

MANAGEMENT OF VOLUNTEER CANOLA

UNDERSTANDING VOLUNTEER CANOLA

- Like other weeds found in a cultivated crop, volunteer canola will compete with a crop for nutrients, water, and sunlight.
- In areas where canola is grown, volunteer canola can act as a host for diseases such as blackleg, clubroot, and sclerotinia so that the pathogen remains in the field to infect future canola crops.
- As with other weeds, early control of volunteer canola is important to minimize the impact that it can have on yield of the current crop.
- Volunteer canola is most likely to reduce crop yield if it emerges prior to crop emergence or up to 2.5 weeks after crop emergence. Weeds that emerge at later stages of the crop have less impact on crop yield but do contribute to additional seed returned to the seed bank.



Figure 1. Volunteer canola in a canola crop as a result of pre-harvest shatter loss.

METHODS OF VOLUNTEER CANOLA CONTROL

- Herbicide timings available for volunteer canola control:
 - » Pre-seed
 - » In-crop
 - » Pre-harvest
 - » Post-harvest
- Integrated pest management strategies can be effective methods of weed control
 - » Crop rotation
 - » Seeding density / row spacing
 - » Canola harvest management (reduce losses)
 - » Tillage

MANAGING VOLUNTEER CANOLA

- The most important step in reducing volunteer canola in a field is harvest management. Harvest losses of up to 10% have been documented in canola (Gulden et al., 2003a). Reducing both shatter and mechanical harvest losses can significantly reduce the amount of seed in the soil to become volunteers.
- The majority of canola seed is eliminated from the seed bank within two years of when canola was grown. Most of the seed will germinate the year following the canola crop (Figure 2).

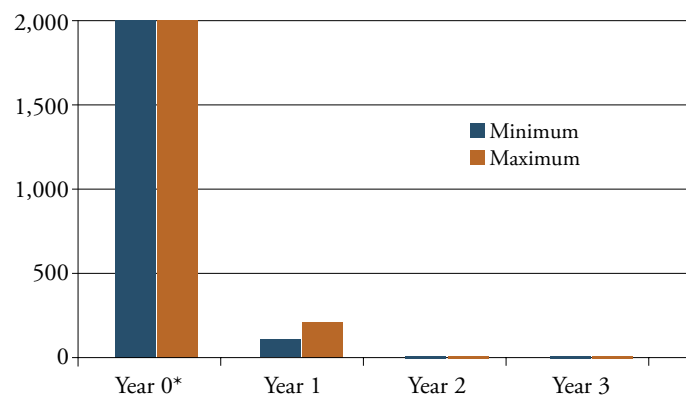


Figure 2. Volunteer canola emergence over time. Gulden et al, 2003b* Year 0 is the year of planting with 2000 viable seeds/m².

- Leaving a minimum 1-2 year break between canola crops provides an excellent opportunity to control volunteers prior to seeding canola again.
- There are many herbicides available for use pre-seed, in-crop, pre-harvest, and post-harvest that will control volunteer canola in cereals, pulses, and flax crops.
- The use of a herbicide with residual soil properties may be considered when there is significant weed pressure in subsequent crops.
- Smaller canola plants (<4 leaf) are the easiest to control with herbicide, so targeting proper weed staging may improve herbicide performance.
- After harvesting a canola crop, it is preferred to leave harvest losses close to or on the soil surface. If the seeds germinate prior to winter they will freeze. Keeping seeds close to the soil surface also helps decrease chances for secondary dormancy in canola.
- A light tillage after harvest has been shown to stimulate canola seed germination in the fall.

HERBICIDE CONTROL OPTIONS

- Optimal control of volunteer canola can be obtained using a pre-seed herbicide application as well as an in-crop herbicide application.
- Adding a tank-mix partner to glyphosate that is able to control volunteer canola not only can improve weed control, it will also provide an opportunity to mix herbicide modes of action and reduce the risk of herbicide resistant weed development.

Crop	Herbicide Options*
Wheat	Aim®, 2,4-D, BlackHawk™, Buctril® M, CleanStart®, Express® SG, Express PRO, Express FX, florasulam, Heat®, Inferno™ Duo, KoAct™, Korrex™, MCPA, Pardner®
Soybean	CleanStart, Aim, Express, Heat
Field Pea	CleanStart, Aim, Express, Heat
Flax	CleanStart, Aim, Buctril M, MCPA,
Corn	CleanStart, Aim, Heat, Battalion® (Battalion registered in the Red River Valley in MB ONLY)

PRE-HARVEST WEED CONTROL

- Under the right weather conditions, volunteer canola may emerge following in-crop herbicide applications.
- Yield is not greatly impacted by weeds at this time.
- Herbicides such as Aim, CleanStart, Reglone®, and Heat are registered for use pre-harvest (see label for crops registered).
- Aim and Heat are tank-mix partners with glyphosate.
- Efficacy of post-harvest applications can be impacted by weed size, water volume and coverage.



Gulden, R.H., S.J. Shirtliffe, and A.G. Thomas. 2003a. Harvest losses of canola (*Brassica napus*) cause large seedbank inputs. *Weed Sci.* 51:83-86.

Gulden, R.H., S.J. Shirtliffe, and A.G. Thomas. 2003b. Secondary seed dormancy prolongs persistence of volunteer canola in western Canada. *Weed Sci.* 51:904-913.

SELECTING A GLYPHOSATE-TOLERANT CANOLA SYSTEM

- No one herbicide tolerant system may fit all fields. There are several factors to consider when choosing a system.
- Weed Control
 - » Weed control is the number one factor to consider when choosing a herbicide tolerant canola system.
 - » A glyphosate-tolerant herbicide system provides an opportunity to successfully control grassy weeds, difficult to control weeds such as cleavers as well as many winter annual and perennial weed species.
 - » The broad-spectrum of weed control possible with glyphosate reduces the need for expensive tank-mix partners to improve weed control.
 - » Glyphosate is able to be tank-mixed with other herbicide products pre-seed, pre-harvest or post-harvest to allow for opportunity to reduce the risk of glyphosate resistance.
 - » Glyphosate can be aerially applied as necessary for weed control during times when getting a sprayer in the field is not always possible.
- Non-Weed Factors
 - » Factors such as hybrid performance, harvestability, disease resistance and available traits are additional factors to be taken into consideration.
 - » Consistently high yielding glyphosate-tolerant hybrids are available across western Canada .
 - » Glyphosate tolerant hybrids have shown good harvestability and strong ability to hold pods and reduce shatter to allow for reduced canola seed going back into the seed bank.
 - » A variety of glyphosate-tolerant hybrids are available with resistance to canola diseases such as clubroot, sclerotinia, and blackleg.
- Resistant weed management is an important consideration in managing weeds. Glyphosate has been shown to be applied less on fields where glyphosate tolerant canola is grown vs. glufosinate tolerant canola.
- Through the use of proper herbicide rotations and tank-mix partners, risk for development of glyphosate resistant weeds can be reduced.
- Using many different management practices such as diverse rotations, higher seeding rates, varied seeding dates, shallow seeding depth, tillage, direct seeding, adequate fertility, and protection from disease and insects is the best strategy to decrease the impact and spread of weeds, including volunteer canola.

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