Control of Glyphosate Resistant Canola in Glyphosate Resistant Soybean

Glyphosate resistant (GR) soybeans dominate the market due to convenience and improved weed control over traditional soybeans. Volunteer glyphosate resistant canola is the major weed appearing in glyphosate resistant soybean acres in Saskatchewan. Producers must use herbicides in addition to glyphosate for control of glyphosate resistant volunteer canola to minimize soybean yield loss. This is an added cost, but combining herbicides with different modes of action can delay weed resistance. In addition, "layering" of pre- and post-emergent herbicides provides the greatest control of glyphosate resistant canola volunteers which emerge early and over an extended period of time. The objective of this trial was to demonstrate the efficacy of various pre- and post-emergent herbicides alone and in combination.

Trials were established at Yorkton, Indian Head, Melfort, and Outlook in 2018 to demonstrate the benefit of layering herbicides for the control of GR canola volunteers in a GR soybean crop. The first factor compared an in-crop application of glyphosate alone against glyphosate + Viper ADV. The second factor contrasted pre-seed applications of glyphosate alone and glyphosate tank mixed with either Blackhawk, Authority Charge, Express SG or Heat LQ. The benefit of layering herbicide could not be demonstrated at all locations.

An in-crop application of Viper ADV alone was sufficient to maximize control of GR canola volunteers and maximize yield at Yorkton, Indian Head, and Melfort (Figures 1 and 2).

Layering with pre-seed tank mixes did little to improve control of volunteers or increase soybean yield as canola populations were low at Indian Head and the initial flush at Melfort and Yorkton emerged after the pre-seed herbicides had been applied.

The situation was different at Outlook under irrigation, as a healthy population of volunteers was present when pre-seed herbicides were applied, and canola continued to flush throughout the year. As a result, layering of herbicide was extremely beneficial at Outlook. On average, pre-seed tank mixes alone provided 60% control of glyphosate resistant canola volunteers and increased soybean yield by 36%. However, layering pre-seed tank mixes with an in-crop application of Viper ADV further improved volunteer control to 90% and increased soybean yield by 68%.

Layering of herbicides with different application timings and modes of action can increase control of canola volunteers and increase soybean yield. While differences between pre-seed tank mixes were significant at times, no consistent conclusion can be made regarding the relative efficacy of the products.

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Figure 1. Main Effects of In-crop Herbicide on the Control of Volunteer Canola 56 days after Post-Emergent Herbicide Application

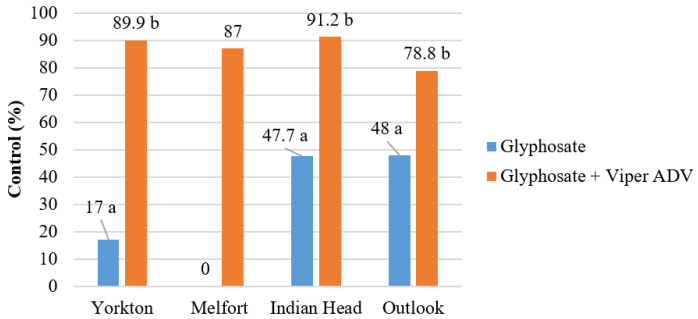

Figure 2. Soybean Yield for the Main Effects of In-crop Herbicide Control