COOPERATIVE EXTENSION
UNIVERSITY OF HAWAI'I AT MĀNOA
COLLEGE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES

Bagrada Bug: A Summertime Pest of *Brassicas*

Joshua Silva[1], Kylie Tavares[1], and Robin Shimabuku[2]
[1]Department of Tropical Plant and Soil Sciences, [2]Department of Plant and Environmental Protection Sciences

Background, Identification

Bagrada bug (*Bagrada hilaris*) is an invasive stink bug that causes severe damage to cole and mustard crops (Fig. 1). Native to Africa, Bagrada bug was first found in the western US in 2008 and in Hawaii in 2014. Bagrada is typically a summer pest, with adults being most active at temperatures around 85F, but bagrada can survive cooler or hotter temperatures by hiding beneath soil, leaves and stems, and plant debris (Reed et al. 2014; LeVeen and Hodges 2018).

Fig. 1. Bagrada bug adult and leaf damage

Bagrada adults can be identified by their black exoskeleton and orange markings, as opposed to other stink bugs that have different colors and patterns (Fig. 2 & 3). Nymph stages in its lifecycle can also be mistaken for other insects such as lady beetles (Reed et al. 2014).

Fig. 2. Stink bug nymph

Fig. 3. Bagrada bug life cycle; egg→4 nymph stages→ adults
(Photos: S. Dara & E. Natwick, Univ. California Cooperative Extension)

Hosts, Damage

The primary host plants for bagrada bug are *Brassica* plants, such as mustard greens, cabbages, kale, broccoli, and cauliflower. When populations are high but *Brassica* plants become scarce, secondary hosts also include corn, cucumbers, okra, papaya, beans, sugarcane, and even weedy species of *Brassicaceae* (Matsunaga 2016). In 2018, field trials were conducted on Maui evaluating cole crop host preference of bagrada bug. The results showed that mizuna, chinese cabbage, arugula and baby pak choi are the preferred hosts (Tavares et al.,unpublished).

Fig. 4. Stippling damage on pak choi

Fig. 5. Suspected stunted damage

Feeding damage by bagrada bug typically includes white patches, stippling, and wilting caused by piercing-sucking

Fig. 6. Feeding damage to broccoli
(Photo: John Palumbo, Univ. of Arizona)

mouthparts (Fig. 4). In cases of high populations of bagrada, damage to apical meristems can lead to stunted and unmarketable shoots and heads, or even complete plant collapse (Fig. 5&6) (Matsunaga 2016; LeVeen and Hodges 2018).

Management Practices (Reed et al. 2014; LeVeen and Hodges 2018)

1. **Prevention**

Bagrada females lay eggs both in the soil and also on leaves or stems of host and non-host plants. Prevent the spread into non-infested areas by not transporting soils and plants from areas with known bagrada bug infestations

2. **Scouting**

Since bagrada bug populations can grow quickly, early detection through regular scouting is important in effective management. Scout not only host crops in the production area, but also seedlings prior to planting and soil surfaces and weeds, especially of the mustard varieties, in the surrounding areas. Scout during the late morning and afternoons when the pest is most active.

3. **Cultural Practices**

Remove weed hosts of bagrada bug and crop residues after harvest to minimize areas for bagrada to hide and thrive. Use of physical barriers such as screen houses or floating row covers can effectively prevent bagrada bug infestations (Fig. 7). However, it is important to ensure the screen material is intact and edges are buried to exclude bagrada from the crop.

Fig. 7. Screen exclusion

4. **Chemical Control**

Control of bagrada bug using pesticides can be challenging, but there are products that have shown to be effective. A pesticide trial on Maui in 2017 found carbamate, pyrethroid, neonicotinoid, spinetoram, and spinosad to significantly reduce mean bagrada number per plant to zero or nearly zero at 1 to 7 days after treatment (Fig. 8a,b). Organic pyrethrins, flonicamid, and azadirachtin had no significant differences compared to the untreated check. The low efficacy of organic insecticides is due to the short residual activity of the chemical. Increased efficacy of organic insecticides can be achieved by ensuring the insecticide comes in direct contact with the bagrada bug during its active periods (Shimabuku et al., unpublished). If using organic pyrethrins, better control can be achieved by drenching the soil around and on the plant. When applying pesticides, always read the label for proper instructions on handling and use. Further research is being conducted on biological controls and products.

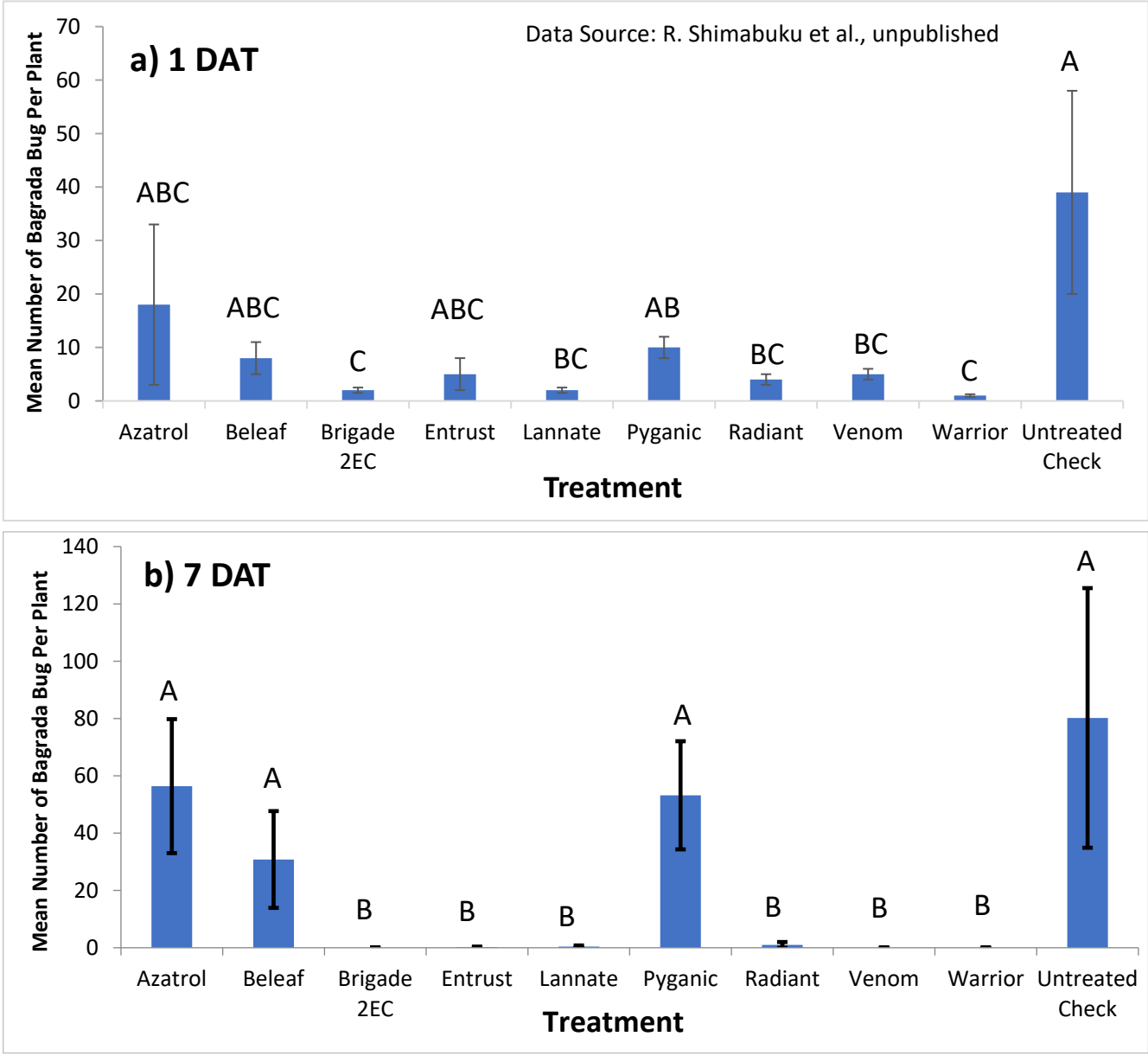

Fig. 8. Mean bagrada bug per plant for 9 insecticides at a) 1 day after treatment and b) 7 days after treatment

Table 1. Insecticides Used in 2017 Bagrada Bug Trial

Insecticide	Chemical AI	MOA	Rate
Untreated Check	Water + surfactant		
Brigade – 2EC (Bifenthrin)	Pyrethroid	3	6.4 oz/A
Lannate SP (Methomyl)	Carbamate	1A	1.5 lbs/A
Warrior	Pyrethroid	3	3.84 fl.oz./A
Radiant	Spinetoram	5	10 fl.oz./A
Entrust SC	Spinosad	5	4 ozs/A
Venom	Neonicotinoid	4A	4 oz/A
Pyganic 5 EC	Pyrethrins	3	18 fl.oz/A
Beleaf	Flonicamid	9C	2.8 oz./A
Azatrol	Azadiractin	18B	2.6 pts/A

References

LeVeen, E. and A.C. Hodges. 2018. Bagrada Bug, Painted Bug, Bagrada Hilaris (Burmeister) (Insecta: Hemiptera: Pentatomidae). University of Florida, IFAS Extension, EENY596. Retrieved from https://edis.ifas.ufl.edu/pdffiles/IN/IN104100.pdf

Matsunaga, J. 2016. Bagrada Bug: *Bagrada hilaris* (Burmeister). State of Hawaii, Department of Agriculture. New Pest Advisory, No. 14-02. Retrieved from https://hdoa.hawaii.gov/pi/files/2013/01/Bagrada-hilaris-NPA4-5-16.pdf

Reed, D.A., Perring, T.M., Newman, J.P., Bethke, J.A., and J.N. Kabashima. 2014. Bagrada Bug: Integrated Pest Management for Home Gardeners and Landscape Professionals. UC Statewide Integrated Pest Management Program. Retrieved from http://ipm.ucanr.edu/PDF/PESTNOTES/pnbagradabug.pdf

Shimabuku, R., Mau, R., Wong, K., Chou, M.Y. Unpublished. Insecticide Evaluations for Bagrada Bug on Cole Crops: December 2016 – January 2017. Retrieved from https://gms.ctahr.hawaii.edu/gs/handler/getmedia.ashx?moid=65619&dt=3&g=12

Tavares, K. 2018. Brassica Pests: Cabbage Webworm and Bagrada Bug. University of Hawaii Cooperative Extension. Retrieved from https://gms.ctahr.hawaii.edu/gs/handler/getmedia.ashx?moid=65619&dt=3&g=12