

## Insect/Disease Information

Vegetables are being planted in some areas and brambles are finally starting to show some life. With the cooler weather, there is little to report in the way of insect or disease problems, but that is sure to change in the coming week as temperatures reach into the 80s. Happy planting!

### VEGETABLES

#### Western Flea Beetle



Whitney Cranshaw, Colorado State University

A sample of western flea beetle was brought into the Utah Plant Pest Diagnostic Lab this week. It was feeding heavily on tomatoes.

Flea beetles are tiny black beetles that jump when disturbed. They overwinter as adults and begin feeding in spring. They feed on the underside of leaves causing small holes or sunken pits. They are mostly a problem on new seedlings, and if left unchecked, can cause significant damage. Older plants can usually withstand feeding, although the lower leaves may be affected. Cole crops are the primary host, and other vegetables (sweet corn, tomatoes) are secondary.

Monitor young seedlings carefully until they have mature leaves. The best time is mid-day when they are most active. Although there can be up to 3 generations, the overwintering adults cause the most damage. Treat when 5% of plants are infested.

*Treatment:* esfenvalerate (Asana, Ortho Bug-B-Gone), insecticidal soap, carbaryl (Sevin), permethrin (Ambush, Pounce), spinosad (Entrust)

#### Aphids

As soon as crops are in the ground, begin inspecting for aphids (of various species). Hosts include melons, tomatoes, peas, and others. On very small plants, inspect the undersides of leaves and look carefully for individual aphids. If you count more than 10 aphids per plant, consider treatment. Keep in mind that natural enemies can often keep aphid populations in check.

*Treatment:* insecticidal soap, imidacloprid (Provado), and many others.

## Production Information

### Alternative Bees for Fruit Pollination

The honeybee is a prized insect among farmers, including fruit and nut growers. In 2005, it was estimated that there were approximately 200,000 beekeepers in the US (1,600 of them commercial). Many bee colonies (over 600,000) are moved interstate year to year (some colonies more than once) as they are essential in aiding food production. Currently, 90% of apples are pollinated by honeybees. But colony collapse disorder has resulted in the loss of thousands of hives. In spring 2008, beekeepers of all types reported a loss of 36% of colonies nationwide, up from 13% last year. About one-third of those losses were attributed to colony collapse. In Utah, approximately 25% of hives were lost, with about 10% of those possibly caused by colony collapse. As a result, growers are looking to alternate pollinators.

Entomologists at the USDA Agricultural Research Service Bee Lab in Logan, UT have been studying native bees, including *Osmia* (mason bee), for years, looking at nesting structures, pollination activity, and how to attract bees to an orchard site. *Osmia lignaria*, the blue orchard bee (shown at right), is gaining attention by or-



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chardists in the west as an efficient alternative pollinator. The hornfaced bee, *Osmia cornifrons*, is native to Japan, where it has been managed as a pollinator on commercial sites for decades. It was introduced to the US in the 1960s, and is established in locations in the East and Midwest. James Cane, an entomologist at the Bee Lab, has been studying another *Osmia* species, *O. aglaia*, native to Oregon and California, as a pollinator for blackberry and red raspberry. Even though bramble berries are self-pollinating, research has shown that insect-pollinated fruits are 30 percent larger.

Mason bees are solitary, and do not nest in complex colonies nor share labor in raising young. Each female makes her own nest and lays her own eggs, providing enough food for each individual offspring. The female flies for about six weeks in spring, collecting pollen from tree to tree. They make their nests in round tunnels, dividing it up with mud partitions into individual cells for each egg. After building her nest, the adults die and the eggs inside the nests hatch and the larvae feed

on the pollen and spin a cocoon in mid-summer. In the fall, they become adults and spend the winter inside the nests and emerge the following spring.

*Osmia* species are valuable to fruit growers because they are only active in spring, when fruits are blooming, and are easy to manage and propagate. They are gregarious, preferring to nest in close proximity to each other, and will readily build nests in man-made tunnels, such as cardboard "straws," or holes drilled in wood.

Mason bees are more efficient workers than the honeybee. They fly in cooler weather and for longer periods of the day. As they visit flowers, they are focused on collecting pollen for their offspring, so their foraging results in repeated and direct contact with the anthers and stamens. Fewer bees are necessary for successful pollination. The recommendation for fruit trees is about 250-300 females of blue orchard bees per acre, and about 50 female bees for a few dozen backyard trees. Density is still being determined for *O. aglaia* in brambles. Another plus? Since they have no colony or queen to protect, mason bees are docile insects, and will not readily sting, except in self-defense.

All the grower needs to do to have successful pollination of fruits is to provide maximum nesting sites (the lack of which being these bees' major limiting factor). Simply find a large block of wood (4" x 6" untreated), a stump, or log, and drill 5/16" diameter holes



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to up to 1/2" from the back of the block. Holes can be 3/4" apart, and in even rows (example shown above). Longer holes of the proper diameter encourage higher reproduction of females. Place nesting structures where they receive morning sun, at least 3 feet above ground. Nesting structures can also be purchased.

Michigan State University has an article on native bees where you can find more information: <http://nativeplants.msu.edu/pdf/E2985ConservingNativeBees.pdf>. Also, "How to Manage the Blue Orchard Bee" is published by USDA ARS: [http://www.sare.org/publications/bee/blue\\_orchard\\_bee.pdf](http://www.sare.org/publications/bee/blue_orchard_bee.pdf).

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#### Small Fruits & Vegetables IPM Advisory

is published weekly by Utah State University Extension

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