WHEN IT COMES TO GENE EDITING, YOU AIN'T SEEN NOTHING YET

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FROM A FARMER'S POINT point of view, gene editing technology can be a game-changer in agriculture. The use of gene editing in canola is particularly significant, as it is a major crop in Canada.

With the introduction of gene-edited canola varieties that have traits like pod shatter resistance, farmers can increase their yields and reduce crop losses, which can translate to higher profits. Gene editing can reduce the need for chemical pesticides and fertilizers, which can be costly and harmful to the environment as well as being increasingly limited globally.

Efforts are being made to promote understanding among the public of the safety of gene editing technology and its potential benefits, while also ensuring that appropriate regulatory frameworks are in place to manage its use. We must communicate clearly what gene editing technology is and what it is not, and to distinguish it from other technologies like GM.

Organizations like Cibus are taking a leadership role in establishing quality assurance standards for gene editing technology. The fact that this technology can produce complex traits that are indistinguishable from those that occur in nature is a core point to emphasize when discussing gene editing with regulators. As stewards of these technologies, our mission is to ensure that there are processes that lead to proper standards for each trait developed.

Gene editing technology is about to show us some truly amazing things that people can't yet imagine. People generally don't like the word "industrialization", but it's really the only word to accurately describe the scale and speed of change that is possible and is going to happen with these new technologies.

Those technologies are accelerating breeding to meaningfully address in real time the challenges to farming productivity caused by the changing environment, and it's going to happen without that problematic acronym "GMO" being involved. That's key, both from a public relations and time-to-market standpoint.

The new gene editing technologies are going to be extensions of the breeding programs of the major seed companies. They provide an important tool in accelerating seed innovation to meet our food supply challenges. An important example is something Cibus calls the Trait Machine — a proprietary optimized end-to-end semi-automatic gene editing process which enables Cibus to edit different traits directly into the most elite material from its various breeding partners.

In addition, with gene editing we can edit complex or multiple traits at the same time, which offers greater flexibility and choice for customers. This is a real paradigm shift in trait development.

Cibus' proposed merger with Calyxt is also an important step in that direction as it brings together some of the core technologies in gene editing to accelerate these efforts in two key applications in our industry — the first being the creation of productivity traits, which address the sustainability of farming by increasing crop yields and reducing inputs such as fungicides, herbicides, pesticides, and fertilizers. The second is renewable low-carbon ingredients; gene editing is a key tool in the development of sustainable products that can replace fossil fuel-based ingredients.

This is shaping up to be an important year for the regulations covering gene editing, with the European Commission and many other countries reviewing their laws for regulating certain new genomic techniques. The U.K. is on course to introduce new laws broadly consistent with those from a growing list of important trading nations (the United States, Canada, Argentina, Brazil and Japan) to view the traits from new gene editing technologies similarly to traits from conventional breeding.

Like the song says, you ain't seen nothing yet when it comes to the plant breeding of the future. We're all lucky to be alive at a time like now to see a new era of plant breeding and farming ushered in. ■