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LADY BEETLES: SHOULD WE BUY THEM FOR OUR GARDENS?

Home Garden Series

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Overview

Lady beetles are a popular biocontrol method for aphids in home gardens and landscapes. Many gardeners purchase these insects at nurseries, garden centers, and online. This publication will discuss the drawbacks to using purchased lady beetles and suggest some alternatives for attracting and retaining local species.

A Brief History of Harvesting

Every serious gardener regards the lady beetle as a companion-in-arms in the fight against aphids and other garden pests. Best known in the United States is the convergent lady beetle (*Hippodamia convergens* Guérin-Méneville; Figure 1), a voracious consumer. As early as 1924, these insects were collected by the thousands from the Sierra Nevada mountain region and released in California's Imperial Valley for aphid control on commercial crops (Davidson 1924). The results were so impressive that lady beetle harvesting and shipping has become a lucrative biocontrol business (Bjørnson et al. 2011). Adult beetles are collected from their natural habitat, placed under prolonged hibernation, and shipped to farmers and home gardeners alike. Both adult and larval lady beetles (Figure 2) not only control aphids (Figure 3), but they also prey on scale insects, mites, beetle larvae, and immature bugs (Evans 2009).

Problems with Purchased Lady Beetles

Popular literature often recommends the purchase and release of lady beetles such as *Hippodamia convergens* (Lind 1998). Recently, however, researchers have raised concerns over the unintended ecological consequences of importing insects for biological control (Howarth 1991; Simberloff and Stiling 1996).

Figure 1. The Convergent lady beetle (*Hippodamia convergens* Guérin-Méneville) is one of the most common lady beetles in North America with a body size of about 1/4-inch long. The converging white lines on the prothorax behind the head are characteristic to this lady beetle species. (Photo credit: Mike Bush, WSU Extension)

Figure 2. Larval (immature) lady beetles are also predatory on soft-bodied insects like aphids. Be sure to recognize and conserve immature lady beetles. (Photo credit: Mike Bush, WSU Extension)

Figure 3. Milkweed aphid (*Aphis nerii* Kaltenbach) on a plant in a Master Gardener Demonstration Garden. Aphids are only about 1/8-inch long, but can build up high population numbers quickly. (Photo credit: Mike Bush, WSU Extension)

Degradation of Natural Habitat

Removal of a population from a natural ecosystem will have environmental consequences. While these consequences have not yet been studied for lady beetles, the environmental wisdom of this practice is questionable.

Competition with Local Insect Species

Populations of native beneficial insects are affected when new competitors are introduced to the system. While the convergent lady beetle is native to North America, it may not be commonly found in your area. *H. convergens* is such a good aphid predator that it may compete with and reduce populations of other local aphid predators, including lady beetles (Gardiner et al. 2011). The multicolored Asian lady beetle (Figure 4), *Harmonia axyridis*, is often cited as one of the intentionally released lady beetle species to North America and may compete with and displace native lady beetle species (Koch 2003).

Unintentional Introduction of Parasites

When lady beetles are collected en masse and released elsewhere, there is the potential to inadvertently transport another species. In the case of *H. convergens*, individuals may be carrying parasitic species including endoparasitoids, microsporidia, protozoa (eugregarines) and fungi (Bjørnson 2008; Riddick et al. 2009; Saito and Bjørnson 2006).

Not only will this undermine the success of the imported lady beetles, but these natural enemies can then attack local lady beetles and other beneficial insects (Day and Tatman 2006; Saito and Bjørnson 2006).

Figure 4. Multiple forms of the adult multicolored Asian lady beetle common to Washington State. (Photo credit: J. Vanden Houwen, WSU Extension)

Little Effectiveness in the Garden

The success of “catch and release” practices is questionable. Even the first recorded release resulted in beetles immediately flying away (Davidson 1924), presumably because some necessary resource was missing. Other researchers have reported similar difficulties with releases in Kansas (Starks et al. 1975). The most successful releases tend to be in nursery settings with high numbers of aphid-infested plants (Flint and Dreistadt 2005). Once the aphids have been eaten, however, the lady beetles disperse permanently (Dreistadt and Flint 1996; Flint et al. 1995). Releasing lady beetles into contained spaces like greenhouses improves retention (Raupp et al. 1994), but release to open gardens or landscapes is unlikely to be successful.

Action List for Attracting and Retaining Local Lady Beetles for Pest Control

Select Plants for Your Gardens and Landscapes that Provide Desirable Habitat

Perennial grassland species including grasses (Diepenbrock and Finke 2013) and wildflowers (Figure 5; Blaauw and Isaacs 2015) attract lady beetles and other natural predators, including lacewings (Figure 6), *Encarsia*, and parasitic wasps. Mown lawns, however, do not provide the same benefit (Blaauw and Isaacs 2015).

Provide Additional Food Sources

Lady beetles also eat fungus, fruit, and occasionally vegetation (Lundgren 2009). Larval stages benefit from pollen, while adults look for sugar sources such as nectar or honeydew in addition to their prey insects. These energy-rich supplemental foods improve lady beetle reproduction and survival over winter.

Reduce Insecticide Use

While insecticides kill pests, they can also eliminate natural predators. Injury can occur either through direct contact or by reducing their prey.

Figure 5. Wildflowers common in perennial grasslands attract and retain lady beetles and other natural predators. (Photo credit: Linda Chalker-Scott, WSU Extension Urban Horticulturalist)

Figure 6. Green lacewings (Chrysopidae) are natural predators attracted to wildflower gardens. Insect size is about 1/2-inch long. (Photo credit: Mike Bush, WSU Extension)

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Further Reading

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