

GAINING CONTROL OF GLYPHOSATE- RESISTANT KOCHIA

Help growers fight the spread strategically and affordably.

By Rob Bahry, Development and Research Manager at ADAMA Canada



Hope for the best, plan for the worst – worthy advice to keep in mind as glyphosate-resistant kochia continues its spread across Western Canada.

Since it was first confirmed in Canada five years ago, glyphosate-resistant (GR) kochia has been steadily moving east, from southern Alberta and western Saskatchewan to sampled sites across Manitoba from 2015 to 2016.¹ This weed spreads fast and greatly reduces yields, so if they aren't asking already, it's time to talk to growers about what they can do.

Kochia has a high risk of developing resistance because it produces a large amount of seed (between 10,000 and 25,000 seeds per plant).¹ Seeds will germinate and emerge in early spring, then break at the stem after maturing. It travels long distances as a tumbleweed and disperses seeds along the way. Non-resistant kochia is already a tough annual weed with a high tolerance for heat, drought and salinity. GR biotypes pose a much more significant threat, so they require a responsible plan that takes cultural practices and chemical options into account.

We know herbicide resistance is a complex issue, and no one wants higher input costs. We also know you need to protect your margin while helping growers make good investments in their fields. Here are some affordable and effective options to share with your customers.



Pre-Seed Control in Cereals

We have all heard of the importance of tank mixing rather than using glyphosate alone. Margins for cereals, like wheat for example, are already thin. But with GR kochia threatening such a high percentage of yield, incorporating new herbicide groups is a worthwhile investment that can help prevent much costlier damage. Here's what we recommend.

¹Beckie, Hugh; Blackshaw, Bob; Hall, Linda; Low, Ryan. "Glyphosate-resistant kochia." Agriculture and Agri-Food Canada. [http://www1.agric.gov.ab.ca/\\$Department/deptdocs.nsf/all/crop14324/\\$FILE/au-2013-blackshaw-glyphosate-resistant-kochia.pdf](http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/crop14324/$FILE/au-2013-blackshaw-glyphosate-resistant-kochia.pdf)

HOTSHOT™

HOTSHOT can be tank mixed with glyphosate for an effective pre-seed burndown in cereals. One case treats 50 acres and comes with two 9.7 L jugs of bromoxynil and 1.6 L jug of florasulam.



Actives

Bromoxynil (Group 6) and florasulam (Group 2)



Registered for

Barley, oats and wheat



Controls

Group 9 (glyphosate) and Group 2 resistant kochia



Application timing

For weed-specific timing, please check the label



Water volume

20-40 L/ac



Cost per acre

\$6 to \$7



For full product details, visit our website at:

www.adama.com/canada/en/crop-protection/herbicides/hotshot.html

BROMOTRIL® II

BROMOTRIL II is an affordable option with excellent tank-mix flexibility. With its single mode of action, growers should follow best management practices and diversify their herbicide groups as much as possible. BROMOTRIL II should be applied at 40 ac/case tank mixed with glyphosate at a rate of 175 g a.i./ac.



Actives

Bromoxynil (Group 6)



Registered for

Barley, oats and wheat (only in minimum to zero tillage cropping systems)



Controls

Group 9 (glyphosate) and Group 2 resistant kochia



Application timing

Prior to or immediately after seeding



Water volume

20-40 L/ac



Cost per acre

\$5 to \$6



For full product details, visit our website at:

www.adama.com/canada/en/crop-protection/herbicides/bromotril-pre-seed.html

Bringing the Fight to the Field

The fact of the matter is it's hard to prevent kochia from entering a field because it travels fast and produces a large amount of seed. Frequent scouting to catch kochia when it's small, using tillage and adding multiple modes of action to the tank for in-crop applications will help increase control. Consider these in-crop herbicides:

FORCEFIGHTER™ M

FORCEFIGHTER M is an effective and convenient new tool for managing resistance in cereals. Its three actives and two modes of action control a wider range of weeds than similar products, including GR and Group 2 resistant kochia, at a lower cost per acre. It also provides excellent tank-mixability with grassy weed herbicides.



Packaging

2 x 10 L bromoxynil/MCPA + 9.6 L fluroxypyr or 40 ac/case
2 x 120 L bromoxynil/MCPA + 115.2 L fluroxypyr treats 480 acres



Actives

Bromoxynil (Group 6), fluroxypyr and MCPA ester (Group 4)



Registered for

Barley and wheat



Controls

GR and Group 2 resistant kochia, plus many other broadleaf weeds



Application timing

2 leaf to early flag



Water volume

20-40 L/ac



Cost per acre

\$9 to \$12



For full product details, visit our website at:

www.adama.com/canada/en/crop-protection/herbicides/forcefighter-m.html

RUSH 24™

RUSH 24 is a more cost-efficient in-crop option and provides excellent tank-mixability with grassy weed herbicides. With its single mode of action, growers should follow best resistance management practices and diversify their herbicide groups as much as possible.



Actives

Fluroxypyr and 2,4-D Ester (Group 4)



Registered for

Spring and durum wheat



Controls

GR and Group 2 resistant kochia



Application timing

4 leaf to early flag



Water volume

40 L/ac



Cost per acre

\$6 to \$8



For full product details, visit our website at:

www.adama.com/canada/en/crop-protection/herbicides/rush24.html

GR Kochia Control in Broadleaf Crops

Biotypes of GR kochia are often resistant to Group 2 (ALS inhibitor) herbicides as well, making it especially difficult to treat in broadleaf crops like canola, soybeans and pulses as there are currently no in-crop herbicide options for controlling glyphosate/ALS inhibitor-resistant kochia biotypes.² Pre-seed or pre-emergent treatments, as well as management practices like adding tillage, will help increase control.

Canola:

- Apply soil-incorporated ethalfluralin in spring
- Or a pre-seed application of bromoxynil
- An in-crop application of glufosinate ammonium (in tolerant varieties)

Soybeans:

- Apply soil-incorporated ethalfluralin or trifluralin in spring
- Or an in-crop application of dicamba in tolerant varieties

Pulses:

- Apply soil-incorporated ethalfluralin in spring
- Or sulfentrazone, either pre-plant or pre-emergent

For more information on control options for GR kochia and other herbicide-resistant weeds, contact your ADAMA area business manager at www.adama.com/canada/en/contact-us

²Fleury, Donna. "Glyphosate-resistant kochia spreading." Top Crop Manager. March 7, 2016. <http://www.topcropmanager.com/weeds/glyphosate-resistant-kochia-spreading-18721>



About the author

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Rob is the Development and Research Manager at ADAMA Canada, where he studies evolving trends in Canadian agriculture and looks for opportunities to bring innovation to key crop protection products.

He is a registered agronomist and has a Masters degree in Agronomy and Crop Science from the University of Manitoba. Prior to joining ADAMA, Rob worked with a crop nutrition company studying the impact of environmental stress on key field crops. Rob lives in Winnipeg, Manitoba, with his family, his dogs and his favourite team – the Winnipeg Jets.

About ADAMA Canada

At ADAMA, we lead an alternative approach in the Canadian agriculture landscape by doing three things better than anyone else:

1. We offer an alternative choice for active ingredients.
2. We champion an alternative approach by simplifying the way we work with customers.
3. We support ag retails and respect the relationships they have with growers.

What this means is, we keep things simple. We bring choice and simplicity to crop protection, allowing farmers and retails to do what they love instead of managing complicated, time-consuming rebate programs or bundling.

We also understand the value of the relationships retails have with their growers, and we respect those relationships. We are here to supply retails with what they need to be successful in their business – quality products with the passionate and experienced team that backs them.

To learn more about us, visit ADAMA.com/Canada.