

Corn adoption on the Prairies set to speed up

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by Angela Lovell



Results of a Farming Smarter study in Alberta suggest that a narrower row spacing of 20 inches and a seeding rate of 30,000 seeds per acre give better emergence and significantly more yield than on a 30-inch row spacing at lower seeding rates. Photo: DuPont Pioneer

Two years ago, Monsanto and DuPont Pioneer announced ambitious plans for expanding corn acreage in Western Canada to eight to 10 million acres within 10 years, and grain corn acres have indeed increased in traditional corn-growing areas like southern Manitoba, where growers seeded a record 410,000 acres in 2017, up more than 18 per cent from the year before.

But acres haven't increased significantly in other western provinces.

A few factors are contributing to the underwhelming growth. Lower corn prices are dampening the enthusiasm among some prospective growers. And, also on the economic side, investments in equipment such as row planters and grain dryers look less enticing with longer paybacks in today's markets.

It would be a mistake, though, to think all those corn hopes have dried up.

Plant breeders report they are making good progress in developing earlier-maturing and higher-yielding hybrids suited to western Canadian growing areas.

“We’re ahead of where we thought we would be from a yield standpoint and right on schedule from a maturity standpoint,” says Dan Wright, Canada corn and soybean portfolio lead for Monsanto Canada. “What’s exciting is when we first started breeding for this area, we were aiming for 70 days to maturity and 100 to 110 bushels per acre yield, and that’s not even on our charts now when we’re looking at advancement. We’re already at above 130 bushels per acre with that earlier maturity, and that’s great news for growers.”

DuPont Pioneer released three new early hybrids in 2015 — a 2000-corn heat unit (CHU) hybrid, P7005AM and two 2050 CHU hybrids, P7202AM and P7211HR. “These products have established themselves in the Western Canada marketplace and our customers are happy with the performance that they’re seeing,” says Steve King, evaluation zone lead for DuPont Pioneer. “These three hybrids have allowed us to grow more corn acres in the West.”

First taste of success

Climate change is also having an impact on many breeding programs. With climate scientists predicting warmer, drier growing seasons on the Prairies, another focus is developing high-yielding genetics that can manage drought stress.

Both companies test all new hybrids for Western Canada under local conditions and have several products in development for release over the next few years that they believe will be viable for the region.

“In our current pipeline we have a lot of material that’s earlier flowering, good test weight, and reaches a harvest moisture that would be less than 2000 heat units,” says King. “Those will continue to provide options for the short-season areas of Western Canada.”

“We have increased our number of yield trial plots in Western Canada dramatically,” adds Wright. “Western Canadian growers are aggressive, they like to try new things, and we really feel that it’s Monsanto’s role to trial and test under local conditions so that when growers have their first experience with a new crop like corn they’re going to be successful.”

A lot to learn

Although there are similarities between the northern U.S. and Canada, breeders have had much to learn as corn moves north, including how to deal with both new and familiar pests and diseases as well as different production systems such as no till.

For example, developing hybrids with better resistance to “green snap” is a focus of breeding programs for northern areas. Green (or brittle) snap is the breakage of corn stalks by violent winds, which are more common on the Prairies than in traditional corn-growing areas in the eastern U.S. and Canada.

Breeders have also discovered it doesn’t take long for traditional pests such as European corn borer to find new corn-growing areas. “As corn moves across Western Canada, we have found out that even in areas where corn has never been grown, corn borer finds corn,” says Wright. “So hybrids need the normal pest and disease package that’s built in, and again that local testing for other diseases that might be present is also important.”

“There are a whole series of traits that we’re breeding for in our product development pipeline,” says King. “Maturity and yield are major ones, but also standability and diseases like Goss’s wilt, which is particularly important in Western Canada. We screen all our genetics for Goss’s wilt in a special disease nursery to ensure we’re not advancing material that’s too susceptible to the disease.”

Fitting into no till

Ken Coles of Farming Smarter has just completed a three-year, dryland grain corn agronomy study at four locations in Alberta: Lethbridge, Medicine Hat, Bow Island and Vauxhall. One goal was to determine how grain corn can fit into a no-till system. All the locations had drought in two out of the three years, with an average of 60 per cent less than normal moisture and average temperatures 13 per cent above normal.

Results suggest that a narrower row spacing of 20 inches and a seeding rate of 30,000 seeds per acre give better emergence and significantly more yield than a 30-inch row spacing at lower seeding rates. In a fertility study, overall across eight trials there was very little response to nitrogen at any of the rates applied, which were zero, 50, 100 and 150 lbs. of actual N applied in various ways — granular side-banded at seeding and as split applications. Background N levels were not high — averaging between 13 and 60 lbs.

“The average yields for us from small plots were between 70 and 100 bushels per acre, so they’re not bumper crops, but when you consider that they’re dryland, and that you don’t necessarily need to put much nitrogen down, I think it pencils out,” says Coles. “I feel pretty confident under an average year, it is possible to hit 100 to 120 bushels, and looking at the current prices, even a 70- or 80-bushel corn crop pencils out compared to a 20-bushel wheat crop in southern Alberta.”

A two-year crop sequencing study also gave interesting results, indicating that previous crops are more important for yield than the tillage regime. In the second year of the trial, corn was planted on corn, soybean, wheat, pea, lentil, canola and mustard stubble using both tillage and no-till plots. Although overall emergence on any of the plots was more even with tillage, there was definitely better emergence in the no-till system on low-residue crops such as soybeans, peas and lentils. Taken overall, there weren’t significant yield differences except where corn followed a non-mycorrhizae crop such as mustard or canola.

Hybrids plus agronomy

The take-home message from the study, says Coles, is that dryland grain corn can work. He’s confident that with the lower heat unit varieties that are now available, corn can be added as a viable option in any production system in southern Alberta.

That said, there is definitely a learning curve to corn in no-till systems.

“We need to learn, as farmers and researchers, how to deal with planters because it’s a different cropping system,” says Coles. “It’s different than an air seeder, and some adaptation is needed to make those planters work well in a direct-seeding scenario. You can’t just take what you know about running an air seeder and apply that to a planter. They’re precision planters that require a little more detail and level of knowledge to use them properly. I think we can make it work in zero till but farmers will need to be careful about the precursor crops.”

Monsanto has several research farms and technology development representatives across Western Canada. In areas where the company anticipates corn could be an option for growers, it has been working to understand the agronomics such as planting dates, fertilization and how corn fits into a no-till production system.



*A Monsanto research plot in Saskatoon where the company says yields are zooming past their original goal
photo: Monsanto*

“We have been doing a tremendous amount of work on the agronomic side, for example with things like strip till (where soil is blackened only in the seed row), which we believe is a good option for western Canadian no-till growers,” says Wright. “Our research is something we don’t talk about enough, so we are building our plan to make sure we’re co-operating with universities and sharing what we’re doing collectively, so the industry can learn together. If we’re all helping move the needle forward, that’s positive for growers.”

King says DuPont Pioneer is also working on the agronomy side, taking the global expertise and knowledge that it has with growing corn in many different environments and making sure it still applies or can be adapted to Western Canada.

“We’re doing studies on plant populations and planting densities to see how Western Canada corn responds to increasing plant populations either for grain or silage use,” says King, who adds the company is also looking at corn development from planting to flowering under various Prairie conditions. “There’s a lot of historical information from the U.S. Midwest about the number of leaves that are needed to reach tassel stage, and how many heat units you need to get to certain tassel stage, so we did a study this past summer where we took these ultra-early genetics that are adapted and bred for Western Canada and tried to repeat some of that historical information and see if the same applies here.”

King says the data is still being analyzed but the company is hoping to share the findings with growers, retailers and agronomists soon. Meanwhile, yield data from Pioneer plots across the West are available to growers. Corn yields averaged 161 bushels per acre in plots 2016, and although 2017 wasn’t as good due to hot, dry conditions in some areas, the average yield across those plots was still 130 bushels per acre. “Obviously not every field is going to achieve that amount of yield but we definitely feel comfortable that we’re achieving enough yield to make corn an economically viable crop in growers’ crop rotations,” says King.

What’s the potential?

Global demand for corn grew by 1.8 billion bushels in 2016 and continues to grow annually, which could be a significant factor in grower decisions about whether to grow corn.

But are the predictions of eight to 10 million acres of grain corn in Western Canada realistic?

Wright isn’t sure of the exact number, but he’s confident there is going to be significantly more acres of corn on the Prairies in the future.

“Growers will decide how it fits on their farms, but the work that we’re doing gives growers another option from a profitability standpoint,” he says. “We talk to a lot of growers who are searching out new crops to help them be more profitable on their existing land base versus growing the same crops and increasing their land base.”

King believes the estimates may be a bit optimistic, but he does believe growth will continue at a steady pace. “Even if the number is half that amount, it’s still significant growth and a significant presence for corn in Western Canada, but it’s going to take a long time to get there, it’s not going to happen in a couple of years,” says King. “With any new crop there are always early adopters and if they have good experiences the news spreads and you reach a point where the market takes off. From a research perspective, we have a long-term commitment to the West. Breeding takes a long time, and we’re making very good progress.”

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