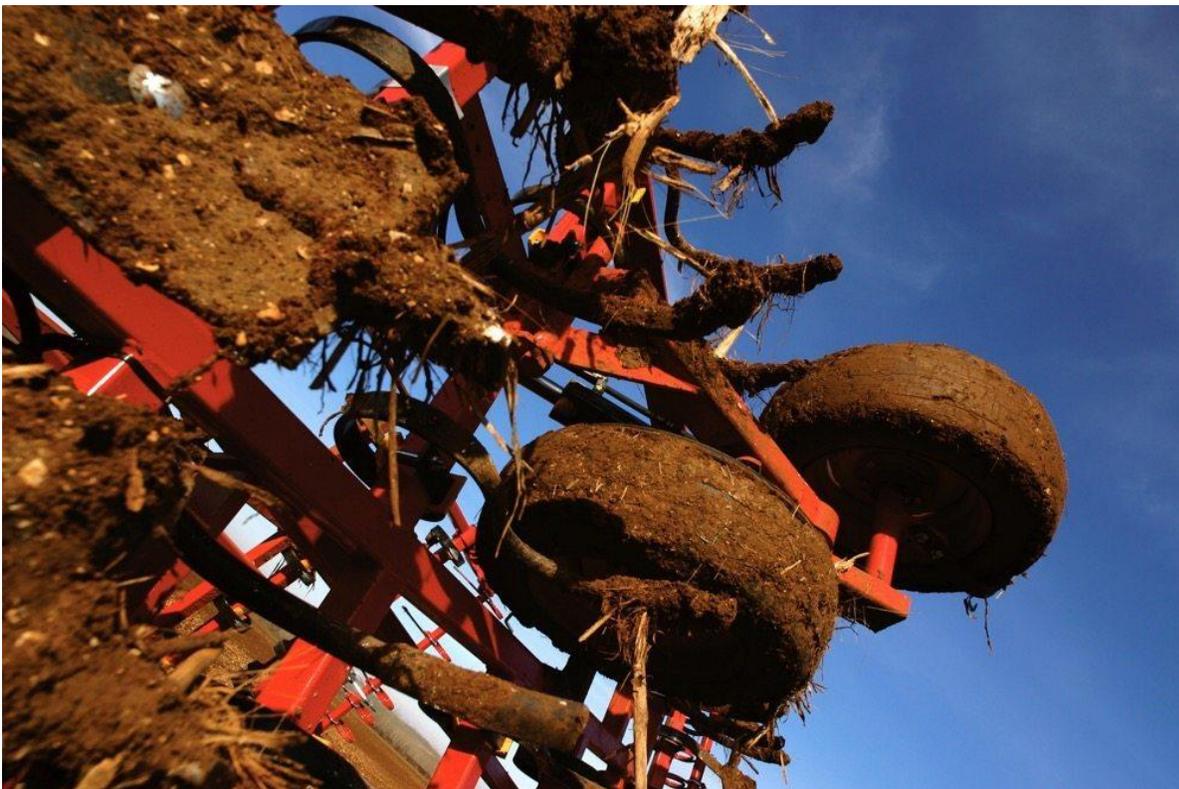


# Disc tillage not the only answer to corn residue

Recent research on the effect of corn on subsequent soybean crops suggests there may be other alternatives



By [Alexis Stockford](#) Reporter Published: May 17, 2017



*Photo: Thinkstock*

Producers may want to look beyond disc tillage to deal with corn residue, according to research co-funded by the Manitoba Corn Growers Association.

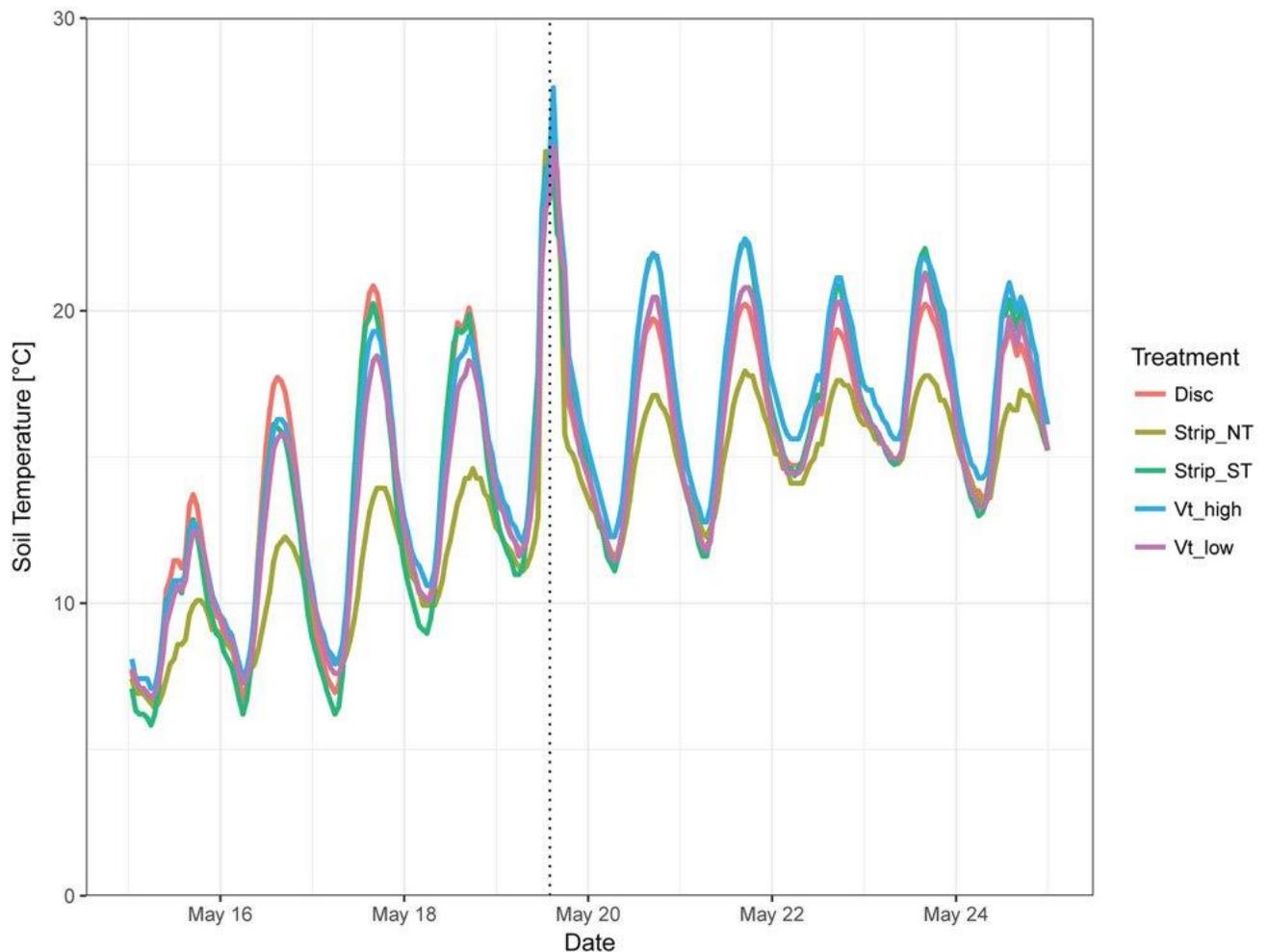
In a two-year comparison of four residue treatments and their effect on soybeans, Patrick Walther and Yvonne Lawley of the University of Manitoba found that low-tillage treatments yielded the same soybean crop as conventional disc tillage on sandy soils.

“That is already something that we, beforehand, didn’t quite know exactly,” Walther said.

Likewise, the study found little difference in accumulated soil temperature between double-disc tillage, high-disturbance vertical tillage, low-disturbance vertical tillage or strip tillage.

All four sites were on sandy soils and all but one site managed corn residue in spring.

Walther reported higher temperatures in tilled soils, compared to untreated soil, but temperatures between treatments varied only during the hottest and coldest periods of the day.



*MacGregor soil temp: Different tillage at the 2016 MacGregor test site showed different soil temperatures at five centimetres only in peak- and low-temperature periods in the five days before and after seeding (indicated by the dotted line). All treatments were consistently higher than untilled soil (indicated by the brown line). photo: Graphic: Patrick Walther*

“What we saw is that management practices such as rolling and planting have influence on soil temperatures, especially in strip till,” he said. “You have to think that strip till makes a little bit of a berm and once you flatten this berm, the temperature changes within that berm, so whether you first go and roll or you plant when you have a planter that has some packing wheels behind it, then it really flattens down that berm and that changes soil temperature.”

Temperature differences evened out, however, once accumulated temperatures were calculated.

“It was interesting that strip till, in certain cases, showed this little higher peak and was warmer than other treatments, but also cooler at night, but then if we accumulate that over time, we don’t have any differences. If we think about soybeans, what they’re looking for, I’d say they’re more interested in accumulated temperature over time than they are a peak temperature during one hour,” Walther said.

Moreover, all four treatments registered the necessary soil moisture to jump-start soybean growth at planting.

The study recorded 30 per cent corn residue coverage after two passes of disc tillage, 27 per cent coverage under high-disturbance vertical tillage, and 65 per cent after two passes of low-disturbance vertical tillage. At the same time, one pass of strip tillage resulted in 63 per cent overall coverage, but only four per cent coverage within the strip where planting occurs.

The study found strip tillage cost significantly less, coming in at \$19.31 per acre compared to vertical low-disturbance tillage at \$29.72 and, on the high end, double-disc tillage at \$32.25 per acre.

Walther also reported significant time saved with the one-pass strip-till system.

He noted, however, that specialized equipment required for strip tillage may outweigh its lower operational cost, as the same equipment may not carry over to other crops.

“This is only an economic analysis for one year. If a farmer thinks about purchasing a certain unit, they should make the calculation over a rotation period at least,” he said.

Pam de Rocquigny, Manitoba Corn Growers Association general manager, echoed the sentiment.

There are no hard numbers on the popularity of different tillage systems, although de Rocquigny, said strip tillage is less common in corn residue management.

“There’s interest in it from producers and I think that’s why it was a treatment that was included in the study,” she said. “Obviously, strip tilling requires specialized equipment, so whether or not every producer is going to invest in strip-tillage equipment, I don’t know if that’s going to happen or not, but including the economic analysis was an important component that we wanted the researchers to look at because if it is something that could potentially increase profitability of producers, then that’s something we need to look at.”

The research covered common concerns to producers making management decisions, she said, noting the possible effect of temperature on germination in various crop and field work timing, given the province’s sometimes wet springs.

“We have some messages, but at the same time, it will vary from field to field, from soil type to soil type and from region to region,” she said. “It’s great research. It helps answer some questions, but it’s by no means going to be the answer for everybody.”

Researchers also hope to explore if Walther’s results hold true on clay soils and are currently looking for test sites for future research.