

## **Vermont Vegetable and Berry News**

Cornicles can be found on all aphids. They are a pair of tube-

Plant damage by aphids results from piercing tissue with their mouth parts and sucking out the sap, causing deformed leaves and flowers. They also excrete a sugary, sticky substance called honeydew, which promotes the development of black, sooty mould fungus on the leaf surface. Sooty mould is not pathogenic on the plant, but in severe infestations, it can interfere with photosynthesis. Aphids can transmit plant viruses (like cucumber mosaic virus). In ornamentals, the presence of the aphids themselves, their cast-off skins, honeydew and sooty mold reduces plant marketability.

Monitoring is essential to assure early detection of aphids and timely implementation of management strategies. Monitoring involves two different strategies: visual observation of the crops for wingless aphids, and yellow sticky cards for those with wings.

Aphidius species are best used when aphid numbers are very low. To facilitate continuous release of low numbers of these species, many growers use "banker plants" that essentially consist of seedlings of a cereal species like rye. These seedlings are host to cereal aphid species that do not attack non-cereal crops, and the cereal aphids in turn are hosts or food for the parasitic wasps. Research indicates that for optimum results, evenly distribute banker plants throughout the greenhouse, with a distance of between each banker plant ideally not greater than 130 feet.

Aphelinus abdominalis primarily attacks potato and foxglove aphids. This wasp prefers to parasitize the 2nd and 3rd nymphal stages while the 1st and small 2nd nymphal stages are used for host-feeding (i.e. as food by adults). To feed on an aphid, the wasp first pierces the aphid with its stinger or egg-laying body part, and then feeds on the aphid's body fluid through the tiny opening(s).

In contrast to *A. colemani*, egg laying activity is low during the first few days of this wasp's life. And then by the 4th day after emergence, an adult female can lay 10-15 eggs per day for the rest of its life of 15-27 days. During this time, an adult female may parasitize more than 200 aphids and kill about 40 by host-feeding. Because adults prefer to walk or hop rather than fly over the crop, they tend to remain localized. Studies have shown that dispersal by this wasp is poor in the greenhouse, and that most remain close to their points of release. This means these wasps should be released as close as possible to aphid infestations for best results. Note that aphids parasitized by *A. abdominalis* appear black while those parasitized by *Aphidius* species are bronze.

Adults are nocturnal and require a period of darkness for mating and egg-laying. Therefore, continuous lighting from a bright source will prevent reproduction. Likewise, lighting that eliminates dusk can also interrupt mating. It is also important to note that larvae drop to the ground and use grains of sand and possibly soil debris to form cocoons. If the larvae fall on plastic or concrete that is dry and free of debris, mortality of this predator will be high. Repeated or continuous release using banker plants is necessary under such situations to achieve acceptable suppression of aphids.

### Ladybeetles