



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. Shortly after, the bagrada bug was found in Makawao and Kula.

Description

This small stink bug has five immature life stages (Fig. 5B-E, Reed et al. 2013) before maturing into an adult (Fig. 1 & 5F). Adults are shield-shaped and can range in size from $\frac{3}{16}$ to $\frac{1}{4}$ inch; females are larger than males (Fig. 3 middle). Adults are black with orange and white markings. They are similar-looking to the harlequin bug, *Murgantia histrionica* (Fig. 2), but much smaller in size (Fig. 4). 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 very easily mistakenly transported to uninfested areas.



Figure 1. Adult bagrada bug.



Figure 2. Look-alike, the harlequin bug.
Photo: Mike Quinn
(<http://creativecommons.org/licenses/by-nd-nc/1.0/>).



Figure 3. Female (top), male and female in copulation (middle) and a mature nymph (bottom) of Bagrada bug on a dime. Photo by Surendra Dara.

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



Figure 4. A bagrada bug sitting on a harlequin bug, showing size difference. Photo by Surendra Dara.

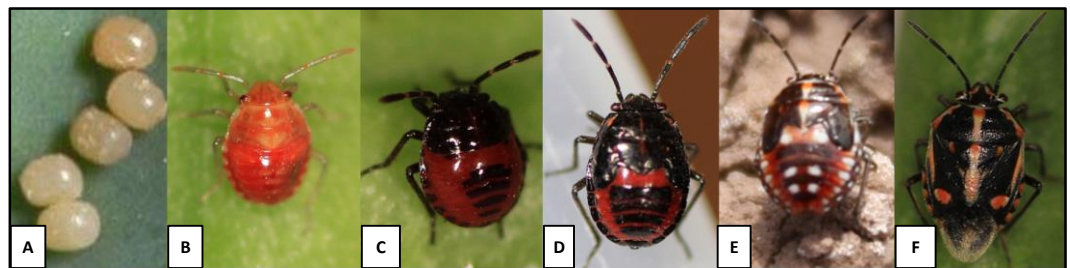


Figure 5. Life stages of the Bagrada bug. A) Barrel shaped eggs, B-E) different nymphal instars, and F) adult. Younger nymphs only have black and orange coloration while the later instars and adults develop white markings as well. A & E photos by Eric Natwick and the rest by Surendra Dara.



family, which may serve as a reservoir for the population.

Damage

In leafy hosts (kale, collards) feeding damage causes stippled, wilted leaves and central shoots can become stunted or break. Fig. 6 shows early signs of damage from a small infestation of bagrada bug, however, in heavy infestations (Fig. 7), crops can become completely unsellable. Feeding on apical meristems of cole crops (broccoli, cauliflower, cabbage) lead to multiple, unmarketable head development (Fig. 8), or no head development at all (Fig. 9). 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.

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 only reported from Maui Island.

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

Hawaii Island: 974-4146

Kauai: 241-7132

Maui: 873-3949

Oahu: 973-9525

Or Email: hdoa.ppc@Hawaii.gov

Acknowledgments

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Reference

Howard, C.W. 1906. The bagrada bug (*Bagrada hilaris*). *Transvaal Agric. J.* 5: 168-173.

Natwick, E.T. 2014. Email communication, 3 December 2014.

Palumbo, J.C. and E.T. Natwick. 2010. The Bagrada bug (Hemiptera: Pentatomidae): A new invasive pest of cole crops in Arizona and California. [Online] *Plant Health Progress* doi:10.1094/PHP-2010-0621-01-BR. Available at:

<<http://www.plantmanagementnetwork.org/pub/php/brief/2010/bagrada/>> (Accessed: 28 November 2014).

Reed, D.A., J.C. Palumbo, T.M. Perring & C. May. 2013. *Bagrada hilaris* (Hemiptera: Pentatomidae), an invasive stink bug attacking cole crops in the southwestern United States. *J. Integ. Pest Manage.* 4(3): 1-7.

Reed, D.A. and T.M. Perring. 2012. Bagrada bug: biology, host range and effects on cole crops. Center for Invasive Species Research. University of California, Riverside. [Online] Available at: <http://cISR.ucr.edu/pdf/capca-bagrada-darcy-reed-sept-19-2012.pdf> (Accessed: 28 November 2014).



Figure 6. Damage to tatsui, showing stippling and early signs of wilting.



Figure 7. Damage to collard greens.



Figure 8. Damage to broccoli, showing unmarketable, small crowns. Photo: John Palumbo.



Figure 9. Damage to cauliflower— no crown production. Photo: John Palumbo.