

Bagrada bug

Bagrada hilaris



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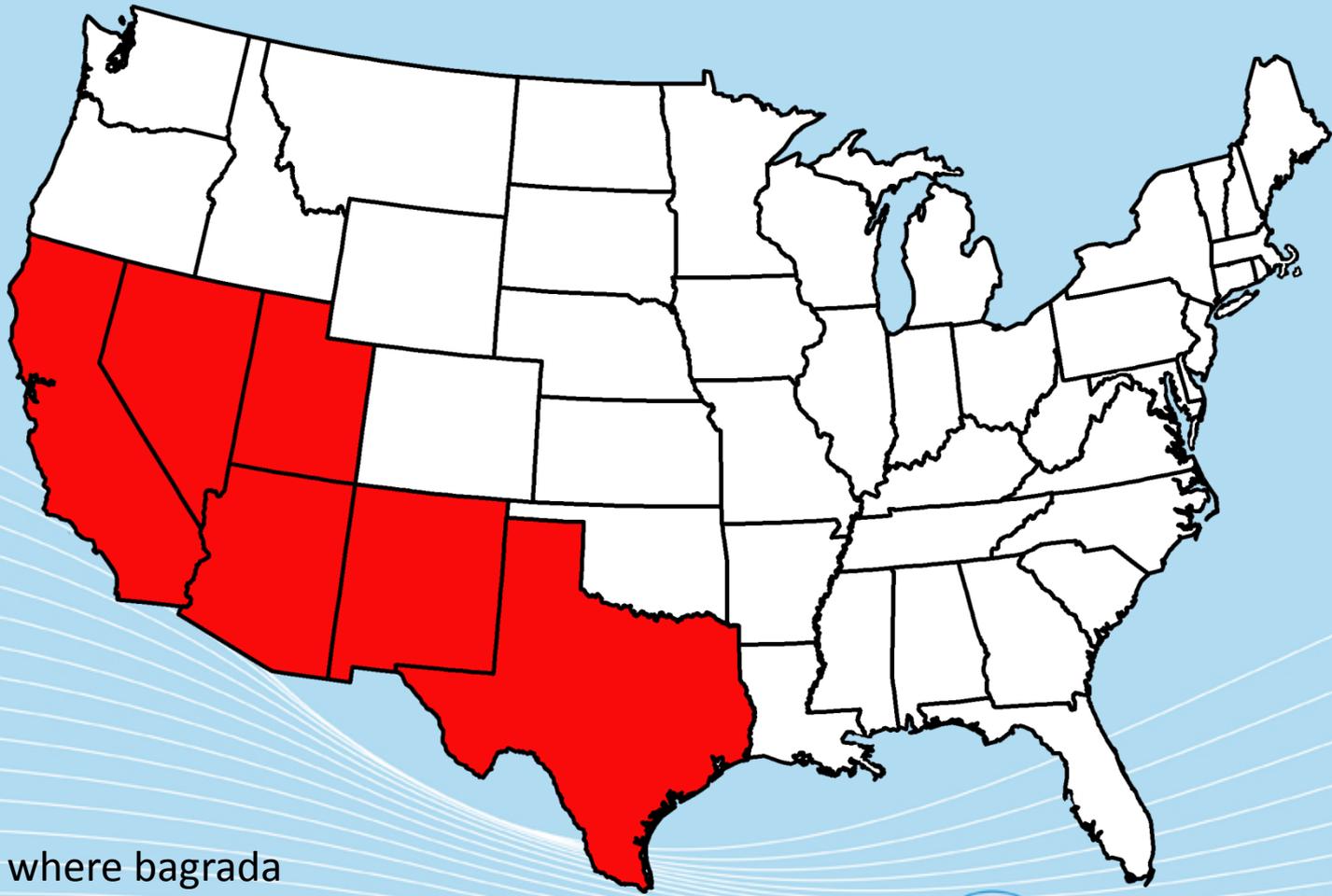
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Bagrada bug

- Native to Africa, India, and Asia
- First detected in the Western Hemisphere in southern coastal California in 2008
- A known pest of cruciferous crops (Brassicaceae) wherever it occurs.



Distribution in the U.S.



■ States where bagrada
bug has been found



Host Range



- The bagrada bug primarily attacks plants in the family Brassicaceae
- Important crop hosts include broccoli, cauliflower and cabbage
- Weed hosts include London rocket and Indian mustard
- Ornamental hosts include stock and sweet alyssum
- Can survive on some grasses (corn and Sudan grass)



Identification: Eggs



Identification: Nymphs



1st instar newly emerged, the black coloration has not appeared yet



2nd instar (top), 3rd instar (bottom)



5th instar



1st instar with the typical black coloration

Image credits: lower left – C. Scott Bundy, New Mexico State University; all others - Ta-I Huang, University of Arizona



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Identification: Adults

Bagrada bug and harlequin bug have similar markings...



...however, the harlequin bug is much bigger.

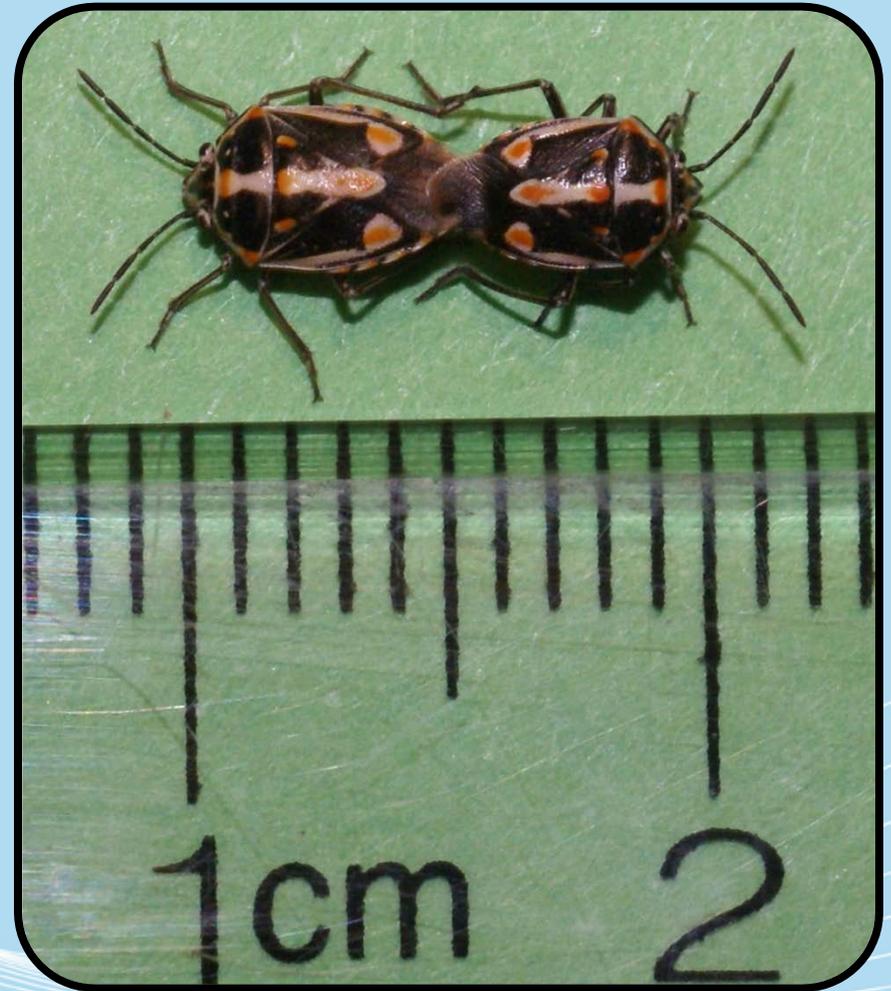


Image credits: right - John Palumbo and Ta-I Huang, University of Arizona; top left - Joe Eger, Dow AgroSciences; bottom left - Lyle Buss, Department of Entomology and Nematology, University of Florida



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Life Cycle

Eggs – 7 days



1st instar - 4 days



2nd instar - 6 days



3rd instar 6 days



4th and 5th instars - 15 days



Adults – 4 weeks



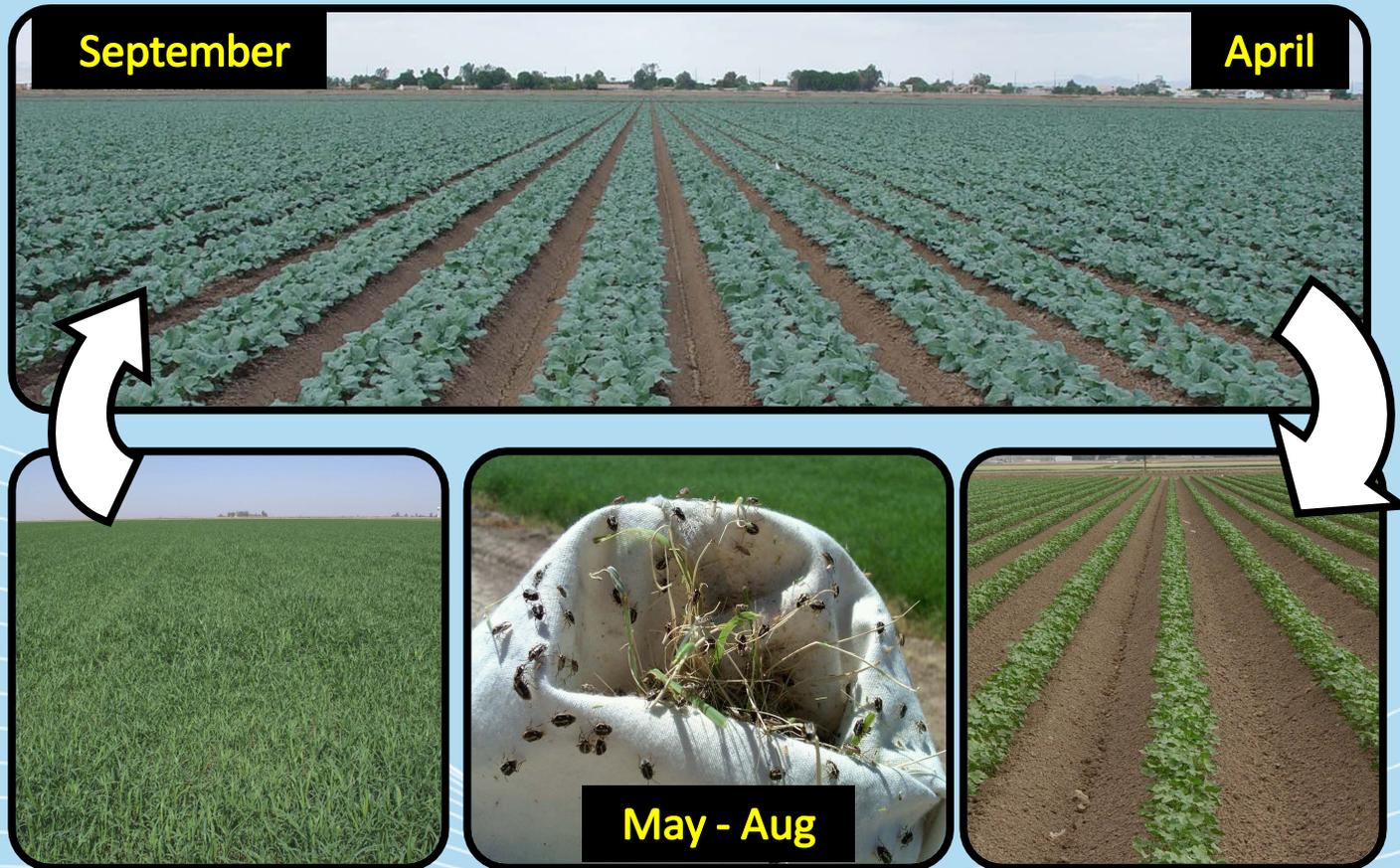
Mean days of development at 24°C



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Seasonal Distribution and Landscape Ecology



September

April



Sudan grass



May - Aug

Bermuda grass



Cotton



Feeding Behavior



Bagrada bugs feeding on newly emerged broccoli seedling.

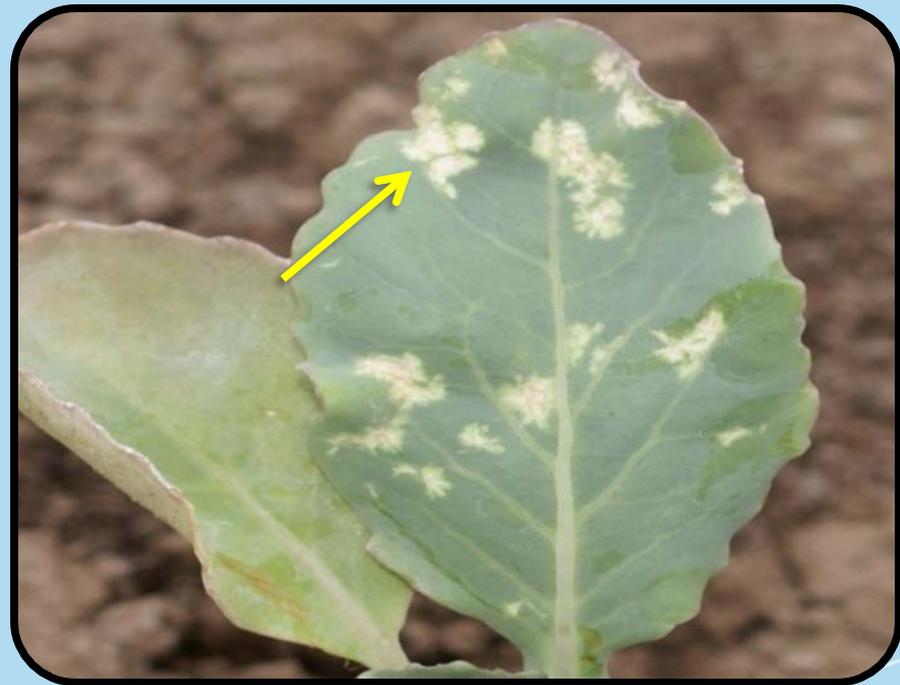


Feeding signs on 2-d old broccoli cotyledons.

Feeding Behavior



Fresh feeding signs on 2-leaf stage broccoli.



Old feeding signs on a week old cauliflower transplant





Bagrada bug feeding damage on mustard leaves.



Bagrada bug feeding damage on kale leaves.

Economic Damage



Bagrada bug feeding on collard leaves.



Economic Damage



Dead broccoli seedling



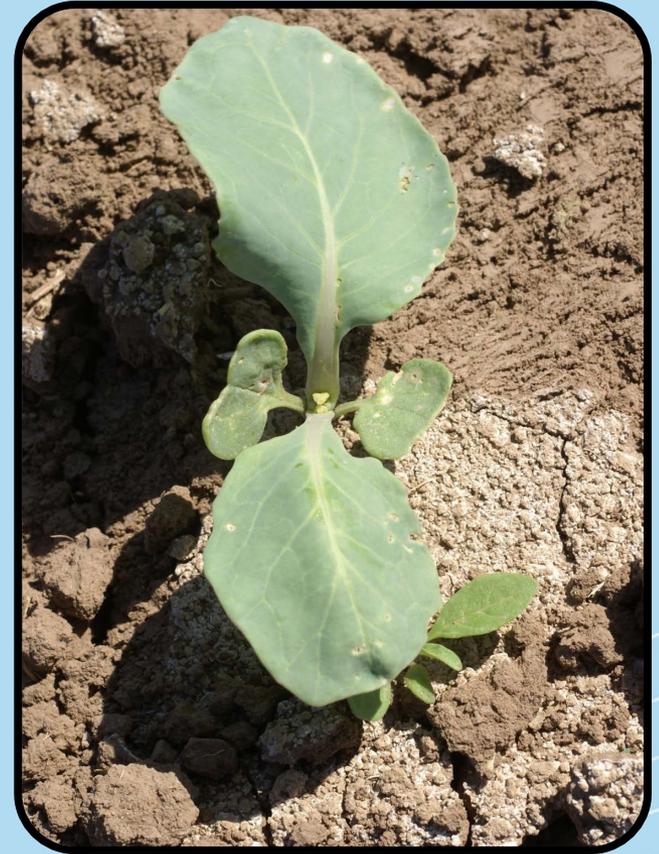
Feeding damage on apical meristem/
cotyledons



Economic Damage



“Blind” cauliflower plant



“Blind” cabbage plant



Economic Damage to Head Forming Crops



Forked broccoli plant



Multi-headed cabbage
“unmarketable”



Multi-crown broccoli
“unmarketable”



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Aggregation Behavior



Multiple mating pairs on 2-leaf broccoli plant



Adults and nymphs on broccoli seed heads



Adults and nymphs on canola seed pod

Scouting



Examine the undersides of cotyledons



Damaged/desiccated cotyledons on seedling broccoli



Adult bagrada bugs are small



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Bagrada bug on soil surface



Bagrada bug on soil at base of plant

Scouting



Bagrada bug can also be found in cracks in dry soil

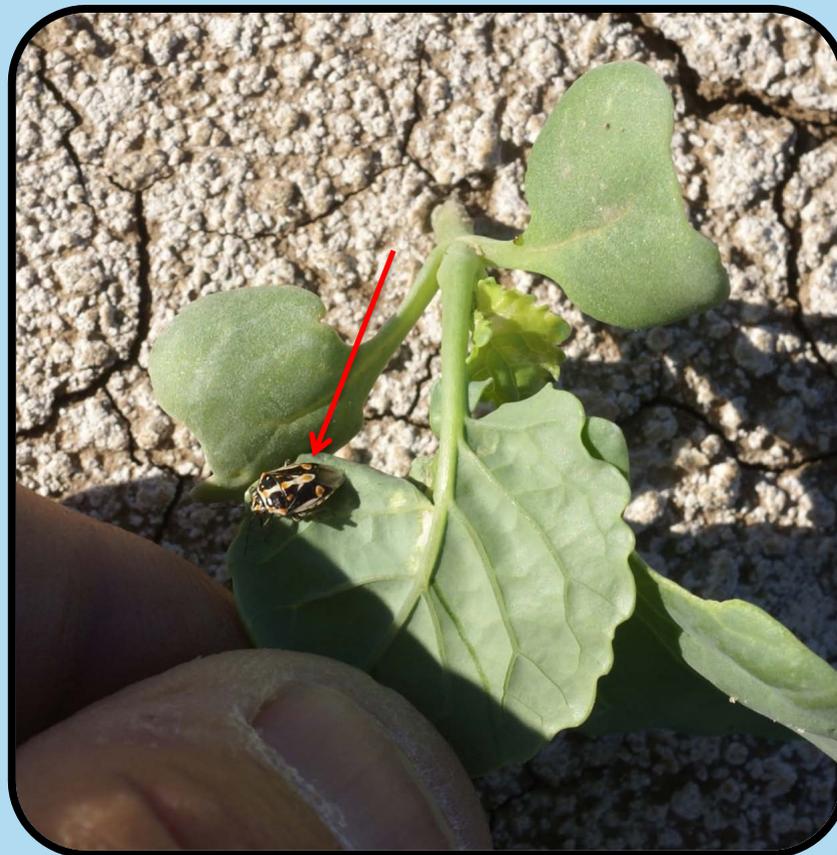




Fresh feeding signs on 2-leaf stage broccoli plants



Scouting



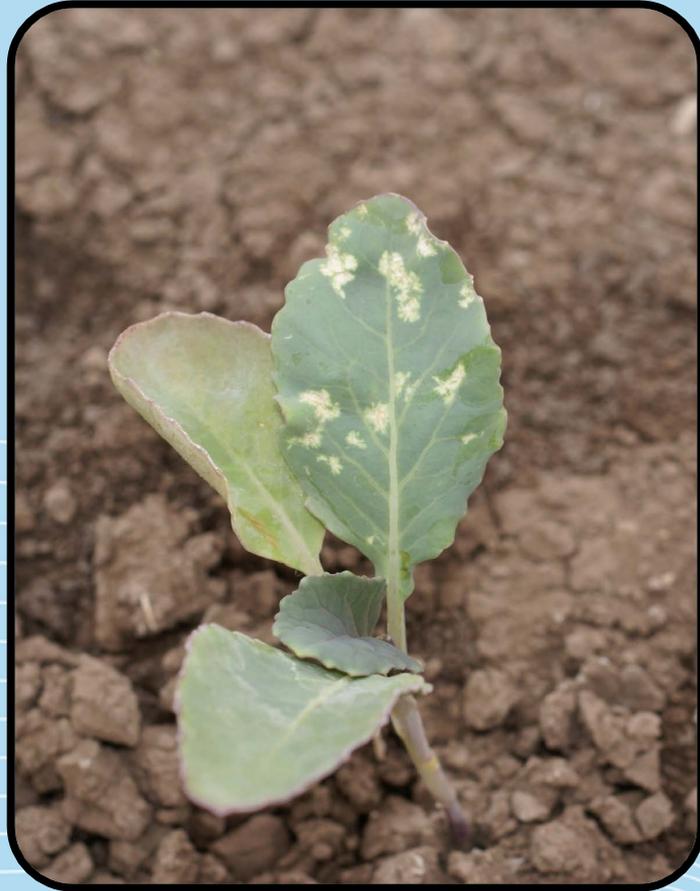
Bagrada bug adult under a leaf (2-leaf stage broccoli plant)



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Scouting



Feeding signs on recently transplanted cauliflower plant.



Bagrada bug adult on surface of recently irrigated soil.



Biological Control



Assassin bug nymph
feeding on bagrada



Parasitic wasp, *Telenomus*



Omnivorous earwigs

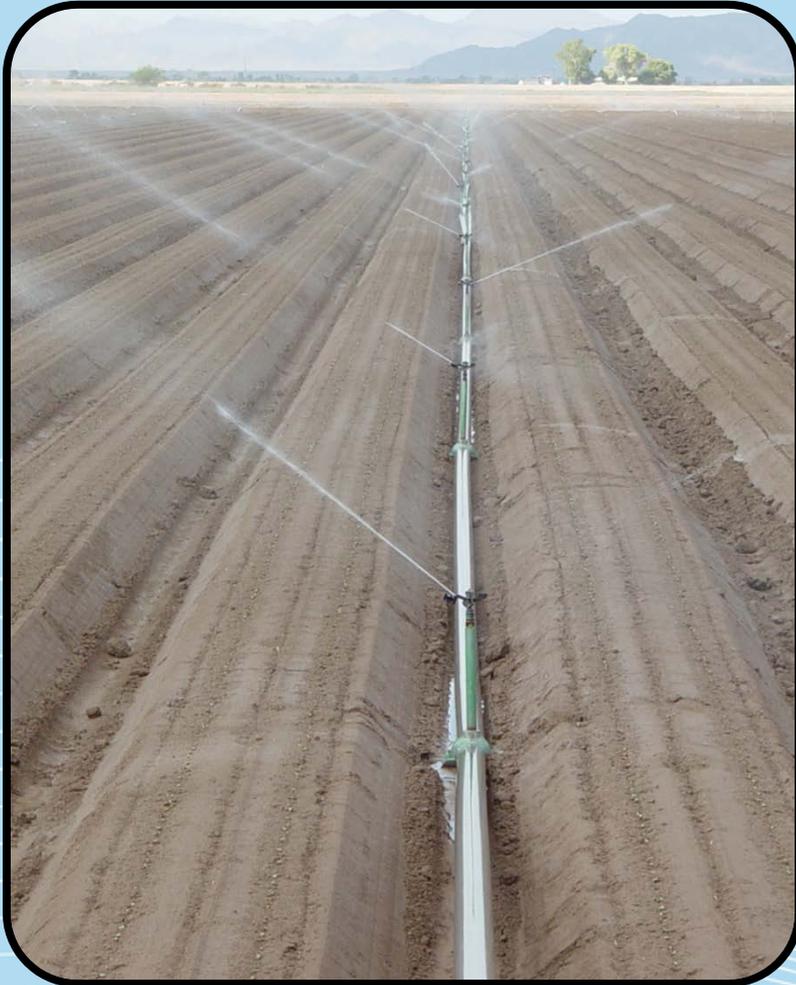
Bagrada bug
adult in spider
web



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Chemical Control



Chemigation on newly emerging
broccoli stand



Foliar spray application on broccoli



Organic Production



Summary

- Bagrada bug is a new invasive pest currently found in the western U.S.
- Bagrada bugs are primarily seedling pests.
- Feeding can cause significant crop damage/yield loss
- Preventing adults from feeding on small plants is critical to establishing and maintaining a quality crop.
- Economic control of *B. hilaris* requires intensive insecticide usage, at least for now



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