DO WILDFLOWER STRIPS ENHANCE PEST CONTROL IN ORGANIC CABBAGE?

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Within this project we assess whether wildflower strips and companion plants increase the control of cabbage pests Plutella xylostella L. (Lepidoptera: Plutellidae), Mamestra brassicae L. (Lepidoptera: Noctuidae) and Pieris rapae L. (Lepidoptera: Pieridae) by (1) naturally occurring parasitoids and predators and (2) mass-releasedn Trichogramma brassciae (Bezdenko) (Hymenoptera: Trichogrammatidae) parasitoids. Two organic cabbage fields were used for this study: adjacent to each field a wildflower strip was sown and companion plants (Centaurea cyanus L. (Asteraceae)) intermixed within the crop. Within each field ~15,000 M. brassicae eggs were placed out to determine the parasitism rates by mass-released T. brassicae and to assess the levels of egg predation. Over 1,000 lepidopteran larvae were collected and screened for hymenopteran and tachinid parasitoid DNA using a multiplex PCR assay. Invertebrate generalist predators (n=1,063) were collected for DNA-based gut content analysis. The wildflower strip had a significant positive effect on M. brassicae egg parasitism rates as rates increased 5-fold in the vicinity to the strip. Moreover, companion plants enhanced invertebrate predation on M. brassicae eggs. Both, the release of T. brassicae and the use of companion plants, however, did not significantly increase egg parasitism rates. The infestation of plants by caterpillars increased with distance to the wildflower strip and there was a trend of decreasing larval parasitism rates with distance to the strip. Currently the invertebrate predators are being molecularly analysed to assess predation on unparasitized and parasitized lepidopteran pests.