

Mustards show promise between rows of strawberries

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By Bob Johnson

A mustard cover crop growing in the furrows between rows of strawberries at the U.S. Department of Agriculture test field outside Salinas is doing a remarkable job of soaking up water that would otherwise carry soil off the farm.



As rainwater runs off the plastic that covers roughly half the ground in the strawberry plot, the mustard takes it up and leaves the furrow ground dry.

"We're really excited about this trial. Who knows, this may be an answer in terms of runoff in the Salinas Valley," said Eric Brennan, USDA Salinas station research horticulturist specializing in organic production.

Brennan made his remarks as he showed the bed-high mustard between the strawberry rows to the growers and Pest Control advisors at the 2014 Irrigation and Nutrient Management Meeting in Salinas.

In the area of the strawberry plot with no cover crop, the soil gave a moisture reading of 12 centibars, which is wet enough ground that if you were growing bulb onions, it would not be time to irrigate.

Where the cover crop was growing, the soil was a dry 50 centibars, with the higher number indicating drier ground. And where the mustard seeding rate was tripled, the reading soared to 200 centibars, which is the maximum reading on the sensors.

Brennan said those numbers show that a cover crop just in the furrows is a promising solution to the perplexing question of how to manage runoff and erosion in crops that are in plastic during the rainy season, like strawberries.

"When we cover the field with plastic, we're creating a tin roof there. We've got to come up with a way to reduce runoff in these systems," Brennan said.

Researchers previously had some success with planting a winter cover crop just in the furrows of vegetable fields, in order to reduce the amount of residue that has to be managed before planting the spring crop.

"We tried barley and a triticale on vegetables. You grow the cover crop for 60 days and then kill it. That is pretty easy to manage in a conventional system because you can use an herbicide to kill the cover crop," said Richard Smith, University of California Cooperative Extension farm advisor based in Salinas.

It is not easy to kill the cover crop in the furrow in organic systems because there are no effective herbicides, but mustard may be the answer because it is easy to kill even without chemicals.

"If you cut mustard low enough, it will die," Brennan said.

USDA staff is killing the mustard in the furrows at the Salinas field by cutting it close to the ground with a weed whacker.

They planted the mustard in a band down the middle of the furrow, in order to reduce the risk of damaging the plastic when they cut the cover crop.

"We were shooting for a two- or three-inch band down the center so we wouldn't be close to the plastic. We walked down the furrow with a seeder, but there's no reason it wouldn't work to use a tractor and do two furrows at a time. There's no reason why it couldn't be automated," Brennan said.

But an important disadvantage of mustard cover crops in some situations is their attractiveness to Bagrada bug, the invasive stinkbug that feeds on seedlings of broccoli, cauliflower and other cole crops.

"Bagrada bugs love mustard cover crops, but they don't love strawberries," Brennan said.

There were a few Bagrada bugs in the mustard at the USDA field, but not a lot of them, and there were no cole crops growing nearby.

Mustards are exceptional, however, at taking up nitrogen before it leaches out of the soil, and storing it for use by future crops.

"If this were a rye cover crop, you would get 2 or maybe 3 percent nitrogen in the residue, but with mustards you get 4 or 5 percent," Brennan said.

Another important benefit is the cover crop crowds out weeds that would otherwise grow in the furrows during the rainy season.

And the reason Brennan advises paying a little more for higher rates of cover crop seeds is because it provides better weed control.

"The most expensive organic seed is weed seed; don't try to save on seeding costs," he said.

Two different mustard crop varieties that grow at different rates and an annual phacelia variety are all being compared in the trial. The most promising looking variety in the trial is Ida Gold mustard, but the results are yet to be tabulated.

Brennan cautioned that if you use a mix of cover crop varieties together, it is wise to be careful that none of the varieties will be crowded out.

"I would not use a cover crop mix unless you know all the varieties will survive, or you'll just be wasting seed,"

Brennan said.

Even after the cover crop has been terminated, it continues to serve the important role of limiting erosion of the soil in the furrows, which makes this a particularly appealing option for the many Central Coast strawberry fields on hillsides.

"We know from other work we've done that even if the cover crop is dead, it makes a difference in the quality of the runoff water. One of the main benefits of this system is controlling erosion on steep hills," Brennan said.

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