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# Planting alyssum brings beneficial insects to lettuce

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By Bob Johnson



U.S. Department of Agriculture organic researcher Eric Brennan has been having success controlling aphids by planting alyssum among his rows of romaine lettuce.

Photos/Eric Brennan, USDA

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“If you are using strips of alyssum, rotate those strips so that you don’t develop weedy areas.” —Eric Brennan USDA organic researcher

Photo/Bob Johnson

Researchers are bringing new levels of science to the art of using insectary plantings to attract and keep beneficial insects in vegetable fields.

For more than a decade many organic vegetable growers, and a few conventional ones too, have planted alyssum in their fields because the flowers provide food for beneficial insects. This helps with pest control, but the dilemma has been how much ground to sacrifice to the cause of biological control.

Now U.S. Department of Agriculture organic researcher Eric Brennan has found it may be possible in some situations to grow enough alyssum without sacrificing any ground for the cash crop.

When Brennan began generating more research funds by sending the romaine lettuce he grows in trials to the commercial market in 2003, he was particularly nervous about the lettuce aphid, a widespread pest that finds its way deep into the heart of the crop and cannot be effectively managed with any organic material. One Salinas-area University of California trial had shown that when you apply Entrust, the organic formulation of spinosad,



can kill aphid fly larvae and actually increase the aphid populations. Brennan's strategy was to plant alyssum

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increase his romaine yields by cutting back on the alyssum to one row in 10.

Now he said he has found a way to grow alyssum throughout the field without any sacrifice of romaine lettuce ground.

"The wind moves the alyssum toward the furrow, which gives me an idea of how I can manage my alyssum so it won't compete as much with the romaine. Next year I will have my romaine at the usual density and plant alyssum on the leeward side between the romaine plants. I won't lose any ground for my crop and will still have flowers on the alyssum that is pushed toward the furrows," Brennan said.

In his most recent trials of different ways of growing romaine in combination with an insectary planting of alyssum, Brennan saw that the alyssum gets blown away from the windward side. As a result, the romaine on the windward side of the bed has more room, and grows larger.

The trial also showed that the most efficient use of space when combining romaine with alyssum is to plant both of them in the same row, rather than to plant the alyssum in a few rows of its own.

This arrangement of growing alyssum in the same rows with transplant romaine lettuce would not necessarily work for other combinations of insectary and cash crops.

Brennan said he plans to look more closely at the most efficient system for including insectary plants with direct seeded crops, and for combining a variety of insectary plants with a variety of cash crops.

Some preliminary work has already shown that the system would have to be changed for growing alyssum, in combination with broccoli because alyssum has a very hard time competing with broccoli.

"If I were growing broccoli with alyssum and wanted to minimize the area I need to devote to alyssum, I would plant them in different lines," Brennan advised.

Brennan has come up with a few other tips over the course of years of growing alyssum in combination with vegetables. It is particularly difficult to weed around alyssum, which sprawls low to the ground and covers an area with its stringy canopy. This can eventually cause a significant weed issue if alyssum is grown in the same ground season after season.

"If you're using strips for alyssum, rotate those strips so that you don't develop weedy areas," Brennan suggested.

Brennan also recommends complementing these in-field insectary plantings with a hedgerow that surrounds the field with plants providing pollen and nectar throughout the year. Without this permanent hedgerow, the beneficial insects would have nowhere to go when the in field insectary plants are removed after the harvest.

UC researchers are working on the challenging problem of bringing helpful predatory insects to the field before there are large numbers of pest insects.

"It's hard to get your predatory insects to colonize a field when there isn't a lot of food for them. The syrphid fly seems to be abundant throughout the year so it's our star; it's the one we focus on. Over the course of its life a syrphid can eat over 100 aphids," said Erik Nelson, UC Berkeley postdoctoral researcher. Nelson is part of a team of entomologists working on a long-term study of how insectary plantings can be used to attract aphid predators to lettuce fields.



One approach Nelson and the rest of the team are taking is to find plants that will attract aphid species that are

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building up a reservoir of syrphid fly larvae. The corn leaf aphid, which is not a pest in lettuce, begins showing up in barley that is just six inches tall.

Brennan's practical concern about using barley as an insectary plant is that barley sets seed quickly and could easily become a weed.

The extensive UC work on beneficial attraction in lettuce is discussed in the pamphlet "Flower Flies and Other Biological Control Agents for Aphids," which is available for free as publication 8285 on the Agriculture and Natural Resources division website (<http://anrcatalog.ucdavis.edu>).

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