

Finding the right farm fit for plant growth regulators

CEREALS | Crop specialists say the use of plant growth regulators in cereal crops remains complex and limited



A PGR test site at Lakeland College in Alberta. PHOTO: LAKELAND COLLEGE

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Cereal growers on the Prairies want to protect their high-yielding crops from lodging, and that's exactly what plant growth regulators promise to do. But there are also some pitfalls to avoid and controversies to work around when it comes to certain cereal crops.

Researchers say the products remain a targeted management tool rather than a routine input.

Prairie research has consistently shown that PGRs reduce crop height, but their impact on yield is less predictable, according to Anne Kirk, cereal specialist with Manitoba Agriculture.

"Plant growth regulators are to maintain yield and not add yield," Kirk said.

Kirk has also previously warned against applying PGRs on crops already under stress due to disease, insects or environmental factors. Doing so could hurt plant recovery in those circumstances or impact crop development, grain yield or quality.

■ WHY IT MATTERS

PGRs can protect high-yielding crops from lodging, but they only pay off in the right fields, according to Prairie researchers.

Plant growth regulators (PGRs) are used to shorten and strengthen cereal stems, helping crops remain standing when favourable growing conditions create heavy canopies and increase lodging risk.

While the products are widely used in Western Europe, where long growing seasons and abundant moisture make lodging a frequent challenge, Prairie adoption remains relatively limited.

"A lot of individuals are wondering about it, but I would still say it's quite niche," said Greg Tomcala, applied research co-ordinator with Suncrest College in Saskatchewan.

Researchers across Western Canada say the strongest fit for PGRs is in high-yield environments where lodging risk is elevated, including irrigated acres, fields with high nitrogen fertility and regions that regularly receive above-average rainfall.

"It isn't something that growers are going to be using every year in every field," said Brian Beres, senior research scientist with Agriculture Canada at Lethbridge.

Western Prairie research

Fields that are predicted to be highly productive, increasing the chances of lodging, are the best candidates for PGR treatments, Beres added.

In more than 10 years of trials in east-central Saskatchewan, researchers have seen only one year where PGRs led to less lodging and higher yields, Tomcala said.

"The PGRs work really well in wet years or wetter-than-average years. In average years or dry years, the PGRs have no effect."



Anne Kirk, Manitoba Agriculture. PHOTO: FILE

Results from Beres's winter cereal research were somewhat different. Despite little lodging pressure during the study, PGR applications still produced modest yield gains.

"What it appears to be doing is taking those resources and partitioning them back to seed development," he said.

The yield increase was generally in the range of five to eight per cent, even when lodging was absent.

Researchers warn that even if yields improve a little, it doesn't always mean more profit. Farmers still have to pay for the product and the application, so choosing the right fields is important.

"Farmers have the best intuition about the conditions on their farm, and they'll know whether they need to put it on and if it's going to pay for itself," Beres said.

PGRs as insurance

Balwinder Kumar, cereal crops research scientist with Lakeland College, believes PGRs should be viewed primarily as a risk-management tool.

"They should not be viewed as a yield enhancer," he said.

Their greatest value, he added, comes when they prevent lodging in dense, high-yielding crops where harvestability, grain quality and yield could otherwise be compromised.

Fields with a history of lodging, high nitrogen fertility, excellent moisture conditions and high-yielding varieties are generally the strongest candidates for treatment, Kumar said.

Researchers also advise against applying PGRs in drought-stressed crops or fields with little history of lodging.



A field of barley undergoes a PGR trial at Lakeland College in Alberta. PHOTO: LAKELAND COLLEGE

Timing is still a major challenge. Since PGRs work by affecting stem growth, they need to be applied at a very specific stage of crop development. If that timing is missed, the product may not work well and can sometimes even harm crop growth.

"You cannot miss your application window," Tomcala said.

Researchers expect interest in PGRs to continue growing as additional products enter the market and more Prairie research becomes available. However, most do not expect widespread adoption anytime soon.

"I think we'll see more of it than we're seeing right now," Tomcala said.

"I still think it's going to be very boutique."

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