DEMONSTRATION OF INNOVATIVE CORN PRODUCTION TECHNOLOGIES:

STRIP TILLAGE

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PROJECT

Conducted at multiple sites between Vernon and Lumby, BC during growing seasons 2019-2022 to examine the adaptability of strip tillage to the interior corn growing region. Strip tillage was conducted using Dawn Pluribus V row units up to two weeks before planting date. Corn was then planted in the strips. A check with full tillage conventional tillage was also conducted. Strip tillage was conducted into various residues including corn grain, corn silage, barley stubble, forage crops and standing fall rye.

RESULTS

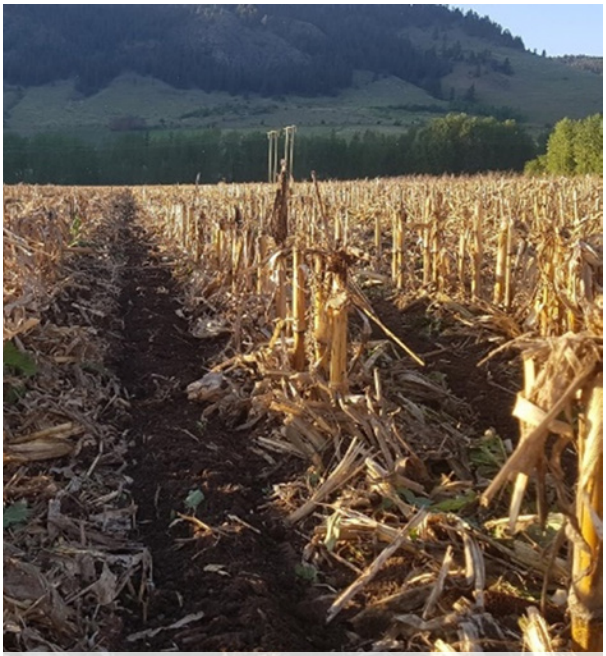
Strip tillage was found to be an excellent practice, with significant savings in time and cost, soil health benefits and limited reduction in yield and quality of the harvested crops.

Yield: Minor reductions in yield and delayed maturity were experienced relative to the conventional tillage check. These issues were more pronounced in the first two seasons and were offset by the cost and time savings versus conventional methods. GPS guidance was very helpful, if the planter was not centered on the strip the plants had noticeably poorer emergence and performance.

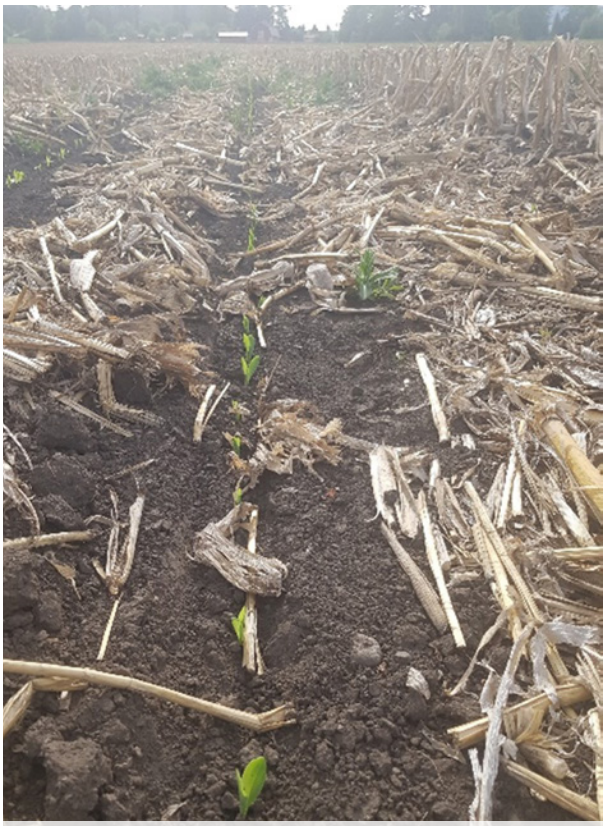
The soil: Over the course of the project, the soil structure improved greatly, there was less rutting and compaction from harvest operations. Adequate breakdown of corn plant residues from grain harvest made it possible to move the strips over to the inter-row in the following year (15" per year). Some nutrient tie-up was suspected from the residue compared to conventional tillage and in-row placement of nutrients is recommended. The inter-row residue allowed for rapid water infiltration from rain storm and irrigation events and prevented erosion. The strip tilled area also had less loss of moisture from spring tillage operations.

Economics: It was calculated that for a farm with 125ac of corn, strip tillage had a net benefit of $80/acre and saved nearly 80 hours of tractor operation time. This can result in less fuel use, lower emissions, and more timely seeding.

Challenges: There were changes in the timing of weed flushes, an early herbicide application had to be made to control winter annual weeds in area between strips that normally would have been terminated with tillage. It was difficult to control weeds without two passes of herbicide although a residual may reduce this challenge. Additional pest pressure was found with a "Corn Leaf Miner", it could be quite devastating on heavy textured damp soils around the V2-V4 stages, while the corn did survive



Strip tillage.



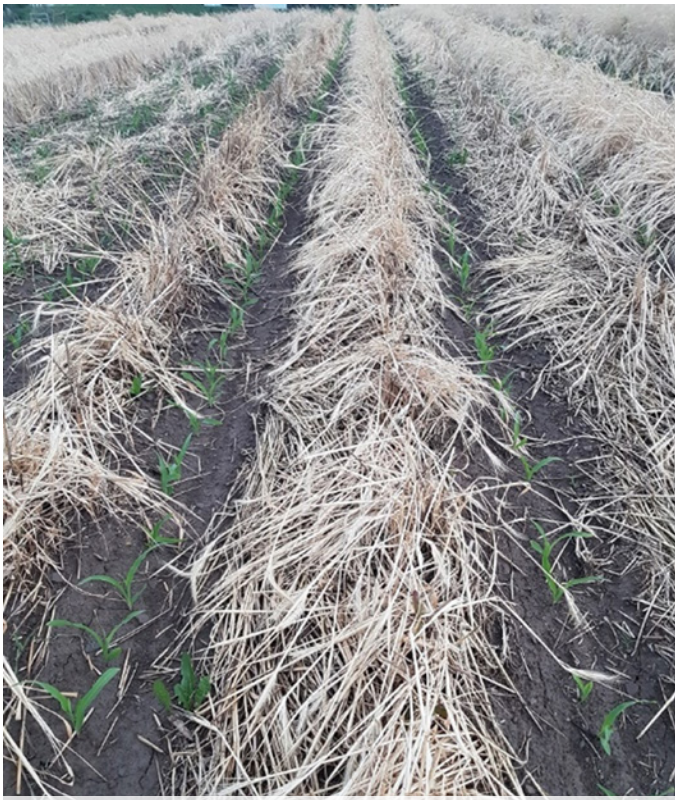
Strip tillage in season.

the damage, yield loss was apparent.

As part of crop rotation: While our plots were mostly maintained as continuous corn production for the four years, the machine was trialed in other crops prior to corn planting. It performed very well in cereal stubble from the previous season, could work okay in perennial forages, and also performed well in standing fall rye. The fall rye allowed for a large residue layer to help suppress weeds and infiltrate water, however the rye did use a large amount of moisture early in the season and tied up nitrogen to where additional applications were required.

Future directions: It would be interesting to explore how to better incorporate dairy manure into a strip till system.

Strip tillage in season.



Strip tillage into standing fall rye.

ACKNOWLEDGEMENT

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