

In 2004—the last time a statewide tillage survey was conducted—no-till corn production (including strip-till) in Minnesota stood at 1.5% of the acreage and no-till soybeans at 7.1%. No-till and strip-till are more difficult in northern areas like Minnesota, where cold weather gives soils less time to warm up and soil microbes less time to decompose residue.

A USDA–Agricultural Research Service (ARS) study at Morris, Minn., suggests no-till and strip-till could yield and pay well—if you can transfer techniques from experiment-scale to farm-scale. Average net returns were \$18 to \$30 per acre higher for no-till and a conservation tillage strip-till-like system the researchers dubbed “fall residue management.”

The field portion of the study was conducted from 1997 and 2003 by soil scientist Don Reicosky. He compared no-till, moldboard plowing, chisel plowing and five conservation-tillage systems.

The systems included fall and spring versions of “residue management” (using fingers and coulters to clear a 4"-wide strip); fall and spring residue management plus strip-till (adding a Mole knife to the fingers and coulters); and fall residue management plus subsoiling (adding a ripper shank to fingers and coulters and running it 14" to 16" deep).

The study was conducted on silty clay loam soil, with some tile drainage, using a corn/soybean rotation. The replicated plots were 30'x90'. Economist David Archer of USDA–ARS’s Northern Great Plains Research Laboratory in Mandan, N.D., assigned costs to each operation and analyzed the results in terms of profitability.

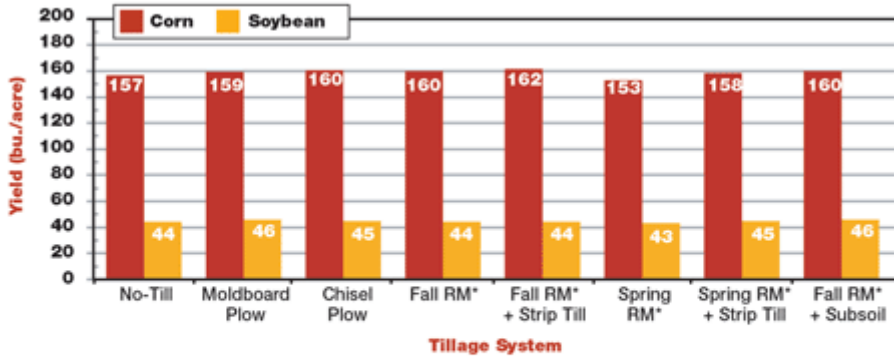
The only statistically significant difference was between fall residue management plus strip-till and spring residue management.

Net returns were higher for no-till and fall residue management. “Higher returns were partly due to lower machinery costs,” Archer explains. “But even without those savings, no-till and fall residue management were as profitable as conventional tillage.

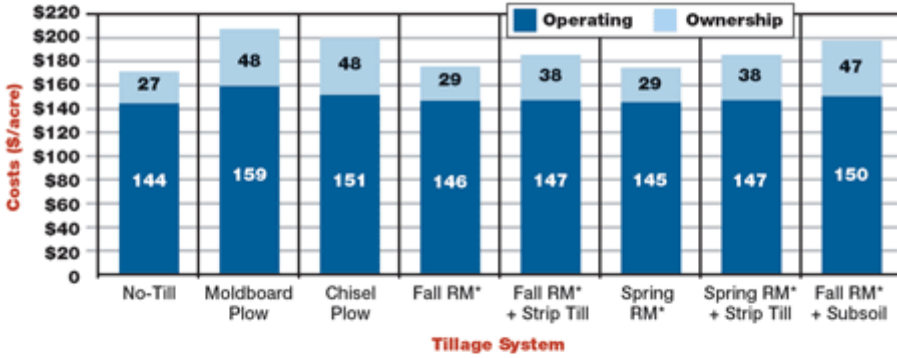
“It does take more management skill than conventional tillage. Farmers need to ease into no-till and strip-till on a small scale so they don’t risk a major failure. It takes time.”

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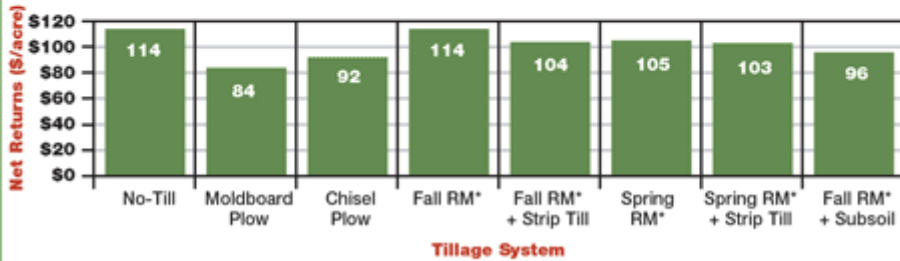
Grain Yield



Production Costs



Net Returns



* RM = residue management (strip-till tool with residue tines and coulters used to create a 4"-wide strip)

In a Minnesota USDA–Agricultural Research Service study, net returns were highest for no-till and several variations of strip-till production. Production costs were highest for moldboard plowing and chisel plowing. Operating costs included labor, machinery repairs, fuel, herbicides, fertilizer, seed and interest on operating capital. Ownership costs included machinery depreciation, interest and overhead. *Source: natural resource conservation service*