

Crop Production

# Demo shows how no-tilling slows erosion

By ANN TONER

**F**OR many decades, Kansas farmers have let one of their most precious resources — their topsoil — be carried away by the water and the wind.

That is very apparent to Lyle Frees and Jim McDowell, USDA Natural Resources Conservation Service employees, when they compare the first several feet of Kansas soil from an area that is virgin prairie sod or long-term pasture with an area that has been tilled and farmed for the past 150 years.

Frees and McDowell shared their observations with farmers recently at a Whirlwind No-Till Expo on the William and Henry Hill farm near Holton in northeast Kansas.

Ground that has been consistently farmed and tilled has very little topsoil left. The percentage of organic matter in the soil may be only 1% to 2%,

**Key Points**

- Farmers have been losing topsoil to erosion for decades.
- No-till farming restores the subsurface soil structure.
- After years of no-till, erosion of soil is virtually eliminated.

compared with 4% to 5% for nearby rangeland. Frequently, a clay layer underlies the top few inches of soil, creating a barrier that rainfall is slow to penetrate, the conservationists said.

But there is good news, they told attendees. After 35 years of no-till farming, the land looks and acts almost like rangeland again. No-till builds carbon and organic matter in the soil. Soil bacteria build soil structure. And undisturbed by tillage, earthworms and old root channels conduct rainfall deeper into the soil, reducing runoff and allowing the water to be stored for crop use in dry weather.



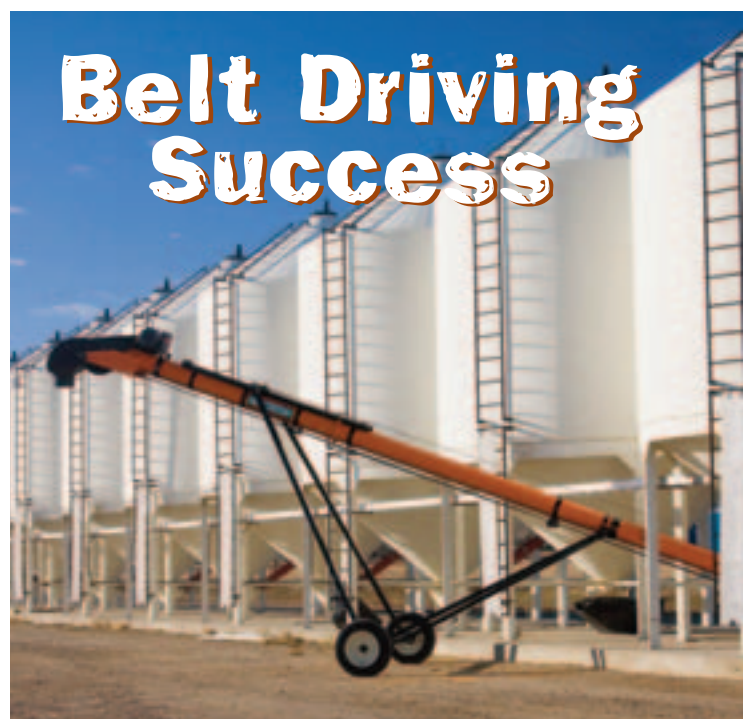
**RUNOFF TEST:** Lyle Frees with the Natural Resources Conservation Service demonstrates the runoff from three fields after a simulated 2-inch rain. On the left, a tilled field produced water filled with soil and chemical runoff. In the center, a well-mulched field produced less runoff, but erosion is still evident. On the right, runoff from a no-till field is scarce and clean.

Frees and McDowell used a rainfall simulator to demonstrate the runoff potential from a 2-inch rain in three scenarios: bare soil, soil with a heavy layer of wheat straw on top and native sod.

The container under the bare soil was full of coffee-colored water laden with soil particles — and the crop nutrients that would have been applied to the soil — in a matter of minutes.

The wheat mulch soil was less than a third full from the same simulated rainfall, and only slightly dirty.

The native sod gave up less than a third of a container of water, and it was clean.



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