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Pre-harvest herbicide and desiccation options for straight-combining canola

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While applying a pre-harvest or desiccant frequently provided drydown benefits in straight-cut canola, not applying a pre-harvest herbicide or desiccant should be considered a potentially viable option, especially for early seeded, reasonably uniform and weed free fields where a hybrid with good pod shatter tolerance is being grown.

With improved genetic pod shatter resistance and increasing producer confidence in the practice, straight-combining canola has become increasingly common in western Canada to the extent that the proportion of acres that are straight-combined in 2020 could approach 50%. Several agronomic questions have arisen with this dramatic increase in uptake, including whether or not pre-harvest herbicide/desiccant applications are necessary and which options are most effective.

Pre-harvest options were evaluated for both glufosinate ammonium (Liberty Link® – LL) and glyphosate (Roundup Ready® – RR) tolerant canola. Field trials were completed over three growing seasons (2017, 2018, and 2019) at four locations (Indian Head, Melfort, Scott, and Melita).

For LL canola, the treatments were glyphosate (890 g AI/ha), saflufenacil (50 g AI/ha), glyphosate plus saflufenacil (940 g AI/ha), and diquat (40 g AI/ha). The treatments for RR canola were similar except glyphosate (applied alone) was replaced with glufosinate ammonium (408 g AI/ha) which, it

should be noted, is not a currently registered pre-harvest option for canola. Glyphosate is registered as a pre-harvest herbicide, not specifically as a crop desiccant.

Various data were collected but the factors of greatest interest included measurements of whole plant and seed moisture content at harvest time, seed size and percent green seed.

There are many factors to consider when choosing an ideal pre-harvest option and, in addition to the specific herbicide tolerance system and relative crop dry-down benefits of the various options, these could include crop stage, anticipated time until harvest, weed control requirements, and cost. With high variability resulting from differences in environment (i.e. weather), timing of operations, and methods, the response data were not combined across site-years for analyses.

For LL canola, glyphosate applied alone reduced whole plant moisture 67% of time and seed moisture content 50% of the time. For RR canola, glufosinate ammonium reduced whole plant moisture content 45% of the time and seed moisture content 36% of the time.

Applied alone and averaged across both LL and RR canola types, saflufenacil reduced plant moisture 33% of the time and seed moisture content 25% of the time. When tank-mixed with glyphosate, the effects of saflufenacil on crop dry-down were similar to when this product was applied alone for RR canola and usually similar to glyphosate applied alone for LL canola. While it was relatively rare that saflufenacil plus glyphosate provided a measurable benefit over glyphosate applied alone in LL canola, this occasionally did occur (i.e. Indian Head 2019).

Diquat provided the most consistent dry-down benefits, reducing whole plant moisture 83% of the time and seed moisture 67% of the time. With regard to seed quality, impacts on seed size were infrequent and inconsistent but presumably due to applying the treatments too early in the cases where they did occur. Green seed was most commonly impacted by diquat whereby, applying this product too early could result in dramatic increases in green seed. No other products had this effect and negative impacts on quality could generally be prevented by avoiding application prior to the recommended crop stage.

As a further testament to the efficacy of modern shatter-tolerant hybrids, no shattering was reported for any treatments at any locations, despite the occurrence of occasional delays and unfavorable weather preceding harvest.

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