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[NDSU Soybean Disease Diagnostic Series](#)



Dry beans beginning to bloom in the Pembina valley on June 27, 2018.

Soybeans

Soybean crops currently range from the V3 (3rd trifoliate) to R2 (full bloom) stages across Manitoba. Assess soybean root nodulation to ensure an average of at least 10 healthy nodules per plant. Refer to [Bean Report #5](#) for more information on nodule assessment. If the crop appears to be yellowish-green and nodulation is inadequate, consider a [rescue nitrogen application](#) at R2 to R3. See the MPSG [Soybean Growth Staging Guide](#) for proper timing. Iron deficiency chlorosis (IDC) symptoms are still present in some soybean crops. If your soybeans have not yet recovered, page 3 offers more information on assessing IDC. Diseases present in soybeans at this time include bacterial blight and root rot, from which earlier-infected plants are now dying off. Plants that were previously damaged (e.g., by hail, insect feeding) are at greater risk of bacterial blight. However, this disease cannot be controlled by fungicide. Many soybeans have also shown signs of herbicide or surfactant injury this season, likely due to dry conditions at the time of application. Moisture is required for some herbicides to properly activate and lack of moisture can exacerbate crop injury symptoms. As many soybeans are now flowering and starting to close canopy, glyphosate application should be wrapping up. The label states “through flowering” as the latter end of the application window. This means blooming soybean plants can tolerate glyphosate as long as pods are not beginning to form.



Soybean root system with 32 healthy nodules at R1 in central Manitoba.

Dry Beans

Dry beans currently range from the late-V stages with flower buds visible to R1 (beginning bloom). Assess the risk of white mould and need for fungicide application as plants approach the “pin bean” stage. For more information on fungicide application in dry beans, refer to page 3. Common bacterial blight (CBB) symptoms are now present in the lower canopy or on plants that were previously damaged. As this disease is not caused by a fungal pathogen, it cannot be controlled by fungicide. Copper products are registered for control of bacterial blight. However, they have not been shown to provide effective control.

Field Peas

Field peas range from full flower to flat pods present. Most foliar fungicides were applied last week and over the weekend. If considering a second application, wait 10 to 14 days after the first and use a fungicide with a different mode of action. As for pest pressure, no pea aphids have been reported yet, but crops are beginning to show symptoms of root rot and foliar disease. Scout for fungicide efficacy in the coming weeks.

Faba Beans

Faba beans have begun to flower in Manitoba with first petals just visible. Early flower marks the timing for foliar fungicides. The main diseases for concern are chocolate spot and ascochyta. However, the extent to which these diseases impact fabas in Manitoba is unknown. This season, MPSG is conducting faba bean fungicide trials and creating a faba bean growth staging guide to be ready in the fall!



Field peas in central Manitoba with 1” long pods.

Soybean Foliar Diseases

Symptoms of many diseases often only appear in soybeans at later reproductive stages. However, foliar fungicide decisions for control of white mould need to be made ahead of the R2 application timing. MPSG's On-Farm Network has found a significant yield response to foliar fungicide in soybeans at 20% of trial locations and an economical return to be unlikely (Figure 1). Early scouting and record keeping of diseases can help with management decisions for this year and future soybean crops.

The Usual Suspects

Septoria brown spot, bacterial blight and downy mildew appear in nearly every field in Manitoba. However, these diseases are rarely present at economic levels and are generally not controlled by foliar fungicide in Manitoba. Refer to the 2017 soybean [foliar](#) and [root rot](#) disease survey summaries.

(A) Bacterial Blight

Lesions are usually more prevalent on leaves in the upper canopy. Leaf tissue becomes infected via stomata or tears caused by wind or hail. Lesions begin as angular brown spots with a prominent yellow "halo" and grow more irregularly shaped. Lesions eventually drop out, giving leaves a tattered appearance. Foliar fungicide is ineffective on bacteria.



SMART DAY
SOYBEAN MANAGEMENT & RESEARCH TRANSFER

An educational event for farmers and agronomists.

In collaboration with the Westman Agricultural Diversification Organization (WADO), Manitoba Pulse & Soybean Growers (MPSG) is excited to host SMART Day in Melita. Attendees will tour research plots, learn how results can be applied to their farm and interact with researchers and production specialists.

Sharpen your agronomy and management skills!

TUESDAY | July 17, 2018

9:00 a.m. – 2:30 p.m.

REGISTRATION 8:30 a.m. | LUNCH PROVIDED

MELITA, MB One mile north of Melita – corner of 156W and 20N

In the morning...

Hear about the latest soybean and pea research and how you can incorporate these results into your farm.

- > Rethinking seeding depth – a yield-determining decision.
- > Soybean seed quality – exploring agronomic influences behind quality characteristics.
- > Feeding soybeans – smart use of inoculant and N, P, K fertilizers.
- > Fungicide decision-making in field peas – Ascochyta, Mycosphaerella blight and on-farm trial results.

In the afternoon...

Tour WADO intercropping trials and explore the latest research questions in intercropping.

- > Pea-canola – will it over-yield? Are fungicides necessary?
- > Soybean-flax in double rows – will agrotain-treated urea enhance yield response in flax or diminish nodulation in soybeans? Will this intercrop over-yield?
- > Relay cropping options for hemp – alfalfa, sweet clover, red clover, hairy vetch, field pea or rye – what works?
- > Corn and hairy vetch – what rate of glyphosate will work? Both grain corn and forage systems.

> **REGISTER ONLINE | MANITOBAPULSE.CA**

or contact Laura Schmidt at
204.751.0538

Pre-registration is required.



WADO

MANITOBA
Pulse Soybean
GROWERS

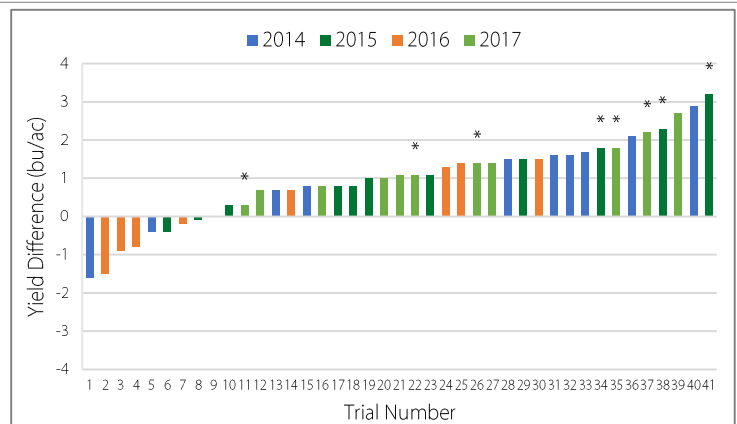


Figure 1. Soybean yield response to foliar fungicide applied at R2 compared to untreated control at trials across Manitoba.

(B) Septoria Brown Spot

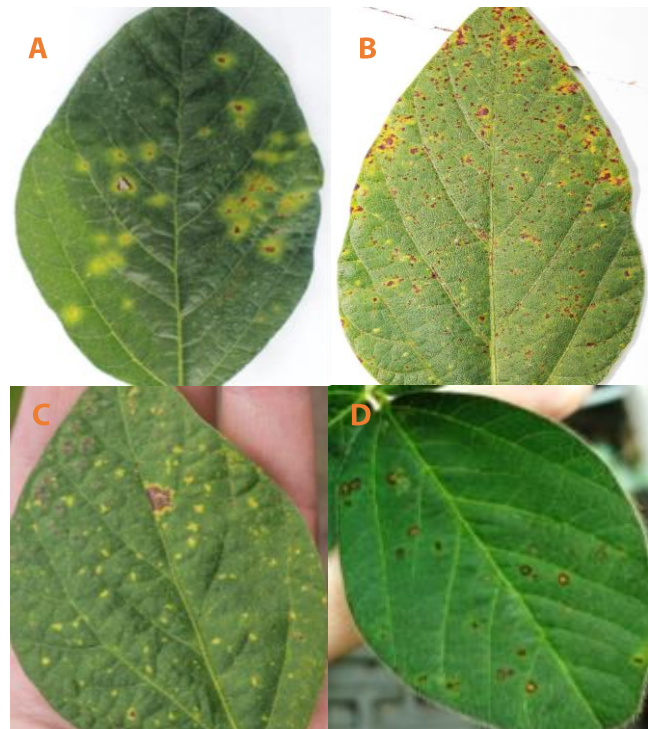
Symptoms are found more commonly in the lower canopy and the dark brown lesions do not have the distinct yellow "halo". Instead, the whole leaf turns yellow due to senescence. The disease survives on residue so continuous soybean and no-till fields are at higher risk of infection.

(C) Downy Mildew

Lesions begin on the upper leaf surface as pale green-yellow spots. These lesions later produce fuzzy grey mycelial growth on the underside of the leaf.

(D) Frogeye Leaf Spot

Presence of frogeye leaf spot was first confirmed in Manitoba in 2016. Lesions are often found in the upper canopy after flowering and appear round to angular with grey-tan centres, surrounded by a purple margin. Disease appearing at R5.5 or later causes minimal damage.



Photos: Gustavo Cruz, Brandon University

Dry Bean Fungicide Application

The main disease to be controlled by fungicide in dry beans is white mould (*Sclerotinia sclerotiorum*). When considering fungicide application, it is first important to refer to the disease triangle (Figure 2). In order for a disease to develop, all three factors of the triangle must be present: 1) susceptible host, 2) virulent pathogen and 3) conducive environment. Knowing that dry beans are in fact a susceptible host and we likely have a virulent pathogen—as *Sclerotinia* affects other crops in rotation, such as canola, soybeans and sunflowers—the decision often comes down to environment. Use the MSPG [Fungicide Decision Worksheet for Managing White Mould in Dry Beans](#) (also available in the Bean App) to determine your overall risk, based on environmental and agronomic factors.

About White Mould

- The life cycle begins with fungal sclerotia bodies in the soil, from which apothecia (small, mushroom-like structures) form. Apothecia release ascospores in to the crop canopy, infecting blossoms and other dead or senescent plant tissues.
- Prevailing cool, wet weather is most conducive to apothecia development and spore release.
- Disease development begins low in the crop canopy (Figure 3). Leaves, branches, stems and pods can all show symptoms.
- Diverse crop rotation, wide row spacing, upright plant architecture, resistant varieties and tillage can reduce white mould pressure in dry bean crops. However, sclerotia bodies buried 12 inches deep in a bean field can survive for 3+ years.

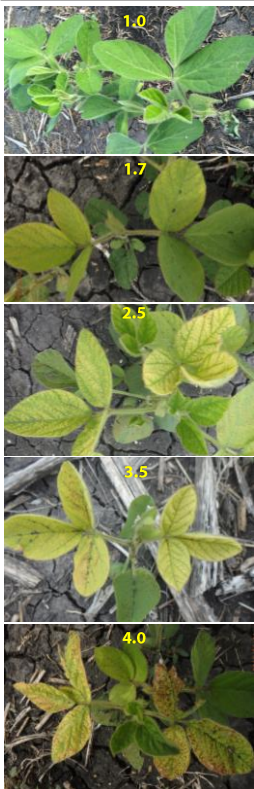
On-Farm Network Research Results

The On-Farm Network has been investigating the impact of foliar fungicide application in dry beans. Only two out of five years (2013 and 2015) have had a significant dry bean yield response to fungicide application. Rainfall leading up to flowering was the main factor that contributed to these responses, in addition to good fungicide coverage. If you are on the fence about applying fungicide this year, consider leaving check strips if you do spray, to determine the efficacy. Read the latest [Pulse Beat article](#) on foliar fungicide application in dry beans, view previous [On-Farm Network research reports](#) or [sign up to participate](#) in this research on your farm!

Fungicide Timing

The R2/early pin bean stage is the best time to apply fungicide for effective white mould control. This stage coincides with flowering. See the MSPG [Dry Bean Growth Staging Guide](#).

Assessing IDC in Soybeans



The severity, duration and distribution of IDC will impact the amount of yield loss from soybean crops. To assess severity, refer to the images on the left and scale below:

- 1 – Green leaves
- 2 – Yellowish leaves
- 3 – Green veins with yellow leaves
- 4 – Brown, dead tissue between green veins
- 5 – Severe yellowing and browning with a stunted growing point

Soybean plants have the ability to recover from this condition. If plants recover by V5-V6, yield loss will be minimal. If symptoms persist beyond V5-V6, yield loss can range from 9-19 bu/ac per chlorosis rating unit (on the above scale of 1-5). To assess the distribution of IDC symptoms, it is recommended to take note of affected areas (e.g., knolls, depressions) using GPS coordinates, or assess the percentage of the field that is affected.

For more information on what causes IDC and its impact on yield, refer to [Bean Report #5](#).

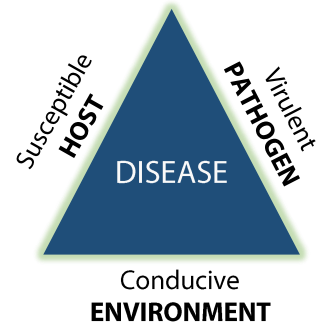


Figure 2. The “disease triangle” of factors required for disease development in a crop.

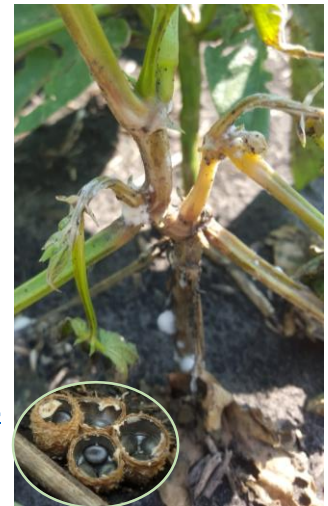


Figure 3. Dry bean plant infected by white mould. Inset: Sclerotia body look-alike, bird's nest fungus.



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Sharpen your agronomy and management skills!

THURSDAY | July 19, 2018
9:30 a.m. – 12:30 p.m.
REGISTRATION 9:00 a.m. | LUNCH PROVIDED

ARBORG, MB Two miles west of Arborg – corner of Hwy. 68 and 8E

Tour highlights include...

- > Soybean seed quality with Cassandra Tkachuk, MSPG and Nate Ort, University of Manitoba
- > Tile drainage effects on cereal production with Ingrid Kristjansson, Manitoba Agriculture and Mitchell Timmerman, Manitoba Agriculture

- > Rethinking seeding depth with Kristen MacMillan, University of Manitoba
- > Feeding soybeans – smart use of inoculant and N, P, K fertilizers with Laryssa Stevenson, MSPG and Megan Bourns, University of Manitoba
- > Best management practices for flax with Dane Froese, Manitoba Agriculture

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