

HERBICIDE APPLICATION TIMING GUIDE

For Peas & Lentils



 **BASF**

We create chemistry

**TREAT
YOUR
PULSES
TO THE
HERBICIDE
PROTECTION
THEY
DESERVE.**





WEED CONTROL IS MAXIMIZED WHEN TIMING IS PRIORITIZED.

Controlling weeds prior to and through the critical period for weed control in field peas and lentils is essential for preventing substantial yield loss.

In field peas	Critical period for weed control	emergence to 6 node stage
In lentils	Critical period for weed control	5 node to 9 node stage

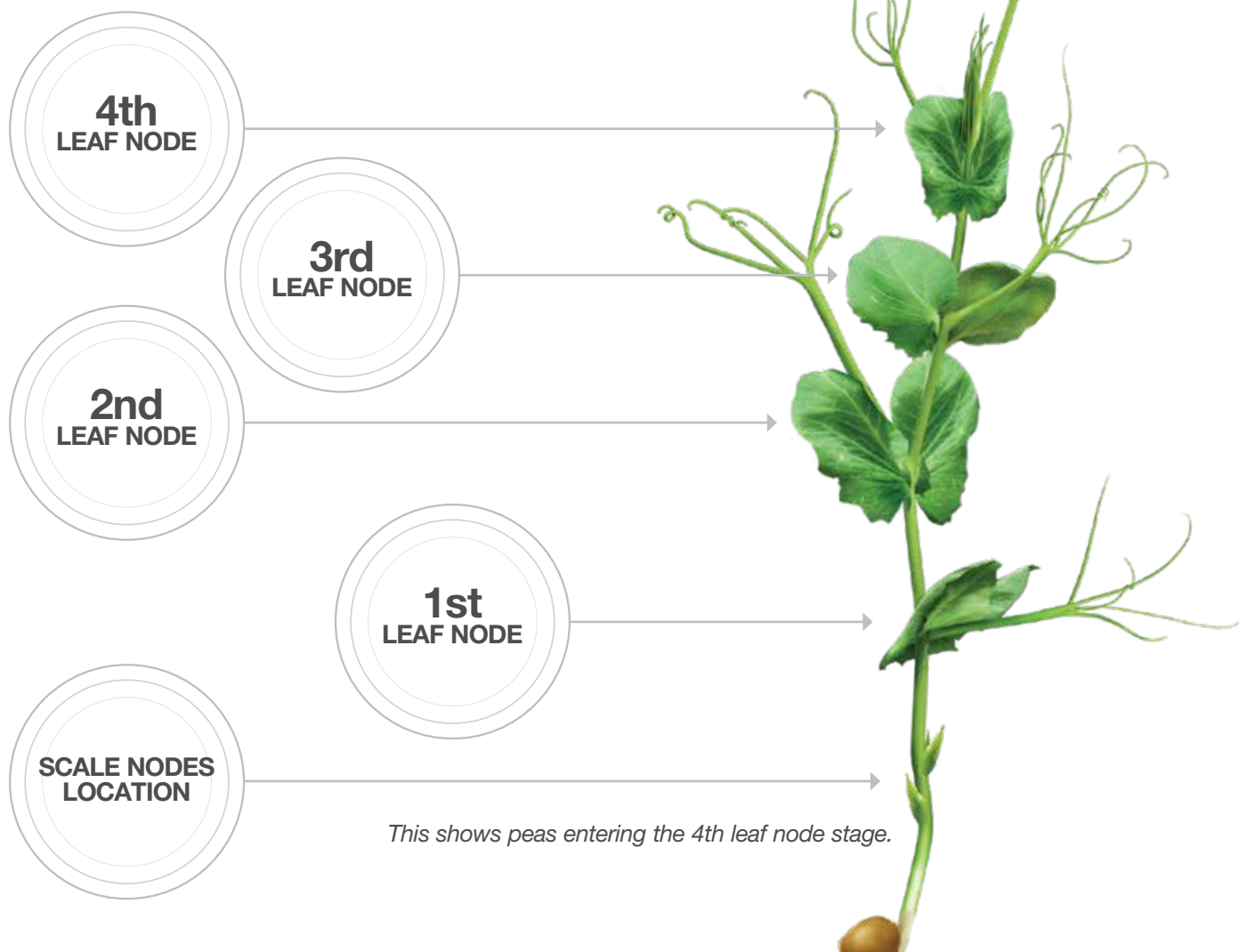
When to apply a pulse herbicide can vary by crop and environmental conditions. Get the timing right to reduce weed competition during early season crop development and get the most yield potential from every acre.

IN THIS GUIDE YOU'LL FIND:

- How to identify the crop stages in field peas and lentils
- Information about application timing for pulses
- Ways to avoid crop injury during crop stress (heat, drought, frost)
- A complete weed control solution for your peas and lentils
- Frequently asked questions and answers

IDENTIFYING PEA STAGES.

- Field peas show scale leaf nodes before the first true leaf appears; scale nodes are not counted
- The first true leaf in field peas emerges at the 1st visible node above ground
- For crop staging, nodes are counted once the leaf has opened
- Later stages show multiple leaflets on tendrils as the plant matures

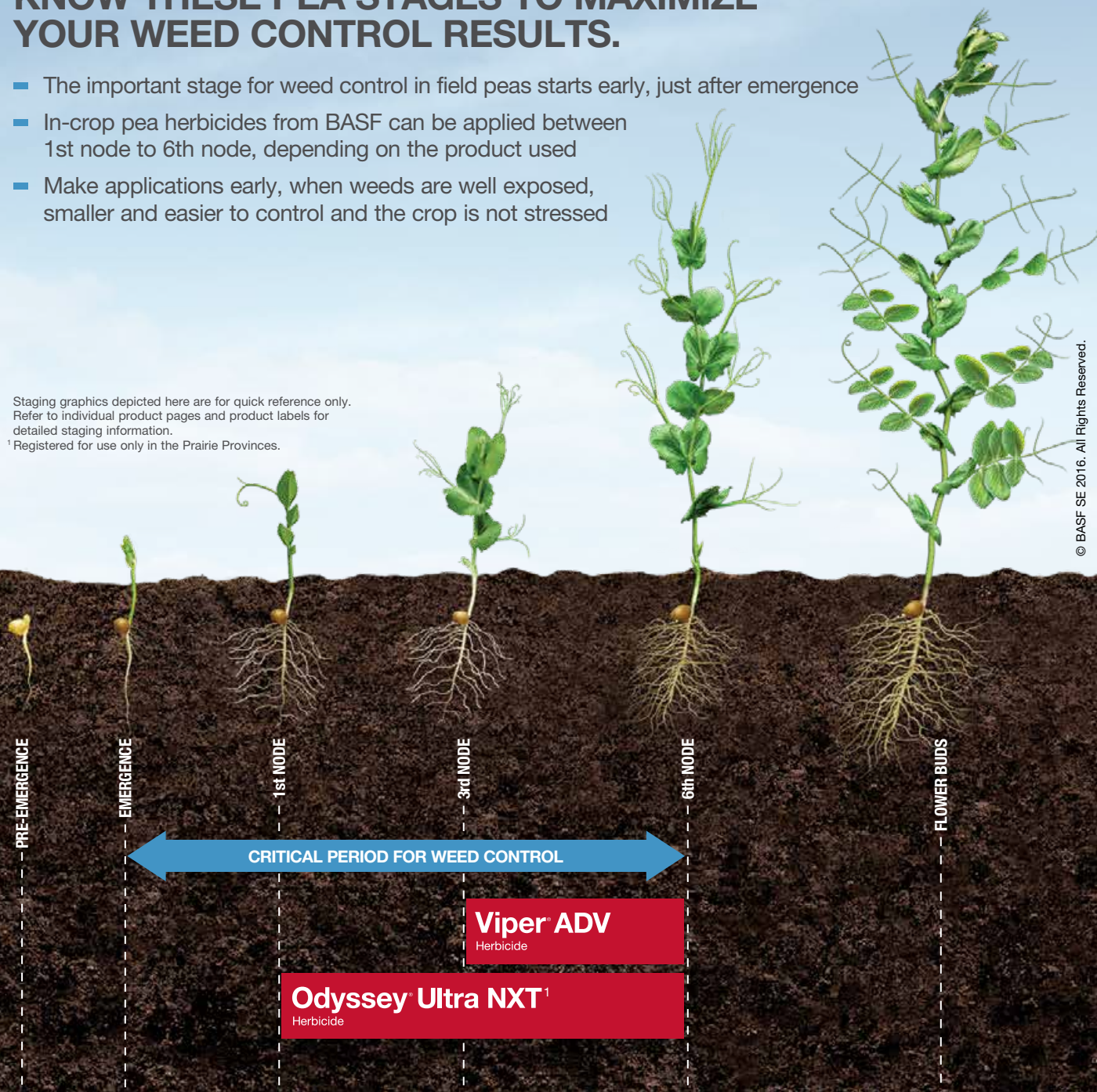


KNOW THESE PEA STAGES TO MAXIMIZE YOUR WEED CONTROL RESULTS.

- The important stage for weed control in field peas starts early, just after emergence
- In-crop pea herbicides from BASF can be applied between 1st node to 6th node, depending on the product used
- Make applications early, when weeds are well exposed, smaller and easier to control and the crop is not stressed

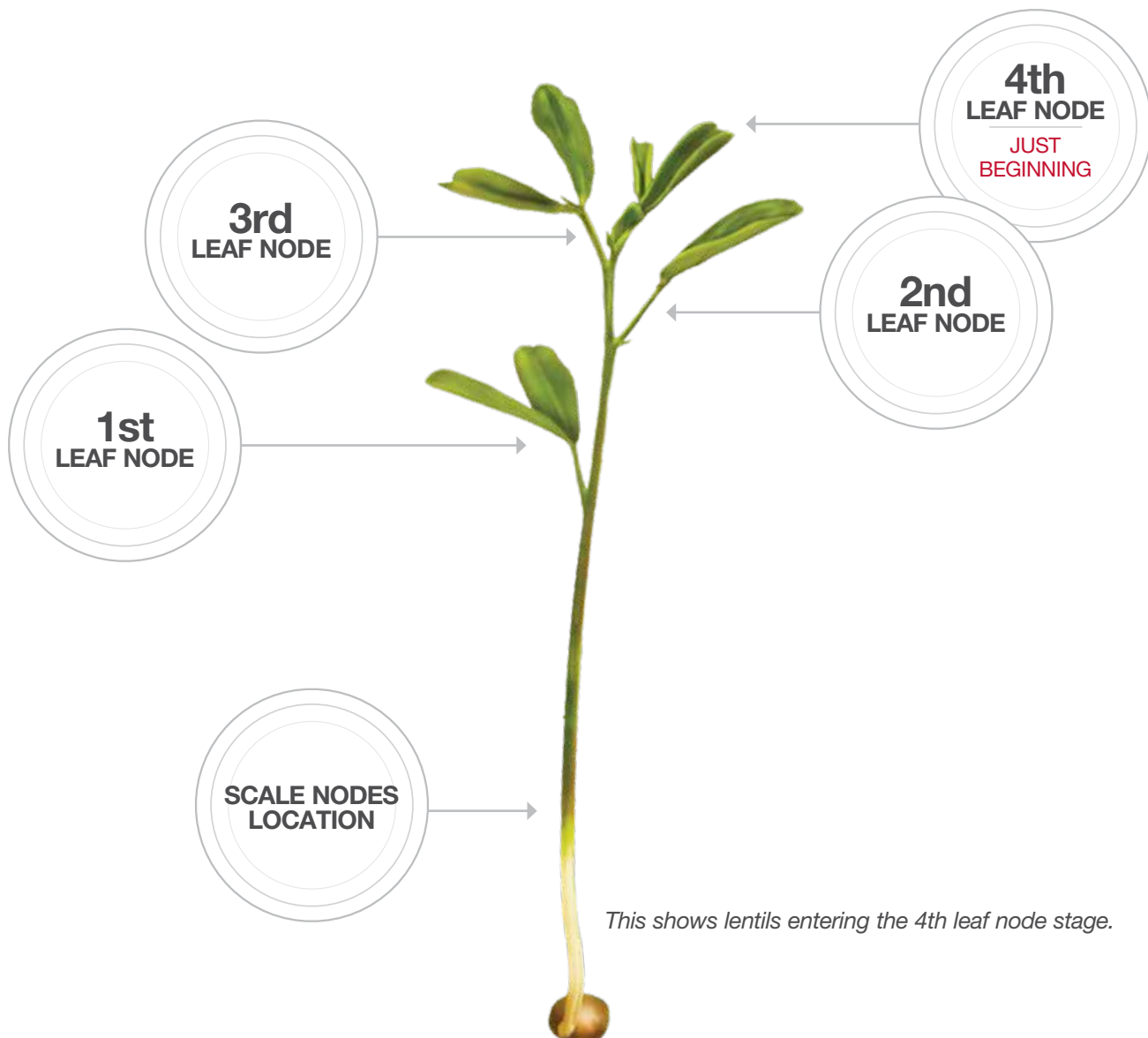
Staging graphics depicted here are for quick reference only. Refer to individual product pages and product labels for detailed staging information.

¹ Registered for use only in the Prairie Provinces.



IDENTIFYING LENTIL STAGES.

- In lentils the first leaf emerges at the first visible node above ground
- Scale nodes are often at or below ground level making them less visible; scale nodes are not counted
- Multifoliate leaves emerge later, depending on variety and environmental factors



RECOGNIZE THESE IMPORTANT LENTIL STAGES. REALIZE THE BENEFITS.

- In-crop BASF herbicides compatible with the **Clearfield®** Production System for lentils can be applied from the 1st node to the 9th node
- Application timing can be based on both the size of the weeds and the crop
- Applications should be made when weeds are young and growing and the crop is not stressed

Staging graphics depicted here are for quick reference only. Refer to individual product pages and product labels for detailed staging information.

¹ Registered for use on **Clearfield** lentils in the Prairie Provinces and Peace River area of British Columbia only.

² Registered for use on **Clearfield** lentils and only in the Prairie Provinces.

PRE-EMERGENCE

EMERGENCE

1st NODE

3rd NODE

6th NODE

9th NODE

EARLY FLOWER

CRITICAL PERIOD FOR WEED CONTROL

Solo® Ultra¹
Herbicide

Odyssey® Ultra NXT²
Herbicide

Solo® ADV¹
Herbicide

ENVIRONMENTAL STRESS CAN ALTER YOUR PLANS.

A crop's tolerance to a herbicide application can be reduced if the crop is under environmental stress. In addition, herbicides work best when weeds are actively growing. In general, it's best to delay spraying when a crop is experiencing stress due to:

HEAT | DROUGHT | FROST

MANAGE YOUR APPLICATION TO DEAL WITH STRESS.

Follow these recommendations before applying a herbicide in pulse crops that have experienced any environmental stress.

- If possible, wait a full 3 days before application, to allow the crop to recover
- Be sure to use the maximum water volumes indicated on the herbicide label
- Avoid midday applications to crops that have been stressed by heat or drought

FROST IS A COMMON ENVIRONMENTAL STRESS.

Field peas and lentils are tolerant of frost, since their growing points are low to the ground in early stages of development. Both crops can recover and regrow after they've experienced aboveground frost injury. Take these steps if your crop has any frost damage.

- Delay spraying to let both the crop and weeds recover and begin growing again; active growth allows for better uptake of the herbicide
- Wait at least 24 hours after a frost or 48 to 72 hours after a heavy frost



SPECIAL CONSIDERATIONS FOR SEVERE FROST DAMAGE.

If the plants are extensively damaged with completely frozen tops and the plant is regrowing from the axils of lower leaves or from the scale nodes, then delay the herbicide application until the plant has had time to recover.

In field peas, one or two nodes of regrowth are a good sign of recovery. Field peas produce a node every four to five days on average under good growing conditions. Waiting up to a week for your herbicide application after severe frost may provide the safest window if crop tolerance is a concern.

The safest way to stage field peas in the case of frost is to base it on the leaf nodes on the frosted stem and the regrowth stem. It is important to count and include the nodes and leaves on the frosted main stem because the plant does not reset after the frost.



ENSURE YOUR CROPS ARE GEARED TOWARDS SUCCESS.

Eliminating weed pressure in peas and **Clearfield** lentils is essential to yield potential. Take the guess work out of weed control and resistance management strategies in these crops with the Advanced Weed Control Program from BASF.

PEAS		Key weeds controlled (incl. resistant biotypes)
PRE-SEED	IN-CROP	
Heat LQ Powered by Kixor ® Herbicide (30 ac/case)	Viper ADV Herbicide	Using Heat LQ: Cleavers Redroot pigweed Stinkweed Volunteer canola Wild buckwheat Wild mustard
OR		Using Heat Complete – the above, plus: Foxtail (green, yellow) Kochia Lamb's quarters Waterhemp Wild oats
Heat Complete Powered by Kixor ® Herbicide (60 ac/case)		

Heat® LQ herbicide

The ultimate pre-seed/pre-emergent burndown in a new, easy-to-use liquid formulation.

Crop Field peas
Staging pre-seed/pre-emerge

Heat Complete herbicide

Applied pre-seed or pre-emergent for rapid and complete burndown of tough-to-control weeds with extended residual suppression of key grassy and broadleaf weeds.

Crop Field peas
Staging pre-seed/pre-emerge

Viper® ADV herbicide

Multiple modes of action for proven, broad-spectrum weed control with excellent rotational freedom.

Crop Field peas
Staging 3 to 6 node





CLEARFIELD® LENTILS

PRE-SEED

Heat Complete

Powered by Kixor® Herbicide
(80 ac/case)



IN-CROP

Solo® Ultra

Herbicide
(for re-cropping flexibility)

OR

Odyssey® Ultra NXT

Herbicide
(for flushing weed control)

Key weeds controlled (incl. resistant biotypes)

Foxtail (green, yellow) | Lamb's quarters | Redroot pigweed | Volunteer canola | Wild buckwheat | Wild oats

Heat Complete herbicide

Applied pre-seed or pre-emergent for rapid and complete burndown of tough-to-control weeds with extended residual suppression of key grassy and broadleaf weeds.

Crop Clearfield lentils
Staging pre-seed/pre-emerge

Solo® Ultra herbicide

Two modes of action for proven control of grasses and tough broadleaf weeds, with rotational freedom.

Crop Clearfield lentils
Staging 1 to 9 node

Odyssey® Ultra NXT herbicide

Multiple modes of action for proven, early-season control of tough grassy and broadleaf weeds, including multiple flushes.

Crop Clearfield lentils
Staging 1 to 9 node

ADVANCED WEED CONTROL



FREQUENTLY ASKED QUESTIONS:

1. How do I know if I am staging correctly?

What is the first node vs. a scale node or scale leaf?

Sometimes it can be difficult to determine if it's a scale node or if it's an aboveground node, as the scale nodes can look similar to an aboveground node. Scale leaves will be smaller than true leaves.

One of the best descriptions of a true node: "The point where the first true leaf joins the stem is counted as the first node; the second node occurs where the second leaf joins the stem, etc."

When talking about staging for herbicide timing, we usually only refer to the true nodes or true leaves. Scale nodes are usually not included when staging.

If you are unsure of whether it's a scale node or a true node, always err on the side of caution. It's better to over stage and avoid injury than to under stage. Applying past recommended timing may lead to yellow flash and possible injury.

FIELD PEAS – There are always 2 scale nodes on field peas at the very bottom. Even if there's a leaf or a shoot coming out of one, it's still considered a scale node, not an aboveground node. It's not unusual for one of the scale nodes to start growing a small shoot and then stop growing. This is so that if there's damage to the main growing point the pea plant can quickly start to regrow from those scale nodes.

LENTILS – There are usually 2 scale nodes as well, however one of the scale nodes can be pushed out of the ground. This node will have no true leaves growing from it.

2. I have heard people talking about the "clam" leaf, which I understand is the growing point and essentially the next node. Is the clam leaf a node, or is it only after it has opened up that it is officially in the next stage?

The clam leaf is the set of leaves found at each aboveground node. Before the clam leaf at the top of the plant opens, it's not counted as a node. The leaves must be open before you can count them.

3. Can you apply Viper ADV or Odyssey Ultra NXT herbicides past the 6th node stage?

If you're applying past the 6th node stage in field peas, there's potentially a bit more risk. If you follow the official crop-staging guides, then technically as long as that 7th node leaf has not opened the plant is still in 6th node stage so you can still spray Viper ADV or Odyssey Ultra NXT herbicide.

A key thing to remember is that across a field you'll have a range of different stages. Some plants may be in 4th node stage still and the odd plant may be pushing 7 nodes. You have to make the call based upon the majority of the plants in the field at the same stage. So even if you find the odd plant in that 7 node stage, if most plants are still at 6 nodes it should still be okay to spray, if done right away.

Applications made beyond the recommended staging may lead to a symptom called yellow flash. If the visible yellowing disappears quickly, no yield loss is typically observed. In cases of prolonged yellowing that leads to delay, there may be a detrimental effect on yield.

4. What can I expect if Viper ADV or Odyssey Ultra NXT is applied later (6 to 8 node) in field peas?

- a) The occurrence of yellow flash is much more likely to occur. Yellow flash usually does not severely impact yield. Symptoms typically dissipate in a couple of days.
- b) Delay in plant growth may be observed, as the field pea plant needs to metabolize the herbicide. This can result in longer yellow flash periods with the crop not growing until the herbicide is fully metabolized. Crop yields may be reduced.
- c) Stunting of the field pea crop, which results in shorter plants that may cause a yield reduction.
- d) Excessive branching of the field pea plants. This will cause the nodes to send out alternative stems, resulting in slightly bush-like (*bonsai*) plants. This will cause a reduction of yield.

5. What happens if Viper ADV or Odyssey Ultra NXT is applied later than 8 nodes in field peas?

At this timing, the field pea plant is moving into reproductive mode and the beginning of flower formation is occurring. Applications during this critical timing can cause the flowers to abort, which will cause yield loss. The amount of yield loss can vary from very little to quite significant, depending on the plant at application.

6. Is the application of Pursuit® herbicide different than Viper ADV in field peas?

Both products offer Group 2 chemistry, but differ in the active ingredients used.

Pursuit relies solely on the Group 2 active ingredient imazethapyr. Imazethapyr offers greater activity on wild buckwheat and provides residual control. Viper ADV combines Group 2 imazamox and Group 6 bentazon for multiple modes of action and management of resistant weeds.

Different active ingredients change the overall weed spectrum controlled by each product, allowing you to tailor weed control to your fields. Refer to product labels for soil zone specifications.

7. What can cause yellowing tops on pea plants?

- a) A rapid growth spurt following stressful growing conditions is often the cause of yellowing of the newest leaves of pea plants. For example, rain after a dry period or warm weather after a cool period are times when the yellowing of the newest leaves is likely to occur.

WHAT TO WATCH FOR:

- The discolouration is pale green to light yellow
- Some pea varieties are more prone to yellowing of the newest leaves than others
- The yellowing results from temporary shortage of nitrogen in the newest leaves
- The plant responds to the rapid growth by forming new nodules to increase nitrogen fixation, or by producing new roots to source nitrogen from the soil, and
- The symptoms will dissipate in about three to four days

- b) An in-crop herbicide application may cause some yellowing or flashing if applied when cool, cloudy conditions exist and may be more pronounced in areas that are under stress prior to herbicide application. Herbicide drift may also cause yellowing of the tops of plants, but is usually found along the field edge and tapers into the field.
- c) Some residual herbicides (e.g. clopyralid) can cause yellowing or whitening of the crop, particularly if insufficient moisture was available to dilute the chemical since application. Discolouration happens when the roots reach the herbicide in the soil profile, or when it becomes activated by soil moisture. Certain areas of the field may be more prone, depending on the topography, soil organic matter, soil texture and moisture.
- d) Root rot is often caused by a composite of organisms. It leads to yellowing that starts from the bottom leaves and eventually works its way up the plant.
- e) Nodulation and nitrogen fixation usually begins at approximately three to four weeks after emergence. If it is slow to initiate and soil nitrogen levels are low, yellowing of the plants is often the first symptom.
- f) Environmental conditions may lead to yellowing of pea plants. Cool conditions with excess moisture will reduce the plants ability to function normally and photosynthesize. The effect is usually yellowing of the entire plant. Contrastingly, rapid growth spurts from ideal growing conditions can cause the plant to show yellowing as well.

In many of these instances, the plant usually begins to recover in approximately four to seven days and the effect on yield is usually minimal.

Note: Answer to question 7 provided by Dale Risula, Provincial Specialist, Special Crops, Saskatchewan Ministry of Agriculture.

Always read and follow label directions.

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