

Can Beneficial Insect Habitat Really Contribute to Organic Insect Management?

David Orr¹ and H. Michael Linker²
Departments of ¹Entomology, ²Crop Science,
North Carolina State University
Raleigh, NC 27695

The use of beneficial insect habitat to improve insect pest management is of interest to a number of organic growers in the southeastern United States. For the last three years we have addressed grower concerns by conducting farm-scale research with commercial beneficial insect habitats. We also examined habitats we developed based on literature, experience, and grower input. Several studies were conducted, and are summarized below.

A laboratory study evaluated the purity, composition and germination of four commercial beneficial insect habitat mixes. These commercial mixes and our own mixes were planted in field plots to determine their suitability to being grown in the southeast, and to assess supplier recommendations for planting. Mixes were planted at different rates, and under different weeding regimes to examine habitat development under weed competition.

A field study recorded the insect communities present in three commonly grown cut flower/ herb plantings (*Zinnia*, *Celosia* and fennel) as well as three commercially available beneficial insect habitat seed mixes. Insect communities were determined three ways: 1) foliar and floral collections were made using a D-Vac, and insects identified to family and assigned to feeding guilds; 2) pitfall traps were used to collect ground beetle and ground-dwelling spider populations; and 3) evening observations recorded visits by noctuid and hornworm moths to flowers.

A two year field study was conducted to evaluate the effectiveness of a commercially available beneficial insect habitat in decreasing pest caterpillar populations in organically managed tomato plots. Six pairs of tomato plots were established and a commercial beneficial insect mix transplanted around the perimeter of treatment plots, while a brown-top millet border was planted around control plots. Egg parasitism by trichogrammatid wasps and larval parasitism by braconid wasps was monitored throughout the growing season to determine if habitat increased their activity.

Field studies were conducted to evaluate simple habitats planted within fall and spring cabbage crops. Parasitism of caterpillar pests and aphids were assessed, as well as predator numbers. Yield and quality measures were taken at harvest

Cotton grown conventionally (using BMP's) was compared with organic cotton grown either with or without surrounding beneficial insect habitat. Population dynamics of both pest and predator populations were recorded, using several sampling methods. Parasitism of key pests was also recorded. Plant growth was examined during the growing season, and yield and quality measures were taken at harvest.