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- [Sign up for Field Scouting Network](#)
- **New to the Bean Report?** [Previous issues are available here](#)
- [Crop Insurance Seeding Deadlines](#)



**Figure 1.** Soybeans emerge facing wet soil and rainfall throughout Manitoba, soybean at V-C unifoliate stage.

## Crop Update and Scouting Activities

**Soybeans:** The majority of soybeans have been seeded in Manitoba. Depending on how quickly fields dry up, there may be some late planting or change in acres. Early planted fields are nearing the unifoliate stage (V-C), while those planted May 20 or later are still emerging. Emergence is taking a little longer in some cases due to deeper planting and cool conditions. There were concerns about dry soils and impact on seed viability (how long can seed sit in dry soil?) and seeding depth ( $\geq 1.5''$ ). Soybeans are emerging from 2'' depths but are taking longer (10-12 days). [Assessing seeding depth](#) at emergence can help diagnose emergence issues such as deep seeding (long, thin hypocotyl) or soil crusting (swollen hypocotyl). Seed that sat in dry ground is also emerging: seed mortality can be a concern if seed imbibes some moisture, begins the germination process but then dries up. Soybean seed must maintain 20% seed moisture throughout germination.

We are now dealing with excess moisture conditions. Soybean *seedlings* will be more tolerant to saturated soil conditions than *seed*. Seedlings can generally survive submerged conditions for 48-96 hours. However, if flooding occurs within 1-3 days of seeding/initial seed uptake, germination and emergence can be severely affected depending on temperature and duration of flooding. Studies have shown a reduction in germination by 15-30% and up to 40% when flooding occurred for 1-24h and 48h, respectively, 1-3 days after seed imbibition. Assessing plant stands will be critical. A desired soybean plant stand is 120-160,000 plants/ac, however 60-120,000 plants/ac can still produce 76-95% optimum yield. Use the [Bean app](#).

Severe soil erosion from strong winds occurred during the week of May 15 and rolled bean fields were particularly impacted. While providing benefits for harvest management, rolling breaks soil aggregates, increasing risk of soil erosion from wind and water, and can reduce water infiltration. If land rolling is required for harvest management, post-emergence rolling at V1 (first trifoliate) is a viable option. Some farmers are moving towards this to minimize negative impacts on soil. MPSG is looking for feedback on land rolling soybeans—[take our survey!](#)

**Dry beans:** Majority of edible beans are seeded and got a good start before the rain but some acres will be on hold. Yield potential of dry beans can be maintained into early June. Soil crusting impeding emergence and excess moisture may be concerns moving forward, weed control should be top of mind.

**Field peas:** Herbicide applications in field pea were underway prior to the rain, although some decided to hold off until after. Field peas have been advancing well and are currently in the 3 to 6 node stage. Once field peas have advanced beyond the 6th node stage, the application window for group 2 herbicides is closed. Plants are noticeably shorter than normal due to dry conditions early in the season. After herbicide applications, assessing nodulation and monitoring for root rots are key scouting activities. If poor emergence and/or nodulation is evident, look for root rot symptoms such as discoloured roots. [Root rots in field pea and lentil](#) can be a production limitation in wet soil conditions. Peas will begin flowering 40-50 days after planting, at which time fungicide applications should begin.

## Weed Control in Soybeans

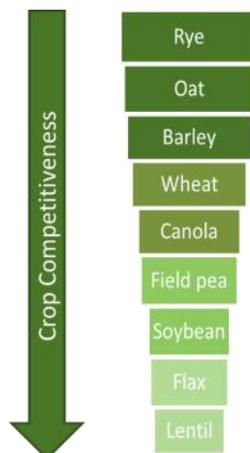
Soybeans are one of the least competitive field crops when it comes to weed competition (Figure 2), primarily due to slow early season growth compared to common cool season weeds. This is why weed control in soybean is among the top management practices that can influence yield, and should be the focus of early-season management.

In soybeans, the critical period of weed control (CPWC) is recognized to be *from emergence* to the 3rd trifoliate stage (V-3, Figure 3), but could last longer. The CPWC is defined as the period of time the crop needs to remain weed-free to prevent yield loss. Typical herbicide strategies in soybean include:

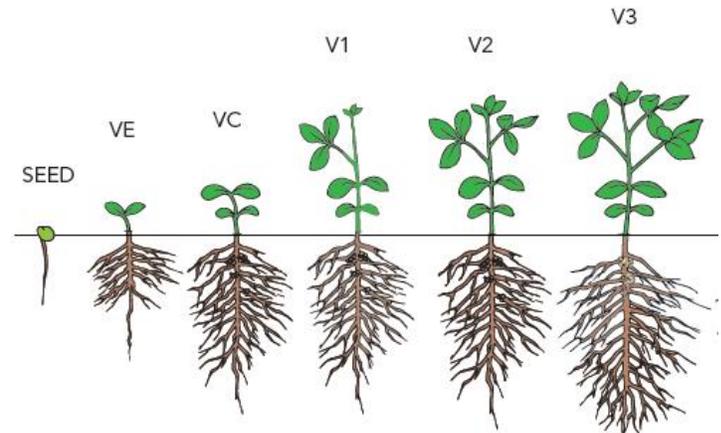
1. *Pre + in-crop glyphosate*: allows flexibility for post-emergence timing and reduces selection pressure
2. *Sequential glyphosate applications*: most common strategy but increases risk of herbicide resistance
3. *Glyphosate + post broadleaf herbicide*: manages volunteer canola and reduces selection pressure

Manitoba has multiple confirmed cases of glyphosate resistant kochia. In North Dakota, glyphosate resistant giant ragweed, Canada fleabane, common ragweed, waterhemp have been confirmed. A complete list of herbicides available for use in Roundup Ready soybean in Manitoba is available on page 4.

If weed control is delayed, how much yield is lost? According to weed removal timing studies in North Dakota, yield loss of  $\geq 4$  bu/ac can occur if initial weed removal timing is delayed beyond V-2 growth stage of soybean or when weeds exceed 6" in height. A well thought out herbicide strategy is required to keep the soybean crop weed-free from emergence to V-3. Herbicide timing should be a balance of weed composition, density and staging. Generally speaking, weeds should not exceed 4 inches in height.



**Figure 2.** Hierarchy of crop competitiveness according to Blackshaw et al. (2002).



**Figure 3.** Weed control from emergence to V-3 is critical for soybeans: this typically spans the month of June in Manitoba.

### VOLUNTEER CANOLA

Significant research by Dr. Rob Gulden continues to address the following objectives related to volunteer canola in soybean:

- 1) How effective are soil disturbance practices at reducing the persistence of volunteer canola seedbank after canola harvest?
- 2) What cultural control methods can be used to improve the competitiveness of soybean with volunteer canola?

**3) What is the action threshold for managing volunteer canola in narrow- and wide-row soybean?**

**4) How effective are pre-emergence and tank-mix partners at controlling volunteer canola in soybean?**

5) How does soil nitrogen affect competition between volunteer canola and soybean?

In the action threshold work (obj. 3), the density of canola resulting in 5% yield loss in soybean for both narrow and wide row production systems have been identified. Action thresholds can be used to determine if it is economical to spray for volunteer canola in soybean, based on the assumption that 5% yield loss will offset the additional herbicide cost (~\$20/ac).

#### Action threshold for volunteer canola in soybean:

Narrow row production (7.5"): 2.8 plants  $m^{-2}$

Wide row production (30"): 1.2 plants  $m^{-2}$

The herbicide efficacy work is still being analyzed, however preliminary results show that faster working herbicides (group 6 and 14) tend to reduce volunteer canola and increase soybean biomass, compared to slower acting products (group 2s). This emphasizes the importance of *timing*; most herbicides work effectively on canola only up to the 4-leaf stage. If using a group 2, you should err on the early side to ensure adequate control and prevent yield loss. Weekly scouting to monitor volunteer canola staging and density is recommended.

Quest to Maximize Soybean Yield and Profitability

# ULTIMATE SOYBEAN CHALLENGE



Figure 4. Team B (MB Ag) calibrating their planter May 20.



Figure 5. Air seeder used by Team A (MPSG)



Figure 6. 50% emergence on May 30. Seeding depth Team B (2.25") vs. Team A (1.25")

**What is it?**

Three teams have been tasked with selecting their own unique combination of soybean management practices and crop inputs in the quest to be crowned the winner of the Ultimate Soybean Challenge (USC)! Winners will be determined in two categories; yield and profit. The goal is for each team to take on a unique strategy for crop management and inputs, representing the different approaches that farmers may take in crop production.

**Where and How?**

At the Agriculture and Agri-Food Canada (AAFC) site in Portage la Prairie, side-by-side replicated field trials were seeded on May 20. Seeding date, speed, soil characteristics and harvest dates will be the same across treatments. All other management practices will be determined by each team. Updates on crop progress & management will be provided throughout the growing season. Stay tuned to [@MBPulseGrowers](https://twitter.com/MBPulseGrowers) on Twitter for updates.

**Field Description**

The USC Challenge is on a 15-acre parcel seeded into spring tilled millet residue comprised of an imperfectly drained clay loam soil. Field history includes soybean. Soil pH is 8 with relatively high soil organic matter, low soluble salts and high fertility (84 lbs/ac N, 22 ppm P, 289 ppm K).

	Team A Manitoba Pulse & Soybean Growers	Team B Manitoba Agriculture	Team C CMCDC Portage
Team members	Kristen Podolsky, Greg Bartley	Dennis Lange, Terry Buss	Curtis Cavers, John Heard
Variety	Akras R2	S007-Y4	Dekalb 23-60
Inoculant	Liquid	Liquid	None
Seed treatment	None	CruiserMaxx Vibrance + Heads Up	Evergol Energy
Seeding equipment	Air seeder 9" rows	Planter 30" rows	Planter 15" rows
Seeding Rate	190,000 seeds/ac	150,000 seeds/ac	150,000 at 2"
Seeding Depth	1 inch	2 inch	2 inch

**May 20, 2016** - The USC was seeded (soil temperature >15°C). No rain was in the forecast so seeding depth was an important decision although there was soil moisture at about 1.5 inches. Team B and C used the same planter and decided to seed at 2 inches. Team A used an air seeder and went for about 1.25 inches. The field was rolled immediately after seeding. The air seeder was used on the farm for the first time so some kinks were worked through.

**May 27, 2016** - Field saturated. Seeds germinated but no emergence yet.

**May 30, 2016** - Surface dried up but very good soil moisture. All treatments are emerging with no clear differences. It was expected that the shallower seeding depth would emerge sooner but soil depth appears deeper than anticipated in all treatments (see picture). Emergence is estimated at 50% and counts will begin in early June. Main weeds are millet and dandelion.

**June 1** - Total rainfall to date is 55 mm and 222 CHUs.

## Roundup Ready Soybean Herbicide Options in Manitoba

Source: Guide to Field Crop Protection 2016

Always refer to Guide to Field Crop Protection and label for further instructions on rates, timing, effects of environmental conditions etc.

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

Pre-Plant/Pre-Emergence														
Product	Group	Timing												
Authority/Authority Charge	14	Pre-plant/pre-emerge												
Blackhawk	4 + 14	Pre-plant												
Dual II Magnum	15	Pre-plant incorporated												
Edge Granular	3	Pre-plant incorporated												
Flexstar‡	9 + 14	Pre-plant/pre-emerge												
Flumioxazin (Valtera)	14	Pre-plant/pre-emerge												
Focus	14 + 15	Pre-plant/pre-emerge												
Glyphosate	9	Pre-emerge												
+ Aim (Cleanstart)*	14 + 9	Pre-plant												
+ Tribenuron (Express SG)*	2 + 9	Pre-plant												
+ Heat*	14 + 9	Pre-plant/pre-emerge												
Trifluralin (Treflan/Rival)	3	Pre-plant incorporated												
+ Metribuzin	5	Pre-plant incorporated												
Post-Emergence														
Product	Group	Crop Staging												
Basagran/Basagran Forté	6	After 1 <sup>st</sup> trifoliolate												
Flexstar GT <sup>†</sup>	9 + 14	1 <sup>st</sup> - 2 <sup>nd</sup> trifoliolate												
Imazethapyr	2	Up to 3 <sup>rd</sup> trifoliolate												
Odyssey	2	1 <sup>st</sup> - 3 <sup>rd</sup> trifoliolate												
Reflex + Basagran <sup>‡</sup>	14 + 6	1 <sup>st</sup> - 2 <sup>nd</sup> trifoliolate												
Solo ADV	2	Cotyledon to 4 leaf												
Viper ADV	2 + 6	Up to 3 <sup>rd</sup> trifoliolate												
Glyphosate	9	1 <sup>st</sup> trifoliolate through flowering												
Pinnacle	2	1 <sup>st</sup> trifoliolate - flowering												
Blazer	14	1 <sup>st</sup> - 3 <sup>rd</sup> trifoliolate												
Poast Ultra	1													
Quizalofop (Assure)	1													
Clethodim	1													
‡ For use in RR Valley only														
S suppression only														
* Weeds marked are those that the product has activity on in addition to glyphosate														