The Bean Report

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MANITOBA Pulse & Soybean GROWERS

THIS ISSUE...



QUICK LINKS

- Dry bean fungicide decision worksheet
- Economics of white mould fungicides in dry beans
- Soybean growth staging guide
- SMART Day (July 20) registration

**Figure 1.** Bacterial blight is present in dry bean fields as well as soybean fields and spreads with cool, wet weather.

## Crop Update and Scouting Activities

**SOYBEANS** are in the R1 to R2 stage (early to full flower), with 5 to 8 trifoliate leaves. Nodulation assessments have been underway and there are some reports of poor nodulation: if soybean roots lack nodules and the crop looks pale green-yellow, a rescue nitrogen application can be economical when applied at R-3 (early pod), just prior to peak nutrient uptake. More information is available here.

Hail damage has impacted crops throughout the province over the past few weeks. Currently, research is being done at Minto and Portage, MB to assess the impact of both defoliation and node removal on soybeans. Results from the first year of study (2015) indicate that if leaf defoliation due to hail damage occurs *prior to flowering*, limited yield loss will occur (<10%) even at a high level of defoliation (up to 100% leaf loss). If damage occurs *during flowering*, 20-40% yield loss could occur with defoliation levels of 66-100%. Node removal (stem breakage) can also cause significant damage, particularly if >60% of nodes are cut off. If at least 40% of nodes are still present on the main stem following a hail storm from V3 to R2, preliminary data shows some yield loss (up to 30%) but adequate recovery is likely under good growing conditions, although delays in maturity should be expected. If you are curious about fungicide use on hail damaged soybeans, recent research from Iowa has shown that "R3 fungicide application to soybean injured by hail at R1 or R4 will likely provide little yield-preserving or disease-limiting benefits when foliar disease severity is low".

Soybean aphids have been detected at trace levels in eastern Manitoba and should be part of crop scouting routines. There is no need for alarm bells, as aphid populations often remain well below threshold. As we head into early pod development (R3), general scouting activities should include aphids as well as defoliating insects (grasshoppers, cloverworm etc.).

Incidence of *Phytophthora* root rot continues to increase as soils remain wet in many areas, particularly eastern Manitoba.

**DRY BEANS** are near flowering and fungicide application are being considered. Many fields are facing reduced yield potential due to excess moisture. Weather conditions are currently very favourable for white mould development. Bacterial blight is a problem in many fields and is spreading with stormy weather. There are three main pathogens causing bacterial blight in dry beans and are described on page 2. Generally, only foliar leaf symptoms are evident, however if conditions remain favorable and spread continues, the disease can become systemic leading to yellowing of the plant and stem lesions. Pod lesions can also occur and cause seed infection which is why clean, certified seed is important.

**FIELD PEAS** are at the early pod to early seed fill stage, with many crops still flowering. In the earliest planted fields, flowering is nearly complete and seeds are discernible in pods. The threshold for field pea aphids applies to field peas until seed fill (seed formation evident in majority of pods). Continue monitoring for root rot, particularly *Aphanomyces* in fields with a frequent history of field pea. Carefully inspect and compare roots of diseased and healthy plants, looking for a caramel discolouration.

## Bacterial Blight

**Bacterial Blight:** The unsettled weather has led to bacterial bight development in soybeans and dry beans. There are a few key things to remember about bacterial blight in crops:

- Spread easily by wind, rain, equipment and people
- Favored by cool, wet conditions but will slow when conditions become warm and dry
- Not managed by a fungicide; some copper sprays are available as a preventative product, but economic feasibility and efficacy is not well understood
- Symptoms include brown, water soaked leaf spots surrounded by yellow halos near leaf injury
- There can be differences in susceptibility between varieties

**Table 1.** Bacterial blight pathogens affecting dry edible beans

| Pathogen | Symptoms |
|---|---|
| Halo Blight | Small necrotic lesion surrounded by large yellow halo or yellowing of entire leaf. |
| Common Bacterial Blight | Small water-soaked lesions that enlarge and merge leading to dry, dead tissue in between. Most common. |
| Bacterial Brown Spot | Lesions generally smaller, surrounded by narrow yellow halo. May not appear water-soaked. |

## Record Pulse & Soybean Acres in Manitoba

International Year of Pulses (IYOP) has turned out very well for farmers as record pulse crop acreage has been seeded in Manitoba (Table 2). With 95% of seeded acreage reports keyed in, pulse and soybean acres are expected to reach nearly 2 million acres in Manitoba compared to 1.6 million in 2015. The largest increases are from field peas, soybeans and lentils.

**Table 2. Soybean and Pulse Crop Acreage Outlook for 2016 with 95% acres keyed in.**

| | 2015 | 2016 | %Change |
|---|---|---|---|
| Soybeans | 1,414,316 | 1,684,549 | 19% |
| Dry edible beans | 128,382 | 113,624 | -11% |
| Field Peas | 67,805 | 177,361 | 162% |
| Lentils | 1,707 | 10,206 | 498% |
| Fababeans | 9,040 | 9,825 | 9% |
| TOTAL | 1,621,250 | 1,995,565 | +23% |

Source: Manitoba Agriculture Services Corporation (MASC)


SMART Day is an all-day educational event for farmers and agronomists to sharpen their soybean management skills!

MPSG has a major investment in agronomic research, many projects of which are conducted at the Carman research station. Attendees will tour agronomic research plots, learn how results can be applied to their farm and interact with researchers.

RESEARCH PROJECTS AND PRODUCTION QUESTIONS WILL INCLUDE:

- **Soil, Fertilizer and Biological N Dynamics** Do soybeans benefit from starter N?
- **Soybean Aphids** What role do beneficial insects play in action thresholds?
- **Seed Quality and Plant Establishment** Why test seed for moisture, cracks or disease?
- **Foliar and Root Rot Disease** When should you consider using foliar or seed treatment fungicides?
- **Weed Management** What should I know about weed control for dicamba-resistant soybeans?

SMART DAY
SOYBEAN MANAGEMENT & RESEARCH TRANSFER

Wednesday, July 20, 2016

REGISTRATION 8:30 am | TOUR 9:00 am to 3:00 pm | LUNCH PROVIDED

University of Manitoba
Ian N. Morrison Research Farm
Carman, MB – 1.8 km west of the junction of Hwy 3 and 13

PRE-REGISTRATION IS REQUIRED FOR ALL ATTENDEES
Register online – manitobapulse.ca
or contact Toban at 204.227.8875

Registration is free for farmer members in good standing with MPSG.
Agronomist fee is $50. CCA CEU credits will be available.

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## Favorable Conditions for White Mould

White Mould (*Sclerotinia*) is a concern for most broadleaf crops, however, the susceptibility of broadleaf crops can vary. Generally speaking, crops including dry beans, canola and sunflowers are more susceptible than soybeans, peas or lentils. Fungicide applications for sclerotinia are generally not common in field pea or lentil, as compared to dry bean and only under very favourable conditions may a fungicide application in soybean be warranted. This is particularly true for early maturing soybeans that we grow in Manitoba. Research in North Dakota has shown that earlier maturing soybeans are less susceptible to white mould than long season varieties (Figure 2). An understanding of host, environment and pathogen is important in determining if a fungicide application is required.

**How does white mould occur?**

- Sclerotinia survives in soil as sclerotia; hard, black structures. When there is ample soil moisture in the topsoil, the sclerotia will germinate and produce apothecia (little mushrooms often found in winter wheat fields that were previously canola).
- Apothecia release ascospores, which need to land on a nutritional source to begin the infection process; usually the flower petals. Once the flower petals become colonized, the pathogen easily penetrates the plant and produces the characteristic light tan lesions and mouldy appearance.

**Favourable conditions for white mould**

- *Soils need to be moist before bloom.* Generally, 1-2 inches of rain in a 1-2 week period before plants enter bloom is required for sclerotia to germinate, produce apothecia and release ascospores. For Manitoba, this pre-bloom period is generally June 25 to July 10.
- *Moderate temperatures and wetness during bloom.* Temperatures of 15-24°C are favorable, but high temperatures above 29°C inhibit disease. The canopy also needs to be wet—rain, fog and heavy dew during bloom (July 10 to 30).
- *Canopy density"* narrow rows that have reached canopy closure generally create a more favourable environment for disease development.
- *Field history:* high frequency of canola, dry bean, sunflower or soybean will increase risk of white mould if environmental conditions are favourable.

Source: Sam Markell and Michael Wunsch, NDSU

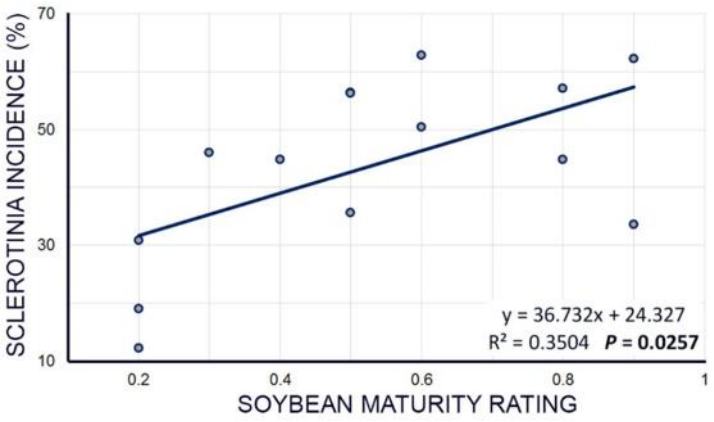


Figure 2. Sclerotinia incidence in soybeans of various maturity ratings (lower maturity rating = earlier maturity).

## Soybeans and White Mould

Fungicide efficacy to manage white mould in soybeans is much more variable and favorable economic returns are less common compared to dry beans and canola.

A fungicide application targeted to white mould can be economical when levels of white mould infection have the potential to reach 10% incidence in soybeans. At this level of infection, research has shown a reduction in soybean yield of 1.3-5.5 bu/ac. In Manitoba, this level of infection is very rare and would only be expected under *very favourable* conditions.

**What are *very favourable* conditions?**

- At least 1-2 inches of rain 1-2 weeks prior to bloom
- Moderate temperatures during bloom (15-24°C)
- Dense canopy (narrow rows, bushy plants)
- Wet canopy during flowering from rain, fog or dew
- History of white mould and inoculum source nearby

If very favourable conditions exist, a fungicide application between R1 and R2 (full flower) may be considered. Product choice is also important: few fungicide products have been shown to provide consistent, satisfactory control of white mould in soybeans. Optimum timing can also depend on the product. For reviews of product performance from North Dakota, click here. On-Farm Fungicide trials have been conducted in Manitoba over the past two years and results are shown on page 3. However, it is important to note that white mould was not present in high levels in the majority of these field trials.

If you are decide to use a fungicide and would like to incorporate an on-farm test, we encourage you to leave at least 3 check strips. This way, you can harvest replicated yield data that can provide valuable insight to future management decisions.

## Fungicide Testing in Dry Bean

Fungicide testing in dry edible beans has been conducted in On-Farm Trials at Carman, MB from 2012-2015 and is under-way for 2016. Results from 2012-2015 are summarized here.

**2015 Research Results**

In 2015, Windbreaker certified pinto beans were planted on 30" rows, at 75,000 seeds/acre on May 21st at Carman, MB. All fungicide treatments were applied July 11th, at growth stage R2 (early pin bean). Growing season precipitation and heat accumulation were near normal for the area. There was concern for disease pressure in edible beans in 2015, which resulted in fungicide being applied to the majority of acres, according to the 2015 dry bean grower survey. Average seed yield across all treatments was 2915 lbs/ac in 2015. Beans that did not receive a fungicide application had the lowest yield (2740 lbs/ac), while Lance applied with Serenade and Lance applied alone produced the highest yields at 3074 lbs/ac and 3024 lbs/ac, respectively.

**Combined results and economic analysis (2012-2015)**

A significant yield response to fungicide in edible beans has occurred in two out of the past four years at Carman. Where there was a statistical yield difference among treatments (2013, 2015), an economic analysis was performed using the suggested retail price (SRPs) for each fungicide, an application cost of $7/acre, and pinto bean price of $0.30/lb. The yield increase needed to break-even (red bar) ranged from 83 lbs/ac for Acapela to 175 lbs/ac for Propulse (Figure 3). Generally, when foliar fungicide significantly increased seed yield compared to the untreated control, the application was economical (all except Propulse in 2015). The pinto bean

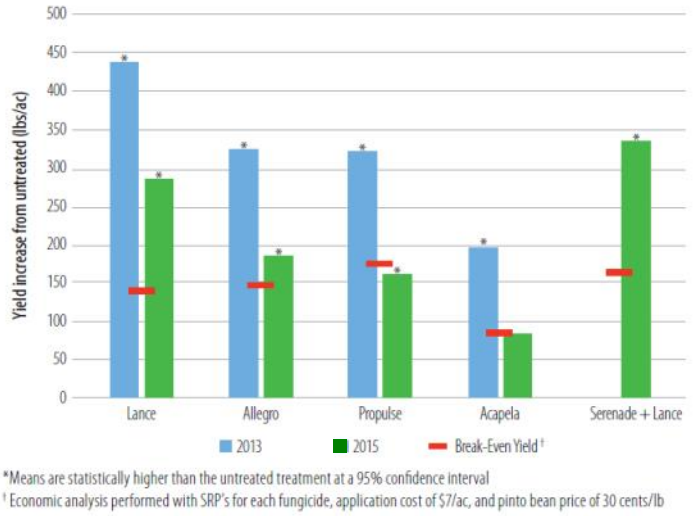


**Figure 3.** Yield increase and break-even yield for pinto fungicide trials conducted at Carman in 2013 and 2015.

fungicide trial will be repeated in 2016 in addition to 4 other On-Farm trials where detailed rainfall and temperature data will be collected. For more details on the economics of fungicide applications in dry beans, click here.

**Fungicide Timing**

Fungicide timing in dry edible beans should take place between R1 (early flower, one blossom open at any node) and R2 (pods 1/2 inch long at first blossom position) which is approx. 50-55 days after planting, and prior to canopy closure.

Use the Fungicide Decision Worksheet in the MPSG Bean App to assess the risk of white mould based on environment and crop factors

## Fungicide Testing in Soybean

Manitoba Pulse & Soybean Growers has conducted 21 On-Farm fungicide trials in eastern Manitoba from 2014-2015. As shown in Figure 4, the yield difference between treated and untreated ranged from -0.4 to 3.2 bu/ac, with an average yield difference of 1.2 bu/ac in favor of the fungicide. When data analysis is conducted, the yield difference is significant at **4 out of 21** sites. At $25/ac for product and application, and a market price of $11/bu, there was a significant economic return from using fungicide **3 out of 21** times (14% of the time). The products tested in these trials are Acapela (Group 11), Delaro (Group 3 and 11) and Priaxor (Group 7 and 11). Disease ratings were also conducted. Septoria brown spot was the main leaf disease and while a moderate reduction was observed with fungicide, this is generally not a yield limiting disease. Low levels of *Sclerotinia* (white mould) were present in 2015 trials and none in 2014. Fungicide trials are continuing.

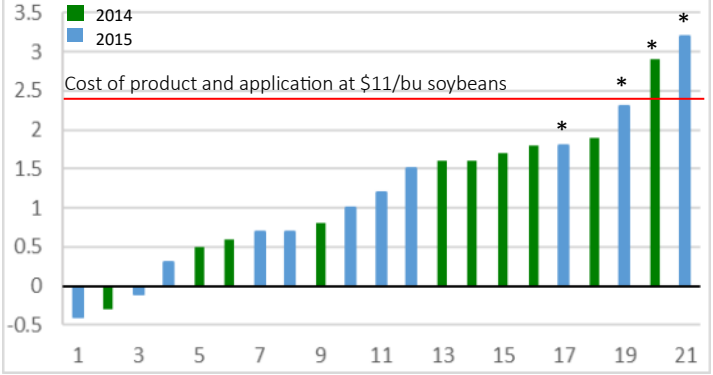


**Figure 4.** Soybean yield response (bu/ac) to fungicide application at R-2 in 21 On-Farm trials in 2014 and 2015.