



Kansas farmer Terry Jacob mounted a broadcast seeder on the front of his tractor while hitching a no-till drill behind so seed in cover crop blends – like rye and radish – can be planted separately.



All Covered Up

Cover crops are boosting yields, reducing nitrogen use, saving moisture, and curtailing weeds.

Cover cropping is a long-term investment in soil quality, but experience is showing that there can also be some short-term rewards. That's what they're finding on the Jacob Farm, where a three-year-old cover cropping program is beginning to bear fruit.

"We've got a lot more to learn, but our initial results are encouraging," says Ryan Speer, one of three partners in the Bentley, Kansas, farming operation. "Our on-farm test plots show cover crops are improving crop yields, lowering fertilizer costs, reducing weed pressure, and saving irrigation water."

Speer, who farms with Steve and Terry

Jacob, is working with a variety of cover crop options. On irrigated acres, a rye and radish cover crop is seeded after the second corn crop in their corn/corn/soybean/wheat/double-crop soybean rotation. The dryland corn/soybean/wheat/wheat/double-crop (milo or soybean) rotation uses the rye and radish cover crop after the corn, while various cover crop blends are being tried between the stacked wheat crops.

"In three years of tests, we've seen the rye/radish cover crop increase soybean yields an average of 11 bushels per acre. We're also using 35% less irrigation water because of cooler soil temperatures, a quicker crop canopy, and increased water infiltration," says Speer.

Initial tests with the summer cover crop mixes – planted between wheat crops – are also promising. "Our double-crop milo yields were improved by 8 bushels per acre with cover crops in the rotation, and we think we can reduce nitrogen costs by nearly \$20 per acre," says Speer.

Nitrogen savings are a focus of additional research on the farm. "We're using strip trials, soil sampling, and tissue testing to evaluate the amount of nitrogen that legumes in our blends can produce and when the nitrogen becomes available to following crops," says Speer.

Terry Jacob says getting the rye/radish cover crop seeded immediately after corn harvest quickly emerged as a critical factor.

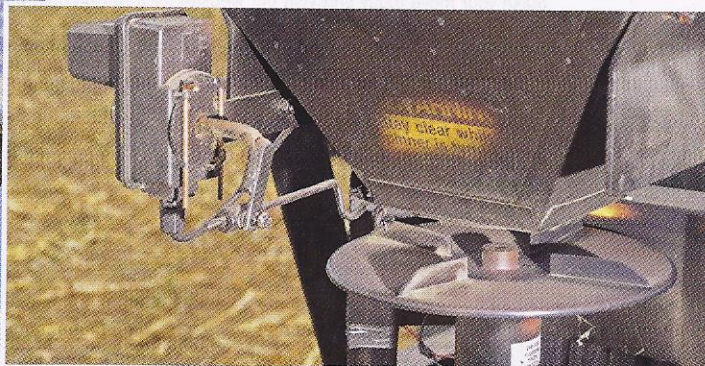
"You've got to get adequate fall growth so roots can penetrate deep. We're in the field with the seeder before the combine is finished," he says.

Jacob saddled the farm's Case IH front-wheel-assist tractor with a unique system to seed cover crop blends. "We mount a broadcast seeder to the front of the tractor to spread small-seeded species, and then we pull a 30-foot no-till drill for the larger-seeded ones. In the case of the rye/radish blend, we put the radishes in the spreader and the rye in the drill."

A fear that seeds of differing size and



The spinner on the broadcast seeder is driven by an electric motor while an electric control valve is linked to a second slide gate added to the hopper. Push-button on/off control of this second gate is achieved through a switch in the tractor cab. Ryan Speer (front right) and Terry Jacob (front left) are quickly incorporating cover crops into their corn/soybean and wheat rotations, with help from Bill King (left rear) and Tom Spexarth.



density will separate if mixed together in the drill box is a major reason for the split-seeding system. Though many cover crop advocates report that such segregation is not a concern, Jacob has found otherwise.

"Some of the summer cover crop blends we've tried contain sunflowers, peas, and corn, and I know from riding the drill that these float to the top," says Jacob. "Also, we've included turnips in some blends, and I've actually seen that seed run right through the meters in the bottom of the drill box.

"Broadcasting the small seed ahead of the drill guarantees even distribution across the field, and it also allows the openers on the drill to mix some of the seed into the soil, which improves germination," he says.

The broadcast seeder, bought used through the Internet, was originally a

Farm Star seeder/spreader. The hopper holds 100 pounds of seed, and the spinner is driven by a 12-volt electric motor.

"The unit features a slide gate in the bottom for rate control, but we added a second slide (above the first one) for simple on/off control. An electric shutoff valve is linked to this gate and is controlled from a switch in the tractor cab," says Jacob.

A team of researchers from Kansas State University is conducting further research to document the benefits of cover cropping, but the partners aren't waiting for results before moving ahead. Last fall they seeded the rye/radish blend on 1,050 acres of cornstalks, and their

goal is to leave all of next summer's wheat stubble planted to either double crops or cover crops – a practice they saw enhance the snow trap in the following wheat last winter.

"We're convinced there are major long-term benefits to the improved soil health that comes from cover cropping. The benefits of increasing the organic matter level in the soil are huge, as is the ability to stop nitrogen from leaching and to scavenge P and K from below the root zone. However, we've been most excited to find that the short-term benefits to cover crops appear to more than offset the expenses, so we're moving ahead," says Speer. ■