

PRE-SEED VS. POST-HARVEST:

How to get the best perennial weed control

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WHEN IT COMES TO HARD-TO-CONTROL PERENNIALS, WHAT'S THE BEST BURN FOR YOUR BUCK?

Here are the pros and cons based on application timing.

Several types of weeds cause headaches throughout the growing season, but perennials like dandelions and Canada thistle pose a unique threat. Not only are they long-lived, they can be extremely difficult to kill. Unlike annuals, perennials can live for several years, surviving our cold Canadian winters by storing food in their roots. And it's these roots that make perennial weeds such a challenge to get rid of.

For example, the ubiquitous dandelion has a thick, branched taproot up to two metres long that can delve deep underground.¹ It will also produce a whole new plant even if the tiniest piece of root is left in the soil,



which is why hoeing or tilling aren't great choices for controlling dandelions. In fact, mechanical removal can actually make things worse. When you defoliate a dandelion, it can cause a shift of the shoot-root ratio which favours root growth, making the plant even more tenacious.²

It's no wonder herbicides are often considered the best solution.

Post-Harvest Weed Control

Spraying after harvest is complete is considered by many to be the best time for dandelion control. One reason why is both the perennial plants and the seedlings are present and easily accessible to herbicide applications. Also, waiting until spring to spray means the plants will be much harder after bulking up their root systems in preparation for winter.³

Taking advantage of nutrient flow

In September, the cooler night-time temperatures and shorter daytime hours act as a signal to plants that winter is coming. This causes perennial weeds to begin moving moisture and nutrients in tissues down below ground so they can survive the winter months and regrow in the spring.⁴

¹ Stewart-Wade, S.M., Neumann, S., Collins, L.L., and Boland, G.J. "The biology of Canadian weeds. 117. *Taraxacum officinale* G. H. Weber ex Wiggers." *Canadian Journal of Plant Science*. Oct 2002. Online. [http://www.uoguelph.ca/~plpathol/PDFs/Stewart-Wade%20et%20al%20\(2002\).pdf](http://www.uoguelph.ca/~plpathol/PDFs/Stewart-Wade%20et%20al%20(2002).pdf)

² Stewart-Wade, S.M., Neumann, S., Collins, L.L., and Boland, G.J. "The biology of Canadian weeds. 117. *Taraxacum officinale* G. H. Weber ex Wiggers." *Canadian Journal of Plant Science*. Oct 2002. Online. [http://www.uoguelph.ca/~plpathol/PDFs/Stewart-Wade%20et%20al%20\(2002\).pdf](http://www.uoguelph.ca/~plpathol/PDFs/Stewart-Wade%20et%20al%20(2002).pdf)

³ Agriculture: Controlling Dandelion in the Fall." *Manitoba.gov*. Online. Accessed 14 September 2017. <https://www.gov.mb.ca/agriculture/crops/weeds/print,controlling-dandelion-in-the-fall.html>

⁴ "FAQ on pre- and post-harvest Roundup applications for perennial control." Cargill Expert's Blog. Online. <https://www.cargillag.ca/expert-network/expert-blog/faq-roundup-perennials>

This is an important reason why fall is a good time to clean up hard to kill perennials like dandelion and Canada thistle. This is when these weeds are stocking up root reserves, and a fall herbicide application takes advantage of this increased nutrient flow.

A variety of products can control dandelions, depending on the crop. Glyphosate is particularly effective in the fall because it will get translocated down to the roots, enhancing its activity and providing better control.

A post-harvest burndown is also a good opportunity to add different chemistries to boost performance or increase the number of weeds controlled. Using different modes of action in your tank mix will also reduce the risk of herbicide resistance.

In post-harvest applications, glyphosate used in combination with active ingredients such as tribenuron-methyl, metsulfuron-methyl, florasulam (PRIORITY®) or 2,4-D will provide good dandelion control. Rates will depend on the size of the dandelion plants.⁵

Setting yourself up for spring

Controlling weeds post-harvest can help crops get off to a good start the following spring by helping to provide warmer soils for planting. Earlier weed control can reduce the mat of dead weeds that often remains after a spring burn-down, resulting in a warmer, drier seedbed that will encourage uniform emergence and seedling vigor.⁶

A post-harvest herbicide application can also result in less insect and disease pressure in the

spring. With fewer weeds, insects and spores have fewer places to hide.⁷

You may find you have more time to spray post-harvest than at other times, but like most operations, this largely depends on the weather. You may have no choice than to opt out if the weather doesn't cooperate and winter sets in early.

Climate and crop type are other considerations. Areas where winter typically arrives later in other parts of the country may favour post-harvest spraying. Crops that are reaped earlier (such as in August) may also provide a bigger window for post-harvest herbicide applications.

Another reason to consider post-harvest herbicide applications is labour. If you have hired staff who helped with harvest, you may want to ask them to stay on to assist with late-season spraying, especially since this manpower may not be as readily available at other times of the year.

Getting your timing right to pack the most punch

One disadvantage of post-harvest weed control has to do with timing. If you spray too early, you may face the possibility of your herbicide application losing its efficacy.

Weeds cut by the combine need time to accumulate new leaf tissue in order to absorb herbicides applied post-harvest. A four- to six-week interval is recommended between harvest and herbicide application; if you're combining in late August, for example, it's a good idea to wait until mid- to late-September to spray.⁸

⁵Weir, Thom. "Best registered herbicides for dandelion suppression." *The Western Producer*. 25 Apr 2014. Online. <http://www.producer.com/2014/04/best-registered-herbicides-for-dandelion-suppression/>

⁶"Post Harvest Treatment for Corn and Soybeans." Dupont Crop Protection. Online. <http://www.dupont.com/products-and-services/crop-protection/corn-protection/articles/post-harvest.html>

⁷"Post Harvest Treatment for Corn and Soybeans." Dupont Crop Protection. Online. <http://www.dupont.com/products-and-services/crop-protection/corn-protection/articles/post-harvest.html>

⁸"FAQ on pre- and post-harvest Roundup applications for perennial control." Cargill Expert's Blog. Online. <https://www.cargillag.ca/expert-network/expert-blog/faq-roundup-perennials>





However, this brings frost into the picture. The later you get into fall, the higher the risk of a killing frost that can damage leaf tissues and bring weed development to a full stop. Hardy perennials like dandelion and Canada thistle are capable of withstanding light frosts, but hard frosts (as well as droughts) will halt growth.⁹ As a result, herbicides like glyphosate that control weeds at the root level will lose their effectiveness.

Following a frost, it's recommended that growers wait one to two days to check the conditions of weeds before filling the sprayer. If the weeds are green and the leaf tissue is still relatively pliable, there's hope. Control with glyphosate may still be obtained if no more than 40% of the original leaf tissue

is damaged.¹⁰ If the weeds appear to be blackened, brown or brittle, it likely means the plants are too damaged to take up herbicide, and subsequent spraying won't be of much use.¹¹

When applying glyphosate for post-harvest weed control, it's recommended to spray when the plants are most actively growing – either late morning or early afternoon when temperatures are warmer and heavy dew is off the plants. Bright sunny days are also best for moving herbicides to the roots where they will have the most impact next year.¹²

As with all weed control, it's important to keep a close eye on plant development. If weeds are under serious drought stress, it's wise to wait for rain and spray a week later if weather permits.¹³

If you're planning a post-harvest application, read herbicide labels carefully to ensure not only proper rates of application, but any possible cropping restrictions you may have for the following year.

Pre-Seed Weed Control

Of course, a post-harvest application isn't your only option. A pre-seed burndown allows growers to start the season clean by reducing early season weed pressure. Fewer perennial weeds means less competition for moisture and soil nutrients for your crops.

⁹ "Winter Annual and Weed Control: FAQs." *Alberta Agriculture & Forestry*. Online. Accessed 14 September 2017. [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/faq7331](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/faq7331)

¹⁰ "Fall Weed Control and Frost". *Canola Watch*. 2 Oct 2013. Online. <http://www.canolawatch.org/2013/10/02/fall-weed-control-and-frost/>

¹¹ "Weed Management." *Canola Council of Canada Canola Encyclopedia*. Online. <http://www.canolacouncil.org/canola-encyclopedia/weeds/weed-management/>

¹² "Weed Management." *Canola Council of Canada Canola Encyclopedia*. Online. <http://www.canolacouncil.org/canola-encyclopedia/weeds/weed-management/>

¹³ "Controlling Weeds Post-Harvest in Winter Wheat." *University of Nebraska-Lincoln Institute of Agriculture and Natural Resources Cropwatch*. Online. <http://cropwatch.unl.edu/controlling-weeds-post-harvest-winter-wheat>

Choose a partner with residual action for top-growth control

Spraying in the spring also provides an opportunity to enhance weed control with multiple modes of action. Teaming up glyphosate with another herbicide that provides residual action will provide sharper control of tougher, more established weeds like dandelion than an increased rate of glyphosate alone, while also reducing your risk of developing resistance.¹⁴

For both dandelion and Canada thistle control in the spring, you can expect to achieve only top-growth control. In the spring, perennials like dandelions and Canada thistle are moving water and nutrients from their roots to new top growth, so herbicides like glyphosate don't move to the roots as well in spring, compared to fall applications. As a result, a spring perennial control strategy should focus on reducing competition for the incoming crop and removing top growth to starve the root system.¹⁵

In pre-seed herbicide applications, glyphosate used in combination with active ingredients like florasulam (PRIORITY®) flucarbazone-sodium, an ALS-inhibitor (Group 2) and tribenuron-methyl will provide dandelion control in good growing conditions, so you need to allow time for some spring growth before you spray.¹⁶

Keeping populations in check can be harder in the spring

Dandelions spread through seedlings, but it's the combination of dandelion seed and rootstock regrowth that can cause the weed's population to swell in a field. Spring tillage can make the problem worse by dicing up dandelion roots in the soil that then go on to produce new shoots.

This regrowth means that pre-seed herbicide applications may be less effective for controlling dandelion populations than spraying after harvest. That's because post-harvest applications are capable of controlling established dandelion plants, emerged seedlings and those plants that emerged from rootstock earlier in the year.

It's possible you'll have a bigger window for spraying prior to seeding in the spring than after harvest – but once again, this is largely dependent on the weather. Warm, dry conditions in late March and into April are favourable for pre-seed herbicide applications, while adverse conditions leading up to seeding are not.

Another consideration is labour. If you're looking for assistance with pre-seed spraying in the spring, you may run into a problem with workers not being available for earlier start dates. On the other hand, if you opt for measures like custom seeding, you may find you have more time and resources available to focus on weed control early on.

¹⁴ Fehr, Doug, Matichuk, Sonia, and Pedersen, Annemarie. "How to stop weeds from getting a head start." *The Western Producer*. 2 Feb 2017. Online. http://www.producer.com/sponsored_content/how-to-stop-weeds-from-getting-a-head-start/

¹⁵ Raine, Michael. "Weed of the Week: Dandelion." *Western Producer*. Online. Accessed 14 September 2017. <http://www.producer.com/2013/05/weed-of-the-week-dandelion-2/>

¹⁶ Weir, Thom. "Best registered herbicides for dandelion suppression." *The Western Producer*. 25 Apr 2014. Online. <http://www.producer.com/2014/04/best-registered-herbicides-for-dandelion-suppression/>



Watch the weather and catch them while they're growing

The best time to catch weeds in the spring is when they're young and actively growing, so scout your fields early and often to determine when to spray before seeding. Calm, sunny days are best for spraying in the spring as it's best to avoid applying glyphosate in colder weather.¹⁷

For perennial weeds, the recommended delay between applying glyphosate and seeding ranges from three to five days depending on weather conditions. If it's sunny and warm when spraying, translocation will take place fairly quickly and three days should be enough. If the weather is cloudy and cool when spraying, five days is recommended before seeding.¹⁸

If you're planning to do any in-crop applications after pre-seed spraying, it's a good idea to make sure to thoroughly clean out the sprayer so there aren't any active ingredients that could potentially harm crops.¹⁹

Choosing the best time to spray

Troublesome perennials can be a real scourge for farmers because they are so tough to kill. The cornerstone of any successful strategy is to use glyphosate in combination with a tank-mix partner to provide effective and enduring weed control.

However, this begs the question: when is the best time to attack perennials? And the simplest answer is, "It depends." There are pros and cons for each timing option that depend on numerous factors, ranging from weather to labour availability.

To get the best control for your fields, consider your pest pressures, herbicide options and crop plan for 2018 to help determine the best investment for your field. And before you spray, know what conditions will help you make the most of your spray pass.

¹⁷ "Tank Mix Glyphosate for Pre-seed Burnoff." *Canola Watch*. 4 May 2016. Online. <http://www.canolawatch.org/2016/05/04/tank-mix-glyphosate-for-pre-seed-burnoff/>

¹⁸ "Weed Management." Canola Council of Canada Canola Encyclopedia. Online. <http://www.canolacouncil.org/canola-encyclopedia/weeds/weed-management/>

¹⁹ "Tank Mix Glyphosate for Pre-seed Burnoff." *Canola Watch*. 4 May 2016. Online. <http://www.canolawatch.org/2016/05/04/tank-mix-glyphosate-for-pre-seed-burnoff/>



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1. We offer an alternative choice for active ingredients.
2. We champion an alternative approach by simplifying the way we work with customers.
3. We support ag retails and respect the relationships they have with growers.

What this means is, we keep things simple. We bring choice and simplicity to crop protection, allowing farmers and retails to do what they love instead of managing complicated, time-consuming rebate programs or bundling.

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