

# Bagrada Bug: A New Pest for Arizona Gardeners

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## Introduction

The bagrada bug *Bagrada hilaris* (Burmeister) (aka painted bug) was first found in California in June of 2008 and was officially identified in Yuma Arizona in September of 2009 (Palumbo and Natwick 2010). Since then it has been confirmed in many other parts of Arizona including La Paz, Maricopa, Pima, and Pinal counties. This is a new pest insect that is native to Africa, India and Pakistan among others (Palumbo and Natwick 2010). The bagrada bug is in the order Hemiptera and family Pentatomidae. Similar to others in this order, the bagrada bug has piercing-sucking mouthparts which are used to ingest plant juices, similar to a straw. These insects are sometimes mistaken for harlequin bugs *Murgantia histrionica*. While these two insects are in the same family, they are two different genera and species. The bagrada bug is smaller than the harlequin and has a different color pattern (Halbert and Egar 2011).

## Biology

Adult bagrada bugs are 5-7 millimeters long with a shield like body (Palumbo and Natwick 2010). They are black with orange and white markings. While they have wings, they are more commonly seen walking than flying (Gunn 1918). Nymphs are smaller versions of the adult but lack wings and go through five stages of development. Newly hatched nymphs are an orange-red color and get darker as they molt into later instars (Halbert and Egar 2011). Eggs are creamy-white but change to orange as they develop. They are oval-shaped with a band that gives it the facade of a lid (Gunn 1918). Eggs are commonly deposited in the soil but can occasionally be found on host plants. Eggs can take five to eight days to hatch and 100 eggs can be laid in two to three weeks by a single female (Infonet-Biovision 2012). Like other pentatomids, bagrada bugs gather together in large clusters. As many as 2,000 nymphs of different instars

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Bagrada Bug Adults

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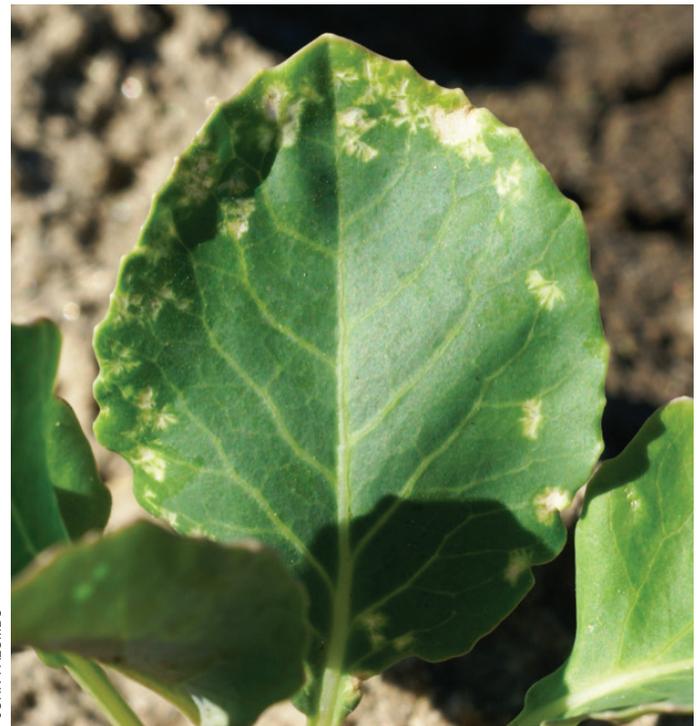
Bagrada Bug Egg Hatch

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Bagrada Bug Adults

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Bagrada Bug Injury (Stippling)

have been seen feeding on a single cabbage plant (Gunn 1918). Length of life cycle varies depending on temperature with several generations per year possible (Halbert and Egar 2011).

In its native India, bagrada has four generations per year (Gunn 1918). Length of the nymphal stage varies but is on average 16 days long. Adult females live longer with a total life cycle (eggs to adult death) averaging 25 days compared to males who live an average of 19 days (Tiwari and Saravanan 2009). Under desert growing conditions,

their activity seems to peak twice a year, fall (Sept-Oct) and again in the spring (May-June). This is due to two factors; 1) temperature, higher numbers are seen with higher temperatures (avg. 85-90 F) and 2) host plant availability.

## Damage

Nymphs and adults cause feeding damage on leaves and the growing points of plants. Initial damage to leaves is observed along the margins as stippling, or small tan or white dots left where the leaves were pierced by insect



Bagrada Bug Nymphs

mouthparts and the juices sucked out. If feeding pressure is severe enough, the stippled areas merge and the leaf eventually wilts and dies.

Although damage attributed to bagrada bugs has been observed in corn, cotton, potatoes plus other crops and weeds (Singh and Malik 1993), members of the plant family Brassicaceae have been more heavily affected in home gardens. The brassicas include many cool season vegetables, such as kale, mustard, cabbage, arugula, broccoli, cauliflower, radishes, and brussel sprouts. Bagrada bugs feeding on the growing points of certain crops, such as broccoli and cauliflower, may result in a symptom called “blind head”, where no edible crown is produced (Palumbo and Natwick 2010). Blind head or multiple heads may not be evident until significant investment in plant care through watering and fertilizing has been made.

## Management

Most research to date has been about managing bagrada bugs in large-scale agricultural crops. The successes in this area are attributed primarily to pesticide applications containing pyrethroids (Palumbo 2011). While these insecticides can be effective, many home gardeners request non-chemical methods.

Cultural practices that may be used to manage bagrada bugs in home gardens or community garden plots include the following.

- Monitoring weekly to look for egg-laying sites on the leaves or in the soil.
- Hand picking early in the season to reduce populations.
- Cultivation of soil surface to destroy eggs.
- Removal of old crop debris and weeds in the family Brassicaceae (formerly family Cruciferae) where bugs may seek refuge.



Bagrada Bug Nymphs

- Soapy water solution can be effective against bagrada bugs by washing young bugs off the plants but this is not a long-term solution since they will come back once the plant is dry.
- Alyssum is a known host plant of bagrada bug. If you have this flower in your yard, consider monitoring it for bug damage, or removing Alyssum if you want to grow cole crops.
- Instillation of lightweight fabric row covers may help with the establishment of susceptible direct seeded plants.

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