Mason unveils organic, no-till test plots

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RUTHSBURG, Md. — Integrating no-till planting in organic grain production saves time and energy, but needs strict management of cover crops to be beneficial.

That was the message at a field day last week where researchers discussed results of two test plots.

The plots were on Bill Mason's farm near Ruthsburg, one looking at corn production and one looking at soybeans.

In the corn plot where soybeans were harvested the year before, Mason planted into four replicated trials of crimson clover and barley for both no-till and tilled corn planting and Austrian winter pea and barley for no-till planting.

In the soybean plot, Mason planted four replications of two rye trials — Wheeler and Aroostook — and one of Alzo Triticale in May and followed all with no-till soybeans in the spring.

Because the plots are on certified organic ground, Mason could not use herbicide and killed the cover crops with a 15-foot roller developed by the Rodale Institute. A field day was held in May to demonstrate the rolling technique and last week's event focused on the amount of biomass produced in the cover crops, weed pressure and yield.

The field day, was led by Ron Hoover, coordinator of on-farm research at Penn State. He agreed with project researchers that strict management is needed to balance several factors to work together as a single system.

"You've got to stay on top of it every step of the way," said Jeff Moyer, farm manager at the Rodale Institute in Kutztown, Pa. "It's not a real forgiving system."

Planting date is one factor.

Mason said wet weather set him back a week from planting the soybeans for the project, and he speculated it could be the reason weeds were more a problem than the two previous years he's planted organic no-till soybeans.

Weeds also plagued the no-till corn trials with more than 10,000 pounds per acre (fresh weight) of weed biomass measured at corn harvest contributing to the low yields — 22.5 bushels per acre in the rolled crimson clover and barley and 61.5 bushels per acre in the rolled Austrian winter peas and barley — in the no-till plots.

Yield for the tilled crimson clover and barley trial was 138.5 bushels per acre.

Timing is also important when rolling the cover crop down. If it's too early, much of it could stand back up and waiting too late will decrease growing time for the cash crop.

Steven Mirsky, Penn State weed ecologist, said in the case of rye, waiting until about 50 percent of the dominant heads in the canopy were in the flowering stage generally achieves an 85 percent kill.

Having the right amount of biomass to form an effective cover for weed suppression is another factor.

"The times we see the system not work is when the cover crop wasn't there," Moyer said.

Moyer said 5,000 to 7,000 pounds per acre is the "magic target" for having enough crop residue to keep weeds at bay and providing nitrogen to the plant.

Much less biomass will likely have too much bare ground for weed to start and much more biomass will be too hard for the planter to cut through.

Researchers also recommended planting at an angle of about 25 to 30 degrees against the rolled cover crop for better biomass distribution.

In the corn plot, the crimson clover and barley trials measured 5,848 pounds per acre of dry matter biomass in the spring, which converted to about 100 pounds of nitrogen to the acre, and the Austrian winter pea and barley plot has 4,669 pounds per acre, which converted to about 98 pounds of nitrogen per acre.

Mason said he'll probably continue the system in soybeans but is not sure about no-tilling corn next year because it seems the cover crops don't break down fast enough to make nutrients available to sustain the plant.

"I like the time factor; it saves moisture and it's easy to do," he said of using the roller in soybeans.

He said his initial yields for the no-tilled soybeans this year are about 40 bushels per acre.

He added there are still some small kinks to work out in the soybean system but "you figure those things out as you go along. Somebody once said, 'If it was easy, everyone would do it.'"