

## Corn School: Narrower rows, zero-till shows promise for dryland corn production

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A three-year trial conducted by Farming Smarter on grain corn production under dryland conditions in four Alberta locations is yielding some interesting results.

The trial at Lethbridge, Vauxhall, Bow Island, and Medicine Hat, was conducted between 2015 and 2017, and included agronomic factors that may affect dryland grain corn production, including plant population, row spacing, nitrogen fertilization, tillage and crop rotation sequence.

In this episode of the Corn School, we're joined by Gurbir Dhillon, research scientist at Farming Smarter, for a summary of key results.

Narrower row spacing resulted in a nine to 10 per cent yield increase, and seemed to work better across all seeding rates used. As seeding rate increased, yield increased as well, except at the highest seeding rate trialed — about 35,000 seeds per acre. The optimum seeding rate they found was at 30,000 seeds per acre at 20 inch row spacing, Dhillon says.

There wasn't a strong response by the corn to different rates of nitrogen, ranging from zero to 190 pounds per acre. Split applications were tried too, some of it got side-banded, and some was applied in-crop. There wasn't a great deal of difference in yield between the different fertilizer rates, which may have been limited due to the lack of moisture in dryland conditions.

"We did find that somewhere between 50 to 200 pounds of nitrogen in the soil is optimum for grain corn production here," says Dhillon.

The study looked at zero-till and conventional tillage systems and found that the initial emergence of the corn was better with conventional, where the emergence rate was 99 per cent. With the zero-till system emergence was 83 per cent on average and was variable.

However, looking at the yield results, there was little to no difference between these two tillage systems. Yield was actually a bit higher in the zero-till system, which Dhillon attributes to moisture conservation.

"The previous crop residues, predictively did not affect [yield] in the conventional tillage, but did have an effect in the zero-tillage, especially in the canola and mustard crops, which do not host mycorrhizal fungi," says Dhillon. Mycorrhizal fungi are known to improve yield in certain crops so, it may become more important to consider crop rotation sequence for the soil microbial aspects in the zero-till system, on top of the other agronomic factors.