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- [Ultimate Soybean Challenge update](#)



## Crop Update and Scouting Activities

**SOYBEANS** are at the unifoliate to second trifoliate stage. Initial herbicide applications have mostly taken place. Scouting for volunteer Roundup Ready canola should continue and herbicide strategies planned prior to V-3 stage of soybean. Weed control data is available in the [June 1 Bean Report](#). Nodules are becoming active, but final nodulation assessment should wait until R-1. Some crops are yellowing and could be due to several reasons: excess moisture, temporary nitrogen (N) shortage before nodules become active and/or iron deficiency chlorosis (IDC). Wet soil conditions are a primary cause of IDC in soybean which is generally only a temporary condition. More information on IDC is available in the new [Soybean Fertility Factsheet](#). If the entire field looks yellow-green, this may be due to excess moisture or temporary N shortage. Once nodules start to actively fix N, the crop will green up. This temporary yellowing is not cause for alarm: studies being conducted at Carman have shown that soybeans receiving starter N looked greener early in the season but did not result in higher yield than inoculated soybeans. To learn more about these nitrogen studies, be sure to register and attend [SMART Day](#) on July 20! Final plant stand counts should be conducted between V-1 and V-2. The ideal plant population is 120-160,000 plants/ac or 2.8-3.6 plants/ft<sup>2</sup>. To assess plant population, use the [MPSG Bean App](#), now available for all mobile devices. Root rot symptoms are being observed and reported at higher levels than previous years, likely due to prolonged wet conditions. Deep seeding also led to delayed emergence, leaving emerging seedlings susceptible because fungicide seed treatments wear off 2-3 weeks after planting.

**DRY BEANS:** Due to wet conditions, some re-planting of dry beans has taken place and some acres have been re-planted to alternate crops. Questions have arisen on the minimum plant stand for dry beans. According to NDSU, minimum plant stands that should be considered acceptable before re-planting are 28-35,000 for pintos and 45-60,000 for navy beans. Scouting for cutworm, root rot and weeds are key scouting activities moving forward. Herbicide options for dry beans are listed on page 3.

**FIELD PEAS** are in the 8-12 node stage and have been holding up relatively well to excess moisture conditions. Yellowing and early signs of root rot and foliar leaf disease are emerging but not widespread. Crop scouting for root rots and foliar disease should begin now to facilitate informed decision making on fungicide applications. Current conditions and forecast are conducive for disease development. Peas will begin to flower in the next few weeks during the 12-16 node stage. Early bloom is considered to occur when the majority of plants have at least one open flower, after which full bloom will occur within 4-6 days. *Fusarium*, *Rhizoctonia*, *Pythium* and *Aphanomyces* are soil-borne fungi that cause root rot in field pea. In Manitoba disease surveys, the most common root rot in field pea is *Fusarium spp.* however, there is increased concern for spread of *Aphanomyces* due to lack of genetic resistance and effective seed treatments. Root rot is an economically devastating disease in pea, and has contributed to the gradual decline in acres. Resurgence in eastern Manitoba has led to pea production in fields with little or no previous history, which should reduce incidence, however, root rot pathogens can have wide host ranges and therefore may still be present.

## Disease Scouting and Fungicide Use in Field Pea

In addition to root rot, the most economically important disease of field pea is *Ascochyta*/*Mycosphaerella* blight complex. Environmental conditions, crop rotation and accurate diagnosis are all important considerations prior to fungicide application.

#### ***Ascochyta*/*Mycosphaerella* Blight Complex**

Three fungi cause various leaf, stem and foot rot symptoms in field pea but can be difficult to distinguish from one another, therefore they are often referred to as “*Ascochyta* complex”. Early symptoms appear as small, purplish-brown, irregular shaped spots or flecks that can enlarge and coalesce, eventually causing blight symptoms on the entire leaf (Fig. 2,3). Severe infections can lead to stem girdling near the soil line, known as foot rot. Under prolonged moist conditions or crop lodging, pod lesions will form and expand, and may cause early leaf drop or seed infection. The main source of inoculum is soil and infected crop residue, therefore crop rotation is important (1 in 4 minimum). However, ascospores can travel long distances with wind and can put fields with no history of field pea at risk. This disease is most damaging when cool, wet weather occurs during bloom and early-mid pod development (late June, early July).

#### **Fungicide use and scouting**

Fungicide application can protect yield and improve harvest ease. Scouting should begin at the 8-10 node stage and continue weekly. If disease symptoms are present, weather conditions are favorable and crop history is conducive (short rotation, disease history), a fungicide application should be considered. According to NDSU, the optimal application timing generally coincides with full bloom and early pod development (first pods are still flat). However, applying fungicide at early bloom may be advised if the canopy is dense and conditions are highly favorable (wet and cool). If conditions remain conducive and symptoms continue to progress upwards in the canopy, a second application may be warranted 2-3 weeks later. If disease onset doesn't occur until mid-late pod fill, significant yield losses are not expected. A [fungicide decision checklist](#) is available here from Saskatchewan Pulse Growers, and should be conducted weekly up to full flower. Peas begin to flower during 12-16th node stage, and early bloom or 10% flower is reached when the majority of plants have at least one flower open. Full bloom will occur within 4-6 days.

Fungicide in peas has been tested in two western Manitoba trials during 2014 and 2015 at sites with a history of field pea. In both years, a fungicide application provided a significant yield increase compared to the untreated. NDSU fungicide trials have shown that strobilurin (QoI / FRAC 11) fungicides are most effective at reducing *Ascochyta*/*Mycosphaerella* blight although significant yield increases are generally only observed when disease onset occurs early.

#### **Bacterial Blight**

Bacterial blight is also common in field pea during cool, wet weather and can spread easily by rain and wind. Symptoms of bacterial blight can be easily confused with *Ascochyta*, however fungicides will NOT manage this bacterial disease. Disease symptoms are described in Figure 2 and 3. Bacterial blight progression will slow as conditions warm and dry and yield losses are usually minimal.

An excellent document outlining visual differences between *Ascochyta* and Bacterial blight is [available here](#).



**Figure 2.** Top: *Ascochyta* lesions initially appear as small purplish-brown flecks on leaves, petioles and pods. Below: Bacterial blight lesions are often dark brown and appear water soaked and can be transparent. Source: Dr. Michael Wunsch, NDSU



**Figure 3.** *Ascochyta* lesions can be circular, target-shaped with concentric rings (left). Bacterial blight lesions (right). Source: Dr. Michael Wunsch, NDSU

# Dry Bean Herbicide Options in Manitoba and Efficacy on Selected Weeds

Source: Guide to Field Crop Protection 2016

Always refer to Guide to Field Crop Protection and/or label for further information on market class tolerance, rates, effects of growing conditions etc.

Grassy		Broadleaf															
		Volunteer Canola	Thistle, Canada	Ragweed, Common	Pigweed, Redroot	Nighshade, Hairy	Nighshade, Eastern Black	Mustard, Wild	Lamb's-quarters	Kochia	Catchfly, Night-flowering	Dandelion	Buckwheat, Wild	Quackgrass	Volunteer cereals	Foxtail, Green	Barnyard grass

## Pre-Plant/Pre-Emergence

Product	Group	Timing														
Dual II Magnum	15	Pre-plant incorporated	P-E	F-E							N	N	F-G			
Edge Granular	3	Pre-plant incorporated	E	E	P		P		P	G			E			
Eptam	8	Pre-plant incorporated	E	E	G				F				G			
Frontier Max	15	PPI/pre-emerge		G-E												
Glyphosate	9	Pre-emerge	•	•	•	•	•	•	•	•	•	•	•	•	•	•
+ Aim (Cleanstart)**	14 + 9	Pre-plant					•		•							•
+ Tribenuron (Express SG)**	2 + 9	Pre-plant					•									•
Permit	2	Pre-emerge							G-E	E			F-E	E		
Trifluralin (Treflan/Rival)	3	Pre-plant incorporated	E	E			N			F-G			E			

## Post-Emergence

Product	Group	Timing														
Basagran/Basagran Forté	6	After 1 <sup>st</sup> trifoliate							P-E*	F-E	E	N	F-G	F-E	P-F	F-G
Clethodim	1	In-crop	E	E	E	G-E										
Imazethapyr	2	In crop to 2 <sup>nd</sup> trifoliate				P			E*	P	E	E	E	E	N	N
Permit	2	2 <sup>nd</sup> - 4 <sup>th</sup> trifoliate									E			F	G-E	
Poast Ultra	1	In-crop	E	E	G-E	F										
Quizalofop (Assure)	1	In-crop	E	E	E	E										
Reflex‡	14	1 <sup>st</sup> - 2 <sup>nd</sup> trifoliate				P			F-E*	P	E	G	P	G-E	P-E	N
Viper ADV	2 + 6	In crop to 2 <sup>nd</sup> trifoliate	E	E	G-E	P			E	P-F	E	E*	E*			•

‡ For use in RR Valley only and in tank-mix with Basagran

\* Weeds are not on product label in MB but have shown to offer control in North Dakota

\*\*Weeds marked are those that the product has activity on in addition to glyphosate

Weed control ratings in this section are based on the following scale†:

E = Excellent = 90 to 99% control      P = Poor = 40 to 65% control

G = Good = 80 to 90% control      N = None = No control

F = Fair = 65 to 80% control

† According to NDSU 2016 ND Weed Control Guide which is available at: <https://www.ag.ndsu.edu/weeds/weed-control-guides/nd-weed-control-guide-1>



## Root Rot Complex Affecting Soybean and Pulse Crops: Symptoms and Management Options

Root rots are caused by multiple fungal and fungal-like organisms and the host range can vary widely, making root rot complex important for most crops and crop rotations. Favourable conditions for root rot include moist-wet soil and other environmental conditions that cause plant stress and reduce growth, such as cool temperatures or nutrient deficiency. Root rot pathogens are soil-borne, attacking plant roots. Many pathogens can attack plants at all growth stages. Generally speaking, symptoms include poor emergence and root development, yellowing, discolored roots as well various lesions on root or stem tissue near the soil line. It can be very difficult to distinguish root rot pathogens from one another, however, it can be helpful in determining the best management strategy. There are no in-crop management options, so prevention is key.



**Left:** Root rot symptoms in soybean: pinched hypocotyl, poor root development

**Top:** Caramel coloured pea roots (left) affected by *Aphanomyces* compared to healthy roots (right). Source: CDC Saskatoon

<b>PATHOGEN</b>	<b>HOSTS</b>	<b>OPTIMAL ENVIRONMENT</b>	<b>SYMPTOMS</b>	<b>MANAGEMENT*</b>
<b><i>Pythium spp.</i></b>	Wide host range including pulses, cereals, canola, alfalfa	Cold, wet soil	Water-soaked lesions on hypocotyl or cotyledons. Diseased plants easily pulled from soil because of rotted roots. Considered a “water mould”.	<ul style="list-style-type: none"> <li>• Fungicide seed treatment</li> </ul>
<b><i>Rhizoctonia solani</i></b>	Wide host range including pulses, cereals, canola, alfalfa	Warm, moist to wet soil	Reddish-brown lesions on the hypocotyl at the soil line, or on root extending upwards. Lesion remains firm and dry.	<ul style="list-style-type: none"> <li>• Fungicide seed treatment</li> </ul>
<b><i>Fusarium spp.</i></b>	Wide host range including pulses, cereals, canola, alfalfa	Warm, dry to moist soil	Brown or pink vascular tissue in roots and overall discolored roots. No external decay visible above the soil line. Compromised root system results in wilting and leaf death.	<ul style="list-style-type: none"> <li>• Fungicide seed treatment</li> <li>• Partial resistance</li> </ul>
<b><i>Phytophthora sojae</i></b>	Soybean only	Warm, wet soil	Most economically important as it affects soybean at all stages. Water-soaked stems on seedlings or dark brown lesions on lower stem and wilted leaves later in the season.	<ul style="list-style-type: none"> <li>• Genetic resistance</li> <li>• Fungicide seed treatment</li> <li>• Crop rotation</li> </ul>
<b><i>Aphanomyces euteiches</i></b>	Field pea, lentil, dry bean (soybeans are more resistant)	Wet soil	Distinguishing feature is caramel coloured roots. Considered a “water mould”.	<ul style="list-style-type: none"> <li>• Crop rotation (1 in 7 years)</li> <li>• Fungicide seed treatment (Intego Solo only)</li> </ul>

\* Proper field selection for pulse crops (well-drained, light textured soils not prone to water-logging) and clean seed are important prevention strategies for all root rots