

Corn: low N response; poor after canola or mustard

By Barb Glen



Adrian Moens of AJM Seeds discusses the agronomics of growing grain corn in southern Alberta during a Farming Smarter plot hop July 23 near Lethbridge. | Barb Glen photo

Results from a three-year study on dryland grain corn agronomics in southern Alberta show little difference in crop response from extra nitrogen application and reduced yields if grown following canola or mustard.

Findings were presented July 23 by Gurbir Dhillon and Ken Coles of the Farming Smarter applied research group and by Adrian Moens of AJM Seeds.

The study ran from 2015 to 2017 on plots in Lethbridge, Vauxhall, Bow Island and Medicine Hat. It compared different row spacings, nitrogen fertilizer rates and the effects of tillage and rotation.

Dhillon said yields were highest on 20-inch row spacing for all but one of five different seeding rates. Rates of 15,000, 20,000, 25,000, 30,000 and 35,000 seeds per acre were measured.

He speculated that a high seeding rate on narrow spacing allowed quick canopy closure, which is better for crop transpiration and weed management.

Nitrogen rates from one to 190 pounds per acre were tested using a split application. Some was side-banded at seeding and the rest applied in crop. Little difference in response was noted. Dhillon said that might be attributed to limited soil moisture, which reduces uptake by the crop.

The study compared conventional and zero tillage. Though corn had lower emergence in zero-till plots, yields varied little between those and conventional till. However, yields were lower in corn planted after canola and mustard, likely because of lower mycorrhizal fungi that are important for phosphorus uptake.

Coles noted 2020 has been a good year for dryland crops in the region, which has had more rain than has been typical in recent years.

However, he noted most corn planters are designed for a tilled field environment so the equipment industry needs to “get up to speed” in designs allowing corn planting in zero-till conditions that have more residue.

Coles also said strip tillage is becoming more popular as an option.

The trials had seeding dates of April 22, May 8 and May 19. The later dates produced more consistent crops.

On the agronomics side, Moen listed the four most important factors for growing grain corn without irrigation: time of planting, uniform emergence, plant population and plant spacing.

“Kind of the rule of thumb is you want to have every single plant come out of the ground in about 48 hours or so,” said Moens.

In the United States, many growers aim for emergence within 24 hours but that’s not easy in southern Alberta conditions, he added.

Even emergence is also key so that all plants pollinate within the same time span. Those that emerge late may never catch up, said Moens.

Planting between May 5 and 15 is considered optimal in his region. Seeding too early runs the risk of cold rain or snow,

causing “chill inhibition” that affects emergence. Soil should be 10 C or warmer at planting, he advised.

Corn is reasonably frost hardy. Its growing point doesn't emerge until the six-leaf stage, when plants are roughly knee-high.

Moens said 18,000 to 22,000 seeds per acre works well and even plant spacing tends to pay off.