



# Bagrada Bug

## *Bagrada hilaris* (Burmeister)

(Hemiptera: Pentatomidae)

### Background

The bagrada bug, a serious economic pest of agricultural crops, was discovered in several areas of Maui Island in October and November, 2014. A small population was found attacking Chinese cabbage and tatsoi in a student garden at the University of Hawaii Maui College campus, Kahului. In 2015, a population was found at a Kailua-Kona residence, and subsequently at large at the Mauna Kea Visitor Center, on Saddle Road, and in Waimea. A population was discovered at the University of Hawaii Waimanalo Research Station on Oahu in March, 2016.

### Description

This small stink bug has five immature life stages (Fig. 4B-E, Reed et al. 2013) before maturing into an adult (Fig. 1 & 4F). Adults are shield-shaped and can range in size from  $\frac{3}{16}$  to  $\frac{1}{4}$  inch; females are larger than males (Fig. 2 middle). Adults are black with orange and white markings. They are similar-looking to the harlequin bug, *Murgantia histrionica* (Fig. 3), but much smaller in size. The bagrada bug may also be confused with ladybird/ladybug beetles, however, unlike beetles, stink bugs have piercing needle-like mouthparts which they use to insert into and feed on host plants. Females lay oval, cream-colored eggs, which mature to become more of an orange-red color, on the undersides of leaves, on stems, and in soil around plants (Reed & Perring 2012). Eggs laid in soil are camouflaged and may easily be transported inadvertently to uninfested areas.

### Hosts

Preferred hosts are cruciferous vegetable crops including broccoli, tatsoi, cabbages (head cabbage, Chinese cabbages, etc.), cauliflower, kale, radish, turnip, mustards, brussels sprouts, sweet alyssum, collards, and arugula. The bagrada bug can also feed on corn, cucumbers, okra, sugarcane, papaya, potato, cotton, figs and some legumes. In the absence of preferred host crops, this polyphagous pest will feed on a variety of weeds, also in the Brassicaceae plant family, which may serve as a reservoir for the population.



Figure 1. Adult bagrada bug.



Figure 2. Female (top), male and female in copulation (middle) and a mature nymph (bottom) of bagrada bug on a dime. Photo by Surendra Dara.



Figure 3. Look-alike, the harlequin bug. Photo: Mike Quinn (<http://creativecommons.org/licenses/by-nd-nc/1.0/>).

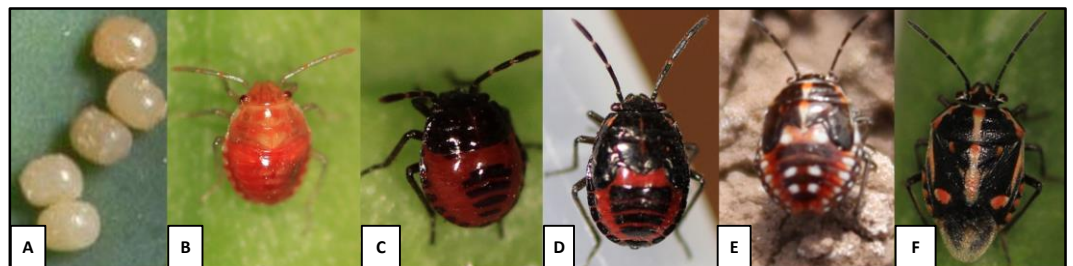


Figure 4. Life stages of the bagrada bug. A) Barrel shaped eggs, B-E) different nymphal instars, and F) adult. Younger nymphs only have black and orange coloration while the later instars and adults develop white markings as well. A & E photos by Eric Natwick and the rest by Surendra Dara.



### Damage

In leafy hosts (kale, collards) feeding damage causes stippled, wilted leaves and central shoots can become stunted or break. Fig. 5 shows early signs of damage from a small infestation of bagrada bug, however, in heavy infestations (Fig. 6), crops can become completely unsellable. Feeding on apical meristems of cole crops (broccoli, cauliflower, cabbage) lead to multiple, unmarketable head development (Fig. 7), or no head development at all (Fig. 8). Heavy feeding can lead to plant death (Palumbo and Natwick 2010, Reed et al. 2013). In California, the bagrada bug has been very expensive for *Brassica* crop growers to control with conventional insecticides, and the organic farmers have taken severe losses due to lack of efficacious control measures acceptable to organic certifiers.

On Maui, populations have dropped in numbers, as well as host plant damage, since initial bagrada bug infestations were discovered. Similarly, numbers on the Big Island have also been at low levels in recent months.

### Distribution

The bagrada bug is native to Africa, India, and Asia (Howard 1906). In 2008, it was discovered in the U.S. for the first time in California, and now spread to southern Nevada, Utah, southern Arizona, New Mexico, and Texas (Reed et al. 2013). In Hawaii, it is present on Maui (2014), Hawaii Island (2015), and Oahu (2016).

### Management

University of Hawaii CTAHR is researching control options for Hawaii, please contact your local extension agent.

### If you suspect an infestation of bagrada bug, please call:

**Hawaii Island:** 974-4146 (Hilo); 808 323-7579 (Kona)

**Kauai:** 241-7132

**Maui:** 873-3949

**Oahu:** 973-9525

**Or Email:** [hdoa.ppc@hawaii.gov](mailto:hdoa.ppc@hawaii.gov)

### Acknowledgments

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### Reference

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Figure 5. Damage to tatsoi, showing stippling and early signs of wilting.



Figure 6. Damage to collard greens.



Figure 7. Damage to broccoli, showing unmarketable, small crowns. Photo: John Palumbo.



Figure 8. Damage to cauliflower— no crown production. Photo: John Palumbo.