



Successful Desiccation Decisions in Peas and Beans

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The Bean Report

Your source for soybean and pulse crop agronomy and research.

CROP DESICCATION HAS become an increasingly hot topic. In part due to consumer demand for pesticide-free products, variable maximum residue limits (MRLs) across export markets and the negative spotlight on glyphosate. It doesn't mean desiccation is off-limits. But we need to understand the limitations of late-season herbicide. Especially when it comes to crops destined for human consumption, including field peas and dry edible beans.

DESICCATION VS. PREHARVEST WEED CONTROL

“Preharvest” and “harvest aid” are broad terms used in the ag industry. Today, we need to be more specific about distinguishing desiccation from preharvest weed control. The difference between the two is your goal for applying the late-season herbicide and the type of product you intend to use.

Desiccation is the application of a contact herbicide or true desiccant that will dry down plant material and advance harvest (Table 1). Preharvest weed control most often involves the application of a systemic herbicide like glyphosate (e.g., Roundup) that will control excessive

weed pressure (especially perennials) before harvest.

This contact vs. systemic herbicide distinction is important. Glyphosate offers some dry-down, but don't expect to see it until a week or two after application (depending on weather conditions). True desiccants provide rapid dry-down of plant material in one to three days and do a much better job of advancing harvest. They also help dry down weeds to ease harvest and maintain quality. Yes, glyphosate is cheaper than a true desiccant. But if your main goal is to advance maturity, glyphosate is not your guy. After all, we don't want you to spend money and risk the marketability of your crop for nothing.

WHAT ARE MRLS AND WHY DO THEY MATTER?

An MRL is the maximum level of residue of a specific active ingredient allowed in harvested grain. Health Canada sets science-based MRLs that are well below any amount that could pose a health concern. But motivations behind



MRLs vary among importing countries and do not follow one internationally recognized standard. Since Canada is highly export-dependent, we need to keep an eye on the changing MRL landscape.

The new, pared down list of chemicals on this year's MRL advisory showcases only the herbicides that pose potential market risks to pulses – glyphosate, diquat and glufosinate. Check out the advisory on page 22 for details.

Keeping track of these moving targets is complex. But what farmers need to do is simple: 1. only use registered products, 2. apply the product at the labelled rate and timing, 3. regularly consult with your buyer to keep tabs on product limitations and 4. consider avoiding late-season herbicide altogether (more on that later). Note that if a buyer does not accept preharvest glyphosate, that applies to tank-mixing as well.

GETTING YOUR APPLICATION 'JUST RIGHT'

The real risk is applying late-season herbicide too early. Applying too early leaves high residue concentrations in the seed and can cause yield and quality loss. At the late end of application, we also need to stay within each product's preharvest interval (PHI). Consider yourself Goldilocks and aim for 'just right'.

The rule of thumb for crop desiccation and especially preharvest glyphosate timing, is that seeds must be dried down to less than 30% moisture in the least mature part of the field. Walk the field to inspect plants from different areas. Inspect pods for colour change, shake the plant for rattling seeds, shell pods and squeeze seeds from the upper portion of the plant to assess seed colour. And do that drive-by assessment or stand on your vehicle to get

Table 1. True desiccants registered for dry beans and field peas.

Product	Group/Active Ingredient	Preharvest Interval
Reglone/Reglone Ion/Desica/ Armory 240/Diquat 240/Drifast/ Stage/Guardsman Diquat/ Craven/MPower Clone/Bolster	22/diquat	4–10 days
Aim EC	14/carfentrazone	3 days
Heat LQ/ WG	14/saflufenacil	Dry beans – 2 days Peas – 3 days
Valtera	14/flumioxazin	5 days 7 days if tank-mixed with glyphosate

Notes: Group 14 herbicides offer dry-down of broadleaf weeds only. Group 22 herbicides are non-selective. Consult with your local rep to determine if your field is a good candidate for Valtera, as this product has not been widely used in dry beans in Manitoba to date. Valtera is most effective when tank-mixed with glyphosate.

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Peas at 25–30% seed moisture with yellow to brown pods and firm seeds within the pod.



a picture of percent maturity across the field. Here's your road map, now let's get to the specifics of 30% seed moisture in peas and beans.

FIELD PEAS

Desiccation timing for peas is in late July to early August when conditions are still hot and dry. Swathing is an option for peas and acts much like a desiccant. However, low residue, billowy pea swaths are highly susceptible to blowing and at high risk of harvest loss. If possible, straight combining is best for peas.

Peas are 'just right' for desiccation when...

- 80% of the plant has turned yellow to brown in colour in 75–80% of the field.
- Seeds rattle in the lowest pods. Bottom pods are ripe and dry with seeds detached from the pod.
- Top of the plant may still be slightly green in colour.
- Top pods appear wrinkled and seeds inside are firm. A firm seed will split rather than squash under pressure.

DRY BEANS

The time to desiccate dry beans ranges from late August to early September when conditions are cool and moisture is high. Dry beans can be harvested by undercutting and windrowing, swathing or straight combining. Cutting and windrowing is more common for row-cropped beans and vine-type varieties

that pod low to the ground. Direct harvest or swathing with lifters prior to combining has been more common for solid-seeded beans and bush-type varieties with higher pods. Both undercutting and swathing of dry beans have a similar effect as desiccation.

Dry beans are 'just right' for desiccation when...

- 80–90% of leaves have dropped and 80% of pods have changed to their mature colour.
- Seeds rattle in the lowest pods. Bottom pods are ripe and dry with seeds detached from the pod.
- Upper pods may still be yellow in colour.
- Seeds in the upper pods have lost their green colour when split.

It is interesting to note that the correct desiccation timing describes the "full maturity" development stage for both crops. This reinforces the fact that desiccants do not bring about seed maturity, but instead help dry down plant material for ease of harvest.

DO I REALLY NEED THAT LATE-SEASON HERBICIDE?

The decision to pull the trigger on desiccation or preharvest weed control depends on a combination of factors. Here are a few questions to run through as you consider whether late-season herbicide is truly needed:

Do I have a stagey crop with areas maturing at different rates?

Estimate how much these areas differ in maturity. If some areas are way behind, consider harvesting in stages. Some of

these green spots could stay green for a long time. This means an increased risk of residue concentration in the seed sample if product is applied. If there isn't a huge difference in maturity across the field and product application can be timed appropriately, desiccation could be your friend.

How far away from harvest is the majority of the crop?

If most of your crop is close to harvest, late-season herbicide may not even be an option for you depending on the product and its PHI. Also consider your crop's potential to mature naturally without a desiccant. This is especially true for peas that mature in the heat of summer. You may not need a desiccant if the crop is already progressing nicely.

Are there weeds that need to be controlled?

Consider the types of weeds present, their populations, distribution within the field and development stage. Your main targets are perennials (e.g., Canada thistle) that are best controlled by herbicide application ahead of winter. Although green weeds of any kind can pose a threat to quality, especially for dry beans. You also need a high enough weed population to justify the cost of application. Maybe the weeds can be managed in patches. Or maybe post-harvest management is a better strategy if weeds have already set seed and you can live with some going through the combine. Luckily, pea harvest is early enough to leave time for weed control after.

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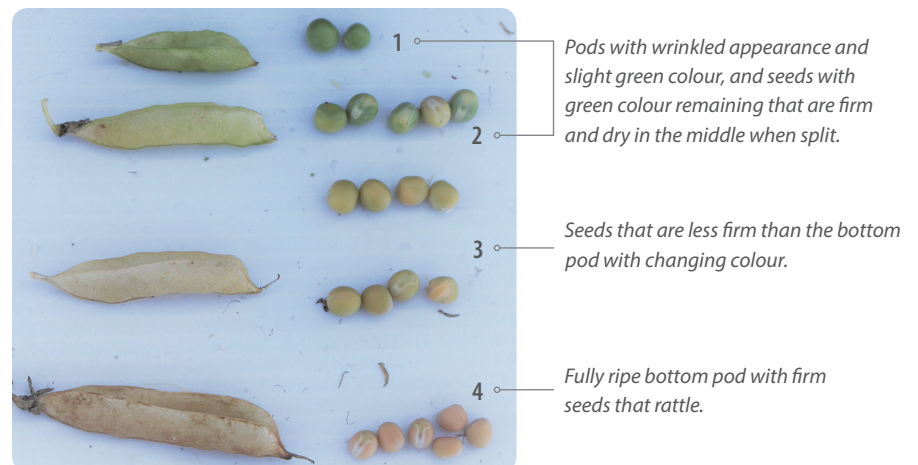


Photo: Saskatchewan Pulse Growers



Navy and pinto beans at the correct timing for desiccation.

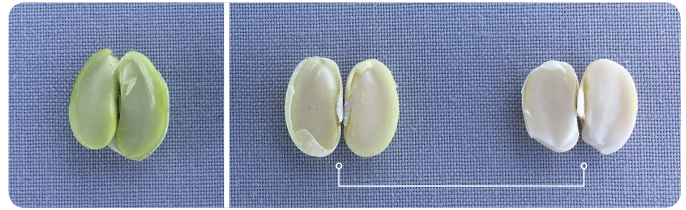


navy bean



pinto bean

Split navy bean seeds showing varying levels of green colour remaining.



too early

just right

Left = too green to desiccate

Middle and right = safe to desiccate

Pinto bean seed samples aggregated from entire plants at 50% moisture (left) vs. 30% moisture (right), on average.



too early



just right

What are the weather conditions like during crop maturity?

If you wait for natural dry-down of beans and peas, particularly in years with lots of vegetative growth and high moisture during maturity, there is a risk of pod shatter, sprouting, seed coat slough and post-maturity disease. There is also the risk of bleaching in green peas. Under these conditions, desiccation may be a good choice.

Product performance is also impacted by weather conditions. Diquat works best under cloudy conditions or in the evening. Saflufenacil is the opposite – it needs sunlight for activity and should be applied during daylight hours under clear skies. And glyphosate prefers warm, sunny conditions when weeds are actively growing.

What grade are you targeting?

Whether you're aiming for No. 1 or No. 2 peas may influence your late-season herbicide decisions. Specifications for No. 2 peas are more lenient on seed colour and staining. For dry beans, where you're normally aiming for a No. 1 grade, we recommend being especially cautious about lush, green weeds mixed with soil going through the combine that can cause downgrading.

What crop are you planning to grow after?

Watch for any re-cropping restrictions associated with a given product and crop combination. Two examples: 1. dry beans can only be planted the second season after preharvest application of Heat on the previous crop, and 2. potatoes can be grown the season after spring application of Valtera but not after fall application. ■

This year, our goal is to collect more photos of pea and bean desiccation timing, ground truth some of the current recommendations and develop more resources for you. Reach out if you would like us to visit your field. And remember to seek a second opinion if you are on the fence about late-season herbicide.