Objective 1: Herbivore plant preference

1a. Herbivore choice. Greenhouse behavioral bioassays with individual adults given the choice between mustard, at one of 3 stages (basal rosette, recently bolted, or senescent), and Atriplex

Cages were censused regularly for more than 2 days - first choice and proportion of censuses on each plant were recorded

- Bagrada preferred 4 to 6-fold Brassica over Atriplex, unless the mustard was strongly senescent

1b. Herbivore aggregation. Field experiment with Atriplex deployed alone or adjacent to Brassica plants

Plants were inspected daily and the number of Bagrada were recorded and removed

Objective 2: Herbivore performance

No-choice greenhouse bioassays with pairs of mated adult Bagrada confined on Brassica or Atriplex

Plants censused regularly to estimate:
1. Population growth (# of new adults produced)
2. Development time to adulthood
3. Adult longevity

- Bagrada much more commonly found on Brassica
- Bagrada only found on Atriplex when Brassica was nearby

Objective 3: Does mustard encourage herbivore spillover?

2x2x2m field cages with a factorial combination of 0, 10, or 100 Brassica plants, 0 or 50 initial Bagrada adults, and 1 Atriplex plant

Censused weekly for # of Bagrada and damage to Atriplex

- Bagrada failed to complete their lifecycle on just Atriplex
- Pairs of Bagrada produced on average 100 new adults on Brassica and none on Atriplex

Conclusions
Bagrada strongly prefers Brassica over Atriplex, which is a poor quality host. Brassica presence encourages herbivore spillover and damage on Atriplex -sufficient for mortality?