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Evaluating the Roller-Crimper for Cover Crops in Corn and Soybean Terraced Ground

Project Title: Evaluating the Roller-Crimper for
Cover Crops in Corn and Soybean Terraced Ground
Coordinator: Michael Willis

Location: King City, Missouri
SARE Grant: \$4,000
Duration: 2013-2014

To read the full project report, go to
www.sare.org/projects and search for
project number FNC13-940



Cover crops have helped to improve erosion problems, soil health, and yields on Michael Willis' terraced farm in northwest Missouri. Photo by Michael Willis.

In northwest Missouri, a practice known as terracing is used to prevent ditches. Michael Willis, a beginning farmer in northwest Missouri, says that cover crops can reduce the need for terraces, but terraces still prove to be important to prevent ditch formation during the transitional phase from traditional no-till to no-till with cover crops.

Willis owns and farms 64 acres, farms another 1000 acres of row crops with his parents and brother, and helps run his family's 120-head cattle herd.

He had information about the Rodale Institute's cover crop roller-crimper, but Willis wanted to know how effective it could be on irregular or terraced areas. In 2013, Willis received an NCR-SARE Farmer Rancher grant to evaluate the effectiveness of the Rodale roller-crimper on hilly, terraced, and irregularly shaped fields. With a 15.5' wide roller-crimper hooked onto a LaForge front-mounted three-point hitch and 25 acres, Willis commenced his experiment.

Willis' Key Findings for Rolling-Crimping on Terraced or Irregularly-Shaped Fields

- The roller-crimper was able to handle gentle curves, but if it looked like a curve would be too sharp, it was best to be safe and treat it like a corner. Turning too sharply bent the arms of the front-mounted three-point hitch, though they sprung back into place once the roller-crimper was lifted. However, doing this too frequently could break them or leave them permanently bent.

- Irregularly shaped fields could be planted while rolling and crimping, but sharper curves needed to be treated like corners. Wide grass borders around the field could make these areas easier to maneuver around, giving ample room to turn around for another pass.

- Rolling and crimping while planting on terraces was easiest on straight terraces. Cover crops near the terrace riser were harder to reach due to the concern of hitting the riser with the roller-crimper.

- Cover crop mixes made rolling and crimping more difficult. When certain species of cover crops were ready to crimp, others still needed time to mature. Having a pure stand of one cover crop made it much easier to manage. Planting soybeans into cereal rye was the easiest to manage.

- The roller-crimper did a better job controlling cereal rye that had higher fertility. Rye in lower fertility areas was shorter and had tougher stems, causing them to spring back up after the roller-crimper rolled over the rye. However, Willis was able to do his pre-emergence application of herbicides even in less-than-ideal field conditions because of the large amount of cover crop biomass—the sprayer didn't cut ruts in the field or pick up much mud on the tires.

Willis has noticed improvements in soil structure since he started using cover crops. He took a soil active carbon test in 2013 on a field where he planted soybeans into rolled and crimped cereal rye, and it tested .79 grams of active carbon per kilogram of soil. He took a test from the same area in 2014 and it tested .82 grams of active carbon per kilogram of soil.

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