BATTLE RIVER IMPLEMENTS LTD.

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AGRONOMY UPDATE

Over the past several of years, I have started to see more and more kochia showing up in our fields. A few years ago, kochia was mostly limited to bin yards, oil lease sites and saline patches. Today it's quite common on field margins; and in some cases patches are starting to show up in places well beyond the headlands. So why is this something I think we should all be concerned about? For starters, kochia is an extremely adaptable weed. Introduced to North America as an ornamental in the 1800s, it has spread throughout the continent, able to thrive in a wide variety of soil types and climates. Its adaptability is due to 2 main features of the species. It's a prolific seed producer, each plant capable of producing tens of thousands of seeds that spread far and wide when the mature plant breaks off at the base of the stem, becoming a tumble weed scattering seeds wherever the wind takes it. The other feature is the incredibly large genetic variety of kochia. This diverse gene pool allows it to adapt to a wide array of situations: from rich, productive farmland to the worst, most unproductive saline soil imaginable. Genetics has also blessed kochia with exceptional drought tolerance, allowing it to dominate the planted crop in dry years. The most important side effect of this large genetic pool from a management standpoint though, is the ability of

kochia to adapt to, and overcome herbicide applications. The list of herbicides that kochia is resistant to includes Glyphosate, Dicamba, the Sulfonyl Urea family, and Fluroxypyr. More recently, that list has grown to include Saflufenacil and Carfentrazone. Kochia is becoming resistant to so many herbicides so quickly, that it may eventually impact our ability to continue our common practice of no-till farming.

Dr. Charles Geddes (AAFC) put together the table included here, showing just how limited our options are for controlling resistant kochia, either in crop or during burnoff. The most alarming thing about the list may be how much shorter it is now than it was even five years ago.

Table 1. Registered herbicide options to control Group 2, 4, 9 and 14-resistant kochia in the Canadian Prairies[a]

Use window and herbicide	Wheat	Barley	Oat	Corn	Canola	Mustard	Flax	Soybean	Pea	Lentil
Soil-applied pre-plant										
Ethalfluralin[b] (3)					C	C		C	C	C
Trifluralin + metribuzin[b] (3 + 5)									C	
Pyroxasulfone (15)	S								S	S
Foliar-applied pre-plant										
Bromoxynil[c] (6)	C	C	C		C		C			
Bromoxynil + topramezone (6 + 27)					C					
In-crop										
Bromoxynil (6)	C	C	C	C			C			
Glufosinate[d] (10)				C	C			C		
Topramezone (27)				C						
Bromoxynil + tolpyralate (6 + 27)	C	C								
Bromoxynil + pyrasulfotole (6 + 27)	C	C								

[a]Based on the 2023 Alberta Crop Protection Guide (i.e., Blue Book); [b]Pre-plant incorporated; [c]Mixed with glyphosate only; [d]Glufosinate-resistant varieties only.

Based on this trend of rapidly evolving herbicide resistance, the challenge of managing kochia (or any other herbicide resistant weed for that matter) is going to require looking at things from a new angle. For most of my time in agriculture, herbicide applications have been our “easy button”. They have allowed us to treat a lot of acres in a short time span, while at the same time keeping our management decisions very simple. Now resistant weeds are threatening to take away that easy button. Once you have widespread resistance issues on your farm, you can never go back. By necessity, management of the problem becomes more situationally focused and time consuming. Not to mention lacking in the level of effectiveness we have become accustomed to. Things we presently pay lip service to without ever actually getting around to implementing become vital to controlling these weeds. That includes things like tillage, mowing out weed patches before they set seed, increasing our seeding rates to compete better with weeds, and even changing up our seeding times based on the target weed biology.

I have mentioned in the past that we are never going to spray our way out of herbicide resistance. As much as we don’t want to think about it, we are coming to a time where cultural practices such as the ones mentioned above are going to take up more and more of your time. Some of the things mentioned may have a fit on your farm. Some may not. And there are other possible control methods not mentioned here. So wouldn’t it make sense to get started learning how to implement some of these practices on that 15 acre patch of wild oats or kochia that you know you have but haven’t gotten around to doing anything about, rather than waiting until you have hundreds or even thousands of acres to deal with?