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The Good, The Bad... And the Bugly!

Some Common Insects to Know

UC MGP SDC – Class of 2023
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Bagrada Bug

Bagrada hilaris



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Scientific Classification

- **Phylum:** Arthropoda
- **Class:** Insecta
- **Order:** Hemiptera
- **Family:** Pentatomidae
- **Genus and species:**
Bagrada hilaris
- Bagrada Bugs develop through instars.
- ¼ " body (5-7mm)



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Hemiptera- Piercing sucking order of insects
Pentatomids- 5 sided. Penta- 5...

Native to Africa - It was first reported in the United States in June of 2008 in the county of Los Angeles, California

From Egg to Instar to Adult

- Eggs laid in small clusters
- Nymphs are a different color



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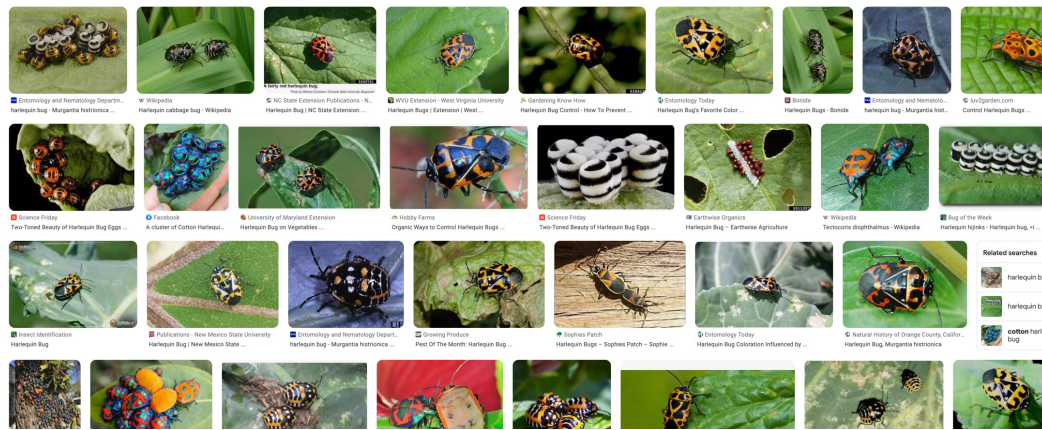
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All Turf grass is susceptible to damage, plus raised garden beds and soil under fruit trees and basically anywhere soil is exposed and there is some adult attractant, like fruit on the ground unpicked.

Masked chafers are large [C-shaped](#) beetle larvae that feed on roots of turfgrass plants. These grubs are white, up to 1 inch (2.5 cm) in length, with dark translucent dorsal stripes, [brown head capsules and legs](#), and a characteristic pattern of bristles on the underside of the posterior end of the abdomen (the [raster](#)). Masked chafers have a scattering of bristles, while less commonly encountered May or [June beetles](#) have two parallel rows of bristles. Masked chafers are larger than [black turfgrass ataeinus grubs](#) and have a slight constriction at the forward portion of the abdomen, which helps distinguish them. [Adult beetles](#) are golden brown, hairy on the underside of the thorax, and have a darker brown head. *Cyclocephala hirta* is common throughout California; *C. pasadenae* is found in southern California. Both species complete one generation per year overwintering as mature larvae, which form earthen cells in soil where they pupate. Adult males are attracted to lights at night, mostly from mid-June through July.

Common Lookalikes



This is a screenshot of a Google image search for harlequin bugs.

The bagrada bug is a true bug in the order Hemiptera, and more specifically is a stink bug in the family Pentatomidae. It causes substantial damage to cruciferous crops such as broccoli, cabbage, mustards, and cauliflower, as well as infests a wide range of other crops and weeds species (Palumbo and Natwick 2010, Hill 1975). It has become a serious agricultural pest in the southwestern United States

Host Plants

- The principal host plants of the bagrada bug are cruciferous crops including broccoli, cauliflower, cabbage, kale, turnip, radish, chard, mustard, arugula, rutabaga, collard greens, bok choy, napa, and broccoflower. However, other plants and crops can become infested as well, including Bermuda grass, sorghum, sudan grass, potato, canola, cotton, corn, sunflowers, papaya, capers, cantaloupe, pearl millet, sugar cane, and wheat.
- Legumes such as snap peas, green beans, and mung beans may become infested.
- In the absence of the preferred cruciferous crops, adults will feed on weeds occurring in and around fields. Bagrada bugs will feed on weedy plants, including shortpod mustard, London rocket, shepard's purse, sweet alyssum, vetch, lambsquarter, Indian mustard, pill-pod spurge, wild juju.
- Bagrada bugs can be found aggregating and attempting to feed on many other plants that are non-hosts.



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Damage

- visible white patches, wilting, desiccation, and scorching of the feeding areas



Figure 9. *Bagra da hila ris* feeding damage resulting in unmarketable broccoli plant with small multiple crowns. Photograph by [John Palumbo](#), University of Arizona.



Figure 7. *Bagra da hila ris* feeding damage on two-leaf-stage broccoli plant. Photograph by [John Palumbo](#), University of Arizona.



Figure 10. *Bagra da hila ris* feeding damage resulting in "blind" cauliflower plants. Photograph by [John Palumbo](#), University of Arizona.



Figure 8. Feeding damage on broccoli leaves by *Bagra da hila ris*. Photograph by [Gevork Arakelian](#), Los Angeles County Agriculture Commissioner's Office.



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In the absence of the preferred cruciferous crops, adults will feed on weeds occurring in and around fields. (Reed et al. 2013, Singh and Malik 1993). Bagrada bugs will feed on weedy plants, including shortpod mustard, London rocket, shepard's purse, sweet alyssum, vetch, lambsquarter, Indian mustard, pill-pod spurge, wild jujube, corn-sow thistle, nut sedge, and field bindweed (Reed et al. 2012, Singh and Malik 1993).

Management



Figure 6. *Bagrada hilaris* feeding damage on cotyledons of broccoli seedling. Photo by [John Palumbo](#), University of Arizona.

Management ([Back to Top](#))

Crucifer Pests:

Insect management for crucifer crops is an important and relevant area for Florida agriculture. It is not yet known if current pest management practices in Florida's crucifer crop production will provide adequate control of bagrada bugs; however, extensive information on [crucifer insect pest management](#) is available.

Monitoring:

Early detection is crucial due to the ability of bagrada bug populations to rapidly increase. Monitoring should begin before planting by scouting and inspecting areas around the field intended for production. Sweep netting and careful visual observation of the soil surface, weeds, grasses, and other vegetation surrounding the field are essential to determine if bagrada bugs are present. Fields surrounded by weedy areas with an abundance of wild mustards or other host plants may be at a higher risk for bagrada bug infestation. Regularly inspect all plants in the field, as well as all plant shipments coming in or going out of the operation. Collect and observe bagrada bugs during the day, taking care not to disturb the plants so that the bugs will not drop to the soil surface or fly away. Black light trapping is not effective; however, visual observation at night with a fluorescent lamp is effective (Huang et al. 2012). Scouting should coincide with peak activity occurring during the warm parts of the day to

improve accuracy of field sampling.

Action threshold levels are defined as the levels of pest population at which control should be implemented to avoid significant crop damage. The action threshold levels for the bagrada bug are not yet established; however, based on preliminary field trials, plant damage and crop losses were reduced when contact insecticides were applied when populations exceeded one adult per three row feet of seedlings or transplants (Reed et al. 2013).

Chemical control:

Young seedlings are the most susceptible to feeding damage, and should be protected by insecticides if a field has a history of bagrada bugs. Contact foliar insecticides applications are the most effective during the afternoon and early evening during the height of insect activity on plants (Chauhan and Yadav 2007, Huang et al. 2012); however, because bagrada bugs fly away when disturbed, adults can easily escape before contact with the insecticide and return later (Reed et al. 2012). Additionally, bagrada bugs may drop to the soil to avoid contact with insecticides. Field trials in India demonstrated that sowing imidacloprid-treated seed provided higher productivity and reduced plant damage (Ahuja et al. 2008). Further bio-efficacy evaluations in India and in Arizona demonstrated positive results using pyrethroids, pyrethrins, neonicotinoids, and organophosphate insecticides to control bagrada bugs and increase yields (Singh et al. 2011, Reed et al. 2012).

Cultural control:

Weed suppression and removal of crop residues after harvest in and around fields during the growing season and the overwintering season may help reduce sources of infestation (Palumbo and Natwick 2010, Reed and Perring 2012). Seedlings and transplants for crucifer production may be isolated in protected greenhouses to exclude bagrada bugs during the most vulnerable stages of plant development (Reed and Perring 2012). Planting clean, non-infested transplants from nursery stock is critical to reduce the spread and potential outbreaks of bagrada bug populations. Screened tunnels, floating row covers, and fine mesh screening material can be used to cover and protect field plantings. Burying the edges of the protective covers will help prevent bagrada bugs from reaching the plants.

Biological control:

Research is proceeding to assess efficacy of entomopathogenic fungi against the bagrada bug. *Beauveria bassiana*, *Metarhizium anisopliae*, and *Paecilomyces fumosoroseus* are examples of entomopathogenic fungi that attack different types of insects, and are being evaluated for use against the bagrada bug.

Natural enemies: Generalist predators including spiders may attack bagrada bugs. Parasitoids that attack the eggs of bagrada bug include flies (Families: Sarcophagidae and Tachinidae) and wasps (Family: Scelionidae). However, there are no known natural enemies in the U.S.A. that specifically prey on them (Reed and Perring 2012). The ability of the bagrada bug to rapidly increase population size is one of the challenges to finding effective biological controls.

Selected References [\(Back to Top\)](#)

So...

- "Good" or "Bad"



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- <https://ipm.ucanr.edu/PMG/PESTNOTES/pn74166.html>
- https://entnemdept.ufl.edu/creatures/veg/bagrada_bug.htm
- https://en.wikipedia.org/wiki/Bagrada_hilaris



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