

Diflufenican Proves Promising for Herbicide-Resistant Waterhemp Control

A recent Weed Technology journal article shows a new preemergence corn herbicide can be effective as part of an integrated weed management approach to thwart waterhemp

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WESTMINSTER, Colorado – 5 June 2024 – Diflufenican, a new mode of action herbicide for preemergence use in corn, demonstrates effectiveness as an integrated weed management strategy for multiple-herbicide resistant (MHR) waterhemp (*Amaranthus tuberculatus*) control. That’s the conclusion from a recently published research article in the journal [Weed Technology](#), a journal of the Weed Science Society of America (WSSA).

Diflufenican is a WSSA Group 12 selective contact and residual herbicide that European farmers have used for weed management in cereals and lentils for several years. In February 2024, the Pest Management Regulatory Agency (PMRA) registered diflufenican in Canada and the USA. Developed by Bayer Crop Science for North America under the tradename Convintro, diflufenican’s approval is still pending for use in corn and soybean from the Environmental Protection Agency (EPA).

“No other herbicide from WSSA Group 12 has ever been marketed for weed management in corn and soybean in North America,” says Nader Soltani, Ph.D., an adjunct professor at the University of Guelph, Ontario, Canada, and corresponding author of the study. “Since waterhemp has evolved resistance to several herbicide Groups (2, 4, 5, 9, 14, 15, and 27), and is considered among the most problematic weed species to manage, this new herbicide could prove critical as part of an integrated weed management waterhemp control strategy here in Canada and also in the USA.”

Ontario corn growers produce nearly a billion kilograms of grain corn annually or nearly 65% of Canadian grain corn, contributing substantially to the Canadian economy and global corn export markets. Whether found in Canada or the USA, waterhemp can cause an average 19% corn yield reduction if left unmanaged.

The encouraging news is that Soltani and his research team determined biologically effective doses of diflufenican applied to preemergence corn for MHR waterhemp control. “The doses that caused a 50, 80, and 95% decrease in MHR waterhemp biomass were 72, 167, and 310 g ai ha⁻¹ (ground or aerial applications to foliage),” he says. “While diflufenican applied preemergence alone does not provide superior MHR waterhemp control than current commonly used corn

herbicide combinations, it can be another complementary herbicide partner to consider to boost MHR waterhemp control.”

Until now, no other studies have been published on the biologically effective doses of diflufenican for managing MHR waterhemp in corn. “Based on these results, diflufenican offers a new mode of action for controlling MHR waterhemp in corn,” sums up Soltani. “It can also be a complementary herbicide partner with other available herbicides to diversify modes of action and minimize the intensity of natural selection for the evolution of additional herbicide-resistant weed biotypes.”

More information about diflufenican and its use to control waterhemp in corn can be found in the article, “[Biologically effective dose of diflufenican applied preemergence for the control of multiple herbicide-resistant waterhemp in corn.](#)” The research is featured in the Volume 38, 2024, issue of *Weed Technology*, a [Weed Science Society of America](#) journal, published online by Cambridge University Press.

About *Weed Technology*

Weed Technology is a journal of the Weed Science Society of America, a nonprofit scientific society focused on weeds and their environmental impact. *Weed Technology* publishes original research and scholarship in the form of peer-reviewed articles focused on understanding how weeds are managed. The journal focuses on applied aspects concerning weed management in agricultural systems, weed/crop management systems, new weed problems, new technologies for weed management, herbicides used to manage undesired vegetation, and special articles emphasizing technology transfer to improve weed control. To learn more, visit www.wssa.net.

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