Managing Volunteer Canola in Soybeans

//Introduction

Volunteer canola can be a troublesome weed problem in soybeans. Research has shown that volunteer canola populations greater than 1.5 plants/m2 in wide rows and 3 plants/m2 in solid-seeded or narrow-row soybeans can reduce soybean yield potential.[1] Volunteer canola can be very competitive with soybeans. Management practices are important to reduce the canola seed bank left behind when soybeans are grown after canola. Managing volunteer canola in rotation crops requires intervention at several stages, beginning with management during canola harvest and fall tillage. Management continues with rotational crop selection, use of cultural practices that strengthen crop competitiveness with volunteer canola, and application of pre-plant burndown, residual, and in-crop herbicides.

//Reduce Harvest Losses

Managing harvest seed losses is a primary factor for limiting the intensity of volunteer canola infestations. Average seed loss at harvest is about 90 lb/acre.[2] The optimum time to swath is up to an average of 60% seed color change on the main stem.[2]

The height of swathing equipment may be adjusted to get all seed pods. Leave about 10 to 12 inches of stubble to anchor the windrow and allow adequate air circulation.[3]

Straight combining can result in pre-harvest pod shattering and combine shattering losses of 8 to 54%.[4] Select a spring canola seed product that is less susceptible to pod shatter to help reduce shatter losses during straight combining. Proper harvest timing is critical to reduce losses. Spring canola is ready to harvest when seed moisture is below 10%.[5] A pre-harvest desiccant, such as diquat herbicide, may help condition the crop for harvest, particularly in fields with uneven maturity.

//Tillage Management

Most volunteer canola plants emerge the year following a spring canola crop. Much of the seedbank can be depleted after two years if additional seed is not added.[5,6] No tillage or timely tillage after harvest can promote spring canola germination and reduce seed survival during the winter. Shallow tillage can keep spring canola seed close to the soil surface and can increase susceptibility to winter conditions. Timely fall tillage shortly after canola harvest can encourage volunteer canola seedling germination and help to reduce the volunteer canola seed bank over winter.[7] The timing of tillage is considered more important than the tillage type. A low-disturbance tillage pass can effectively encourage early fall and spring emergence of volunteer canola.

//Crop Rotation

Rotating to corn or small grains after spring canola can provide greater crop competition and allow for the use of a range of herbicide sites of action to control volunteer canola. Growth regulator (Group 4), ALS inhibitor (Group 2), PPO inhibitor (Group 14), and HPPD inhibitor (Group 27) herbicides are recommended by North Dakota State University for volunteer canola control in several crops. Consult the current North Dakota Weed Control Guide for herbicide effectiveness ratings and control options.[8] Consult individual product labels for use instructions, restrictions, and crop planting intervals for your local area.

//Cultural Practices

Enhancing the competitiveness of soybean and other crops with spring canola can help reduce the risk of potential yield loss. Volunteer canola does not compete well with vigorously growing crops. Living mulches and inter-row tillage in wide-row soybeans can be effective in reducing volunteer canola seed production.[7] Early planting, narrow row spacing, high seeding rates, good fertility, and selection of seed products that perform well with early planting can all enhance soybean competitiveness.

//Herbicide Options for Soybeans

The most effective herbicide system for broad-spectrum weed control in soybeans combines pre-plant burndown and/or pre-emergence (PRE) residual herbicides to control early emerging weeds, protect yield potential, and keep weeds small for an early post-emergence (POST) herbicide application. The best way to manage volunteer canola

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As of September 4, 2020, no dicamba formulations are currently registered by the U.S. EPA for in-crop use with seed in the Roundup Ready® Xtend Crop System in the 2021 season, and current stocks of low-volatility dicamba herbicides XtendiMax® herbicide, Engenia® herbicide and Fexapan® herbicide previously approved for in-crop use with seed in the Roundup Ready® Xtend Crop System may not be used after July 31, 2020.

Figure 1. Canola approaching the 4-leaf growth stage. Control volunteer canola before it reaches the 4-leaf growth stage.

is to start clean with a pre-plant burndown tank mix, a residual herbicide, and an in-crop herbicide application to manage the next flush of volunteer canola. Roundup Ready 2 Xtend® soybeans generally require an in-crop herbicide application effective on volunteer canola to maximize control and soybean yield.

Several herbicide groups can be used in soybeans to help manage volunteer canola (Table 1). Herbicides in Groups 2, 4, and 14 may be used PRE or POST to control volunteer glyphosate-resistant canola. Refer to the current North Dakota Weed Control Guide for herbicide effectiveness ratings and control options, as well as state and local recommendations.[8]

Best Management Practices for Volunteer Canola Control

- Reduce canola harvest losses.
- Don't till or do timely fall tillage after canola harvest.
- Plant competitive rotational crops where diverse herbicide sites-of-action can be used.
- Remove volunteer canola early with pre-plant burndown herbicides, PRE residual herbicides, and early POST herbicides.
- Control volunteer canola before it reaches the 4-leaf growth stage.
- Use proper spray coverage, particularly when using contact herbicides.

Table 1. Herbicides for glyphosate-resistant volunteer canola control in soybeans.[8]

Practice	Herbicide	Site-of-Action Group
Burndown	2,4-D LVE saflufenacil fomesafen	4 14 14
PRE	flumioxazin sulfentrazone + chloransulam saflufenacil + imazethapyr	14 14 + 2 14 + 2
Early POST	imazamox	2

Target canola less than the 4-leaf growth stage with burndown and POST applications. Consult individual product labels for use instructions, restrictions, and crop planting intervals.

//Source

[1]Gaultier, J. 2016. How do I control volunteer canola in my soybean? Manitoba Agriculture. http://cropchatter.com.

[2]Canola Grower's Manual. Chapters 10 and 11. Canola Council of Canada. http://canolacouncil.org.

[3]Kandel, H., Hanson, B., Berglund, D., and Zamstorff, M. 2017. Swathing and harvesting canola. North Dakota State University. A1171.

[4]Kandel, H. and Jenks, B. 2011. Straight combining or swathing. North Dakota State University. https://www.ag.ndsu.edu.

[5]2017. Harvest management. Canola Encyclopedia. Canola Council of Canada.

[6]Gulden, R., Shirliffe, S., and Thomas, A. 2003. Secondary seed dormancy prolongs persistence of volunteer canola in Western Canada. Weed Science 51:904-913.

[7]Lovell, A. 2019. Controlling volunteer canola in soybeans. Grainews. https://www.grainews.ca.

[8]Ikley, J. 2020. North Dakota Weed Control Guide – W253-20. North Dakota State University.

Web sources verified 4/15/2020.

//Legal Statements