated as cover crops. Clover, sunflowers, legumes, sages and mints are a few plants that provide wild bees with pollen and nectar.

Bumblebees can be encouraged to nest in undisturbed grassland. They will also nest in old nests of birds and borrows of small mammals. They require a succession of flowering plants such as clover, field bean and carrot. Avoid mowing in the summertime when these plants are in bloom. Avoid spraying herbicides and pesticides on these areas. If adjacent areas must be sprayed, don't spray when pollinators are at work. Bees are most active when the temperature is above 55-60 F and from 8:00 am to 5:00 pm. Use a non-residual, lower-hazard application of the pesticide. This table includes the residual time of some common insecticides that are highly to moderately toxic to bees. Some insecticides that are practically nontoxic to bees are Apollo, Kelthane, Kryocide, Sulfur, and Vendex. Dust formulations of insecticides are usually more hazardous to bees than sprays or granules. Keep in mind that cooler weather increases the effectiveness of insecticides, which can cause higher bee mortality.

Residual time of some insecticides (Johansen & Mayer, 1990)	
parathion	13-18 hours
malathion	6 hours
methomyl	2 hours
carbofuran	7 hours
chlordane	<2 hours
carbaryl, wp	7 days
naled	12-20 hours
phosmet	>3 days
pyrethrum	<2 hours