The Bean Report

No. 2 • May 31, 2017 @MbPulseGrowers • www.manitobapulse.ca

MANITOBA Pulse Soybean GROWERS

This Issue:

Quick Links:

Soybean Growth Staging Guide

Soybean Insect & Disease Scouting Calendar

AAFC Insect Identification and Management Field Guide

Crop Protection Network – Soybean Seedling Diseases

Soybeans

Soybean seeding is wrapping up in the province and earlier-seeded soybeans have emerged. Despite cool conditions two weeks ago, good soil temperatures and conditions for soybean seeding have since been experienced across Manitoba. As of late last week, some fields in the east and west still needed planting. Frost was experienced in some areas across Manitoba last week causing damage to some emerged soybean plants. Frost damage at Carman (Figure 1) resulted from five hours of at or below freezing air temperatures ranging from 0.0°C to -1.2°C. This frost event caused mortality of some plants; however, most will likely continue growth. Click here for detailed reports of past weather data for your area.

Concerns of shallow seeding in dry soil were alleviated by rains experienced over the past week or two in the eastern half of the province. Soybean seeds are prone to desiccation in dry conditions, where seeds will begin to germinate, then die off if the moisture supply is cut off. Dry conditions coupled with heavy winds in Manitoba are also the ideal situation for soil erosion. Avoiding land rolling when it is very dry is one way to keep your topsoil intact.

The crop insurance seeding deadline for soybeans has just passed (May 30th) for Areas 2 and 3, and is fast-approaching for Area 1 (June 6th). Consult MASC for more information on crop insurance deadlines.

SOYBEAN SCOUTING TIPS

Now that soybean crops are planted and beginning to emerge, growers should be on the lookout for insects such as cutworms, wireworms and seedcorn maggot. Note: Seed treatments do not protect against cutworms.

Also watch for seedling diseases and root rots, such as Phytophthora root rot, Rhizoctonia root rot and Fusarium spp.

Refer to "Quick Links" for more information on insects and diseases.

Figure 1. Soybeans seeded May 1st at Carman showing symptoms of frost damage (photos taken May 24, 2017).

Dry Beans

Dry bean planting should also be wrapped up sometime this week, as crop insurance deadlines approach. The crop insurance seeding deadline for dry beans is as early as June 6 for Areas 2 and 3, and June 10th for Area 1 (MASC).

There have been some reports of slow dry bean emergence. However, growers are advised to continue monitoring. Some varieties, such as Windbreaker, are typically slower to emerge.

Field Peas

Field pea growth is progressing in Manitoba. Depicted in Figure 2 are field peas at the 3rd node stage as of May 25th in western Manitoba.

In-crop herbicide applications should occur anytime now for field peas. Aim to spray no later than the 6th node stage, otherwise injury may result from certain herbicides.

Figure 2. Field peas near Rivers, MB at the 3rd node stage on May 25, 2017 (Photo: Amir Farooq, Manitoba Agriculture).

Land Rolling of Pulse & Soybean Crops

Figure 3. Soybeans at the hook to cotyledon stages susceptible to damage from rolling.

Figure 4. Soybean plant at the V1/first trifoliate stage that can be rolled safely.

Should I roll my pulse & soybean crops?

Land rolling is one method that can improve harvestability of pulse and soybean crops. Rolling evens the soil surface by pushing small and medium-sized rocks into the soil, and crushing soil clods. As these crops are harvested low to the ground due to low pod heights, the risk of rock and soil intake by the combine causing machinery damage is increased. Rolling is a necessity if there are a lot of rocks in the field or if the soil surface is very uneven.

Timing

The best time to roll is immediately after planting, or within two days of planting. However, post-emergent rolling is acceptable under certain conditions. Rolling immediately after planting can be an issue if the soil is wet. This may increase the risk of soil sealing or crusting. Rolling dry soil immediately after seeding can also be a concern, as soil becomes pulverized making it more prone to wind and water erosion. In these cases, it is recommended to wait until the V1 or first trifoliate stage to roll soybeans and dry beans. The first trifoliate stage is recommended because all soybean plants should be past the hook (hypocotyl arch) or cotyledon stages (Figure 3). Soybeans and dry beans at these early stages are at risk of breakage from land rolling. Breakage from rolling can also occur if the hypocotyl arch is just below the soil surface, prior to emergence. When soybean and dry bean plants are rolled at the unifoliate or V1 stages (Figure 4), they can bend and bounce back with much less damage. In comparison, the epicotyl is first to emerge with field peas and is more pliable and less susceptible to breakage than the hypocotyl of bean plants. Field peas may be rolled safely until the 2nd to 3rd node stages. Post-emergent rolling of pulse and soybean crops should be done on a warm day (~25°C) and avoided in the morning when plants could snap.

Soybean Rolling Research

Research conducted by the University of Minnesota examined soybean rolling at different stages: pre-plant, post-plant, 50% emergence, first trifoliate, and third trifoliate. No significant differences in plant stand, average yield and seed quality were found between treatments, including the comparison to no rolling. Soybeans in this study were safely rolled until the V3 or third trifoliate stage. However, rolling at the V3 stage is not recommended due to the increased risk of yield loss from breakage.

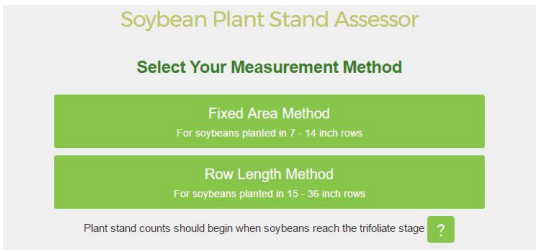
ADVANTAGES OF SOYBEAN ROLLING

- Smoother & firmer seed bed
- Easier harvest
- Faster combine speeds
- Reduced risk of equipment damage
- Cleaner seed at harvest (reduced dockage from stones & soil)

DISADVANTAGES OF SOYBEAN ROLLING

- Risk of soil sealing or crusting
- Potential increased risk of wind or water erosion
- Tractor tire damage to emerged plants
- Increased risk of disease and lodging, if plant damage occurs
- No yield increase

Source: University of Minnesota Extension



Assess your soybean plant population at the first trifoliate stage to determine if your live plant stand matches the target. Plant stand assessments can provide insight on seed survivability, planting conditions, seeding accuracy and crop competitive ability. Use our free MPSG Bean App Plant Stand Assessor to simplify calculations!

Available on the App Store

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Volunteer Canola in Soybeans

In 2016, volunteer canola was the top weed for soybean crops in Manitoba, according to the Manitoba Agriculture Weed Survey. At high densities, canola (especially Roundup Ready) can be a very competitive crop with soybeans resulting in yield losses. However, the presence of volunteer canola in a soybean crop can be more of an eye sore than an actual economic problem in some cases. An integrated weed management (IWM) approach should be used to control herbicide-resistant canola by combining available tools and management methods. Results involving volunteer canola in soybeans discussed here are based on research conducted by Dr. Rob Gulden and his lab at the University of Manitoba.

Volunteer canola plant in a soybean crop.

Control of Volunteer Canola in Soybeans

Managing the Seedbank

Canola seed lost during harvest becomes a problem for subsequent crops due to seedbank build-up. Persistence of canola in the seedbank varies among locations and practices. According to research from the U of M, early fall soil disturbance (following canola harvest) is one way to manage the volunteer canola seedbank by encouraging canola germination prior to winterkill. Overall, the timing of soil disturbance (fall vs. spring) was more important than the tillage implement used.

Chemical Control

Several products are available for in-crop control of volunteer canola (Table 1). It is important to ensure the cost of control does not exceed the yield benefit.

Table 1. Post-emergent herbicides for control of volunteer canola in soybeans.

Product	Herbicide Group	Application Timing
Basagran/Basagran Forte	6	After 1st trifoliate
Flexstar GT[1]	9 & 14	1st to 2nd trifoliate
Imazethapyr	2	Up to & including 3rd trifoliate
Odyssey Ultra or NXT[2]	2	1st to 3rd trifoliate
Reflex[1] & Basagran	14 & 6	1st to 2nd trifoliate
Viper ADV	2 & 6	Up to 3rd trifoliate

[1] Only in the Red River Valley. [2] Will not control Clearfield canola.

In-crop control of volunteer canola may also be more important if less competitive crops are planned for the next year or two of a rotation. More competitive crops (i.e., cereals) may help control volunteer canola in future years, and less competitive crops (i.e., soybeans, peas, sunflowers) could exacerbate the problem.

Soybean Competitive Ability

Volunteer canola is highly competitive with soybeans, as row spacing and plant population have shown no effect on volunteer canola. However, increasing plant population and planting in narrower rows is a good strategy for competition against other weed species. One way to reduce the competitive advantage of volunteer canola is to choose fields with low available soil N and avoid N fertilizer application, which favours volunteer canola performance. Inter-row tillage in wide rows and spring-seeded inter-row cereal mulches can also reduce volunteer canola seed production.

Action Thresholds

The action (or economic) threshold is defined as the point at which 5% yield loss occurs from volunteer canola and control measures should be taken. Research from the U of M identified an action threshold of 2.5 to 3.2 volunteer canola plants/m^2. This threshold is surprisingly low considering how competitive volunteer canola plants appear in a soybean crop. However, it is important to ensure that volunteer canola is controlled early on, prior to yield loss.

Critical Weed-Free Period

The critical weed-free period (CWFP) is the length of time a crop should remain free of weeds to prevent yield loss (Van Acker, 1993). According to research from Ontario and the U.S., the CWFP for soybeans is until the V2 to V3 stages. Research is currently being done to validate the CWFP in Manitoba. It is expected that the CWFP will be longer for Manitoba compared to other regions.