

Alfalfa Leafcutting Bee

Megachile rotundata

<i>Order:</i>	Hymenoptera (ants, bees, wasps, and sawflies)
<i>Family:</i>	Megachilidae (leafcutting bees)
<i>Metamorphosis:</i>	Complete (egg-larva-pupa-adult)
<i>Mouthparts:</i>	Chewing in larvae and adults



Female and male **ALFALFA LEAFCUTTING BEE**, *Megachile rotundata*, see color print, Fig. 6, on publication B-1013.

Leafcutting bees nest in natural crevices above ground as well as in artificial structures. The alfalfa leafcutting bee was introduced into the western region of the United States. Leafcutting bees can increase alfalfa seed yield to commercially profitable levels. Leafcutting bees nest in constructed shelters but can also survive in the wild, nesting in holes and crevices in wood and other materials.

Body Form

Eggs: Eggs are elongated oval and concealed in cells within the nest.

Larvae and pupae: These stages are relatively immobile. They are protected and provisioned with food within the cells of the nest.

Adults: The bee is charcoal gray and is approximately $\frac{1}{4}$ to $\frac{3}{8}$ inch in length. Females have short, white hairs on the body and a white pollen brush on the underside of the abdomen. Males have two light-colored spots on the posterior tip of the abdomen.

Life History

Adults emerge in early summer, approximately at the time of the first bloom of alfalfa. The bees mate, and females soon begin to provision food in a nest for their young. Bees usually forage within the field where they nest in the same area from year to year. A nest consists of an elongated tunnel with stacked cells built in crevices such as long nail holes, spaces between overlapping boards, tubing, and cracks in fallen trees and posts. Grooved boards placed within shelters can be used to encourage leafcutting bee nesting. Individual cells are provisioned with pollen moistened with nectar. Cells are separated by flower pieces or leaf pieces cut from alfalfa or other tender-leafed plants. A female will construct about five to seven cells per nest and about two to three nests during a life span of approximately four to six weeks.

Plant Injury and Plant Benefit

Plant injury is limited to leaf cutting; the leaf pieces are used for provisioning the nest cells. Pollen collection results in very effective alfalfa seed pollination. Each female may trip enough alfalfa flowers to produce ¼ pounds of seed. This rate is much more efficient than honey bee pollination. The bees usually forage in the same field that they nest, and their foraging period is well synchronized with alfalfa blooming.

Management

The bees easily adapt to nesting in constructed shelters. Leafcutting bee activity can be encouraged by building sheltered nesting areas in or adjacent to an alfalfa seed field. Work done in Utah indicates that 10 shelters, each with about 10,000 nesting females, provide excellent pollination in a square 50-acre field. Commonly used nest-building materials are drilled wood boards, paper soda straws, laminated wood, or plastic. Shelters are built in the field to protect the nests from high temperatures. During winter, the nest material can be placed in cold storage or unheated buildings. To initiate adult emergence, nests must be exposed to 88 degrees Fahrenheit and 50 percent relative humidity.

Sources of further information: The USDA Pollinating Insect Laboratory (Logan, Utah) has additional literature on the pollination of alfalfa seed crops. Guides on alfalfa seed production also contain information on pollination.

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