OVSFRDP: Summary of 2022 Flea Beetle trials

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Objective: Determine the impact of different insecticides to control flea beetles in Turnip greens ('Alamo').

Overview: Flea beetle damage is a major constraint of Brassica production throughout Ohio. Feeding damage caused by this pest can create shot holes in foliage, rendering vegetables unmarketable. ***Flea beetle pest management hinges on timely applications of efficacious insecticides.*** However, relatively little is known about the flea beetle complex in Ohio Brassica which makes timing of applications difficult. Further, exclusive reliance on pyrethroids to manage beetles may leave growers with limited options should insecticide resistance develop. Thus, the aim of this proposal is to 1) monitor for flea beetles throughout the growing season and to 2) identify effective insecticide compounds that reduce flea beetle damage in Brassicas.

Location: Willard, OH

Set-up: Trial was conducted comparing Bifenture EC @ 6.4 fl oz./ac (Bifenthrin), Exirel @ 10 fl oz./ac (Cyantraniliprole), Harvanta @ 16.4 fl oz/ac (Cyclaniliprole), Hero @ 10.3 fl oz./ac (Bifenthrin + Zeta-cypermethrin), Mustang Maxx @ 4 fl oz./ac (Zeta-cypermethrin), or Radiant @ 10 fl oz./ac (Spinetoram). Trial was designed with a maximum of 5 replications per treatment with flea beetle counts weekly (=3 weeks due to rainy weather). Plots were 5 x 15 feet with three rows of green planted in each. Yield data was taken at the conclusion of the trial, assessing both the severity of beetle damage and the number of feeding holes.

Summary of Results:

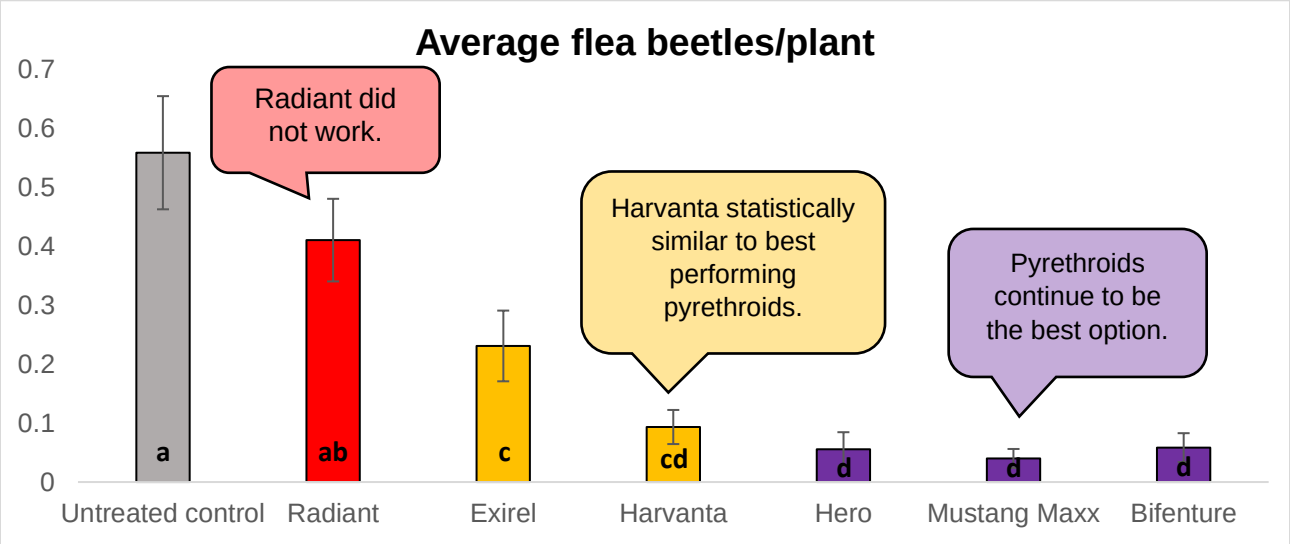

Fig.1: Average number of flea beetles counted per plant. Total of 10 plants per plot were counted over three weeks (June 2022).

- Overall, pyrethroids did the best job of controlling flea beetles (= nothing new). Some of the anthranilic diamides look ok, but we will want to repeat these findings to see if we can get consistent results.
- Damage ratings and the number of holes in leaves (Figs 2 and 3) generally followed the same pattern observed with beetle counts (Fig 1).
- Pyrethroids had lowest damage scores, however, were not statistically different from the anthranilic diamides (Fig 2).

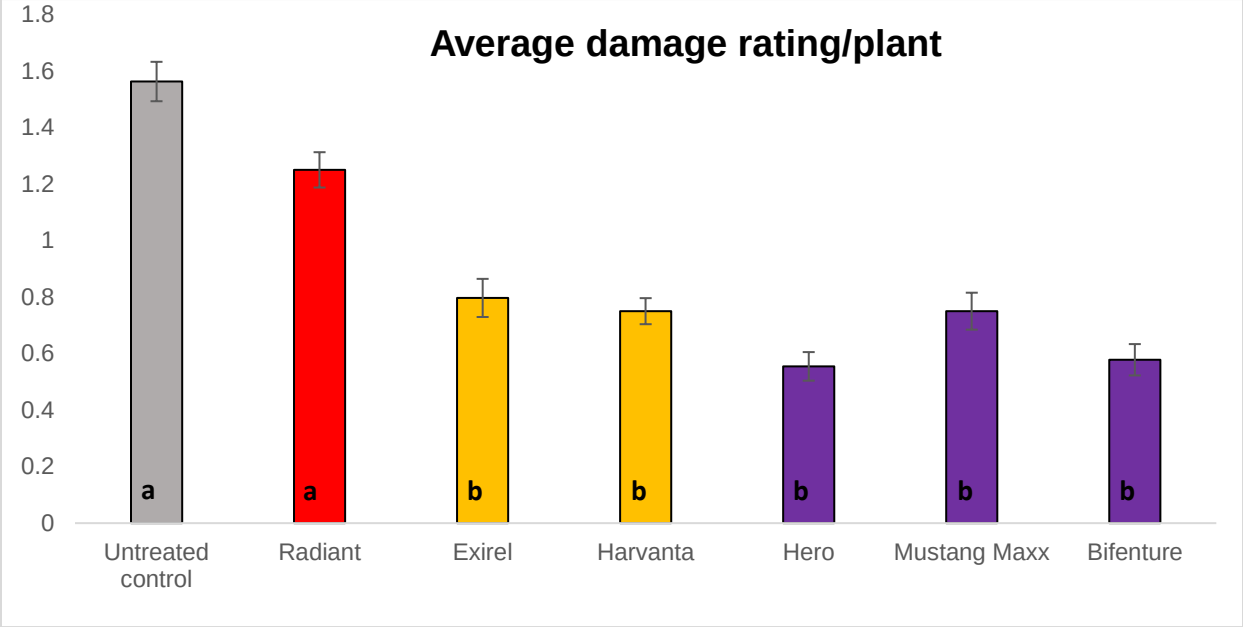

Fig.2: Average damage rating assigned to plants. Score ranged from 0 to 4 where '0' was the best score (no holes observed) and '4' was the worst score (complete defoliation). Total of 10 plants per plot were counted over three weeks (June 2022).

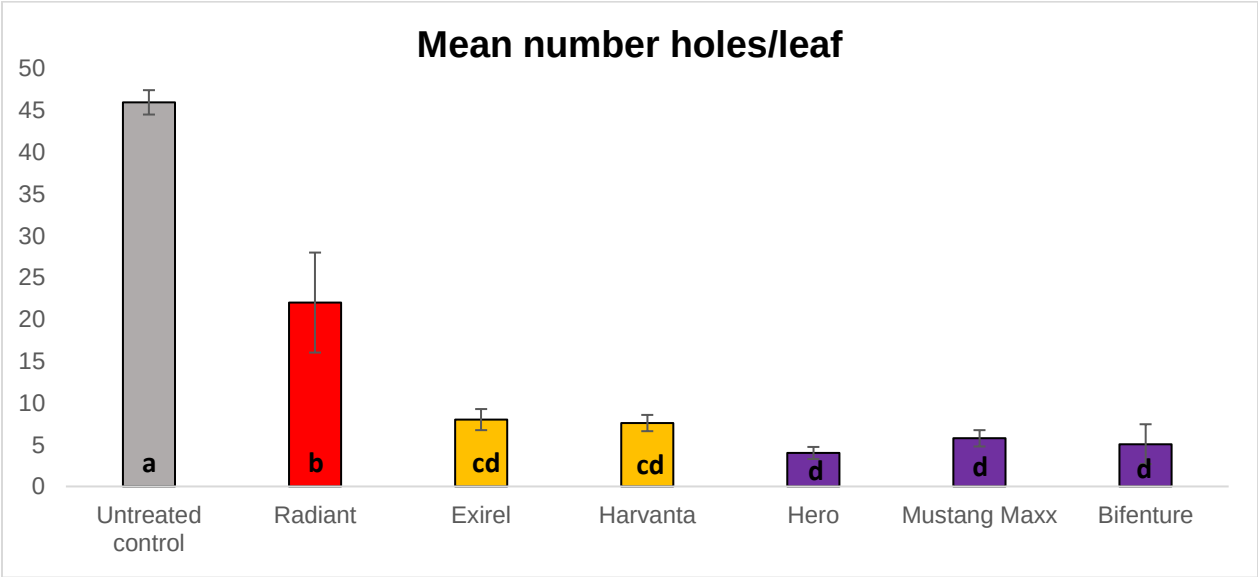

Fig.3: Average number of feeding holes per leaf. Four plants were harvested from each plot and the number of holes recorded (June 2022).

- ***In a follow-up experiment***, testing Hero against Harvanta, we found similar results (Fig. 4), highlighting that Harvanta may be an effective partner in insecticide programming for flea beetles. Importantly, this represents a new chemical class that can be used, thus easing the reliance on pyrethroids.

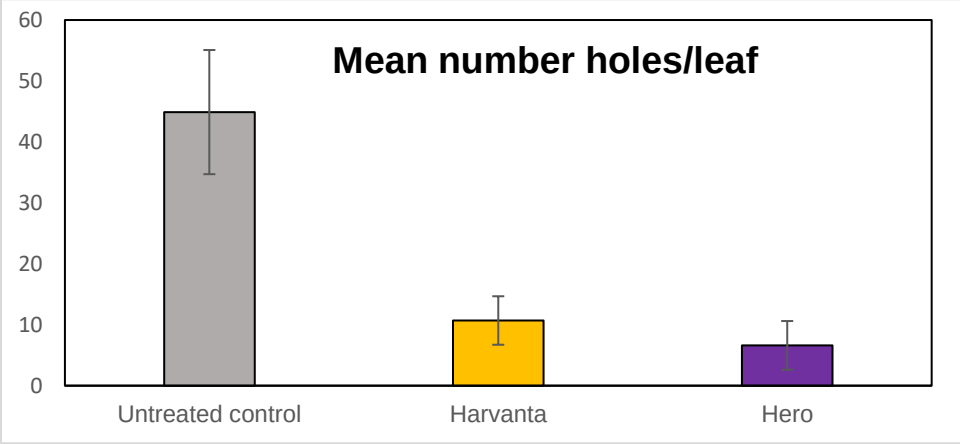

Fig.4: Average number of feeding holes per leaf in a follow-up study conducted in August 2022.

Flea beetle pest phenology in brassica. Sticky traps were placed in Brassica fields throughout the course of the growing season (total of 12 weeks). Cards were replaced every week and monitoring concluded in October 2022.

Results: We noticed two large peaks in May and July in which sticky cards exceeded 15 flea beetles per card (Fig. 5). Specimens on the sticky cards are still being taken to species, but most are identified as *Phyllotreta Cruciferae.* The reason for these peaks is unknown but may be related to weedy margins of the fields supporting resident populations. Further sampling in these fields will allow a greater understanding on pest dynamics in OH vegetable production.

Fig.5: Flea beetle phenology in Brassica crops in the Willard muck.