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## QUICK LINKS

- [\*\*Soybean Growth Staging Guide\*\*](#)
- [\*\*Field Pea Disease Diagnostic Series\*\*](#)
- [\*\*Soybean Insect & Disease ID Guide\*\*](#)
- [\*\*Pulse School: Fungicide application tips\*\*](#)



**Figure 1.** Having eyes out in soybean & pulse fields is part of MPSG's strategic plan: this includes a new disease survey that began this week.

## Crop Update and Scouting Activities

**SOYBEANS** are advancing well and are in the 3<sup>rd</sup> to 5<sup>th</sup> trifoliolate stage. Flowering will begin in the next couple of days, which is triggered by shortening days that began on June 21 (summer solstice) and will begin when plants have 4-5 trifoliates (V-4 to V-5). Early flower (R-1) is when the majority of plants have at least one open flower, which will be white or purple. Full flower will occur within a few days and will last about a week before pods begin to develop. Final herbicide applications are taking place although field access is limited in areas dealing with excess moisture. Glyphosate is labelled *throughout flowering*, meaning that the window closes once pods begin to form (stage R-3). From the beginning of flowering to early pod will be 7-10 days and remember the canopy will also begin to close rapidly and canopy penetration will be reduced. Soybean plant development and key crop scouting activities are described in a brand new resource on page 4.

**Yellow soybeans?** Iron Deficiency Chlorosis (IDC) is identified by the yellowing of new growth with prominently green veins. It is present in many fields and has persisted longer than usual due to wet soil. If symptoms persist for >1 week, some yield loss can be expected depending on the severity. Severe symptoms include brown, necrotic tissue in addition to the typical yellowing, but are usually isolated to small parts of the field. IDC symptoms can be very inconsistent across fields due to variability in soil characteristics such as nitrate, salinity, compaction and moisture which all contribute to IDC. For example, wheel tracks are often clearly visible. Varietal differences are apparent and speaks to the importance of variety selection in susceptible fields. More information on IDC is available in the [Soybean Fertility Factsheet](#).

Brown spots are present on soybean leaves but are generally not cause for alarm. Septoria brown spot, sunburn, surfactant burn following herbicide application and bacterial blight have all been found. Hail damage has also been reported but current Manitoba research indicates little yield loss (<10%) should be expected during early growth stages (V3).

**Did you know?** The Bean Report is in it's fourth year! Thanks for tuning in! Previous issues often cover topics relevant today. For example, articles from 2015 and 2014 discuss brown spots on soybeans and iron chlorosis in more detail. We have plans to archive past articles and make them more accessible.

**FIELD PEAS** are flowering and fungicide applications began last week in the earliest planted fields. Overall there has been low foliar disease pressure in field peas; crop canopies are clean with few lesions evident. This is making the fungicide decision difficult, however in many cases market price and yield potential look very good, making it more desirable to protect yield potential with a single application at full bloom. Many fields have been in a long rotation and are not near other pea fields thus reducing the inoculum load. Root rot is evident in low lying areas and a survey is underway to identify root rot species present in Manitoba fields. If you have root rot in your field and you suspect *Aphanomyces*, samples can be sent to designated labs ([info here](#)) for accurate diagnosis.

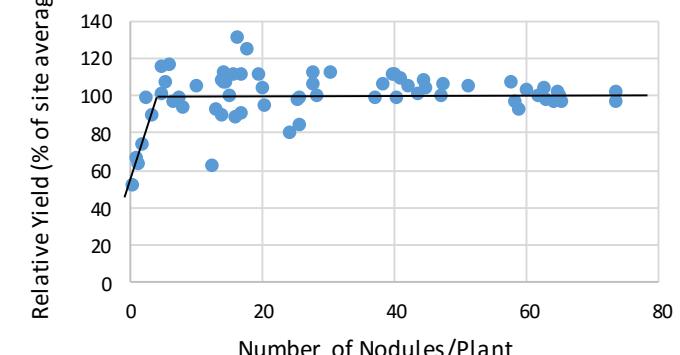
Field pea aphids are present in fields throughout Manitoba and should be monitored throughout flowering. Economic levels are being reported. More information on scouting, thresholds and management is available on page 2.

## Soybean Nodulation Assessment

Nodulation check is a key scouting activity in soybeans to make sure your inoculation strategy is successful and nodules are actively fixing nitrogen (N). It is advised to thoroughly assess nodulation at R-1 (early flower) because this is the beginning of rapid nutrient uptake in soybeans and by this stage, root nodules should be well formed and active. It should be noted, however, that nodules generally do begin to form as early as V-1 to V-2, and can be part of regular scouting activities leading up to flowering (R-1).

**To assess nodulation**, bring a shovel and bucket of water out to the field. At five representative areas, dig up a few plant roots and rinse them to remove soil. Count the number of nodules per root and split a few open to check the color. Healthy, active nodules should appear pinkish-red inside and **each plant should have at least 10 nodules**. This number comes from new research in Manitoba that is showing a strong correlation between nodule number and yield (Fig 2). This was somewhat surprising to us since nodules can be found in varying size, shape and quantity. However, based on 5 site-years of inoculant studies comparing various formulations and rates of inoculant, 5 nodules is what was required for yield optimization at each site. To read more about the inoculant trial, [click here](#).

Number of Nodules per Plant and Soybean Yield



**Figure 2.** Relationship between no. of nodules per plant and soybean yield. Research by Manitoba Pulse & Soybean Growers

If you suspect nodulation failure (few or no active nodules and crop is looking pale-green), a rescue application of 50 lbs/ac N should be considered at R-3 (early pod) and timed around a rainfall event. More details are available in the “Inoculation Strategies” section of the [Soybean Fertility Factsheet](#).

Crops looking healthy and green from the road? Although a pretty good sign that N is not limiting, all fields should be checked for nodulation to ensure N is being acquired from biological fixation (free N!), not just soil reserves.

## Field Pea Aphid Scouting

Field pea aphids (Fig. 3) are relatively common in Manitoba in most years often migrating in from alfalfa fields or other pulse crops, however high levels are more sporadic. The scouting techniques and thresholds for this insect pest have been studied and defined right here in Manitoba.

The recommended monitoring technique for aphids in field peas is to **count aphids on 5 plant tips (top 8") in at least four representative areas of the field (20 plant tips in total)**. Additional counts may be needed to make accurate decisions if aphid levels are near the economic threshold. Sweep net sampling can also be used (180° sweep). Sampling should take place throughout the field, not just field edges where populations of winged aphids can be higher, and counts should be averaged across locations. If during flowering, there are on average **2-3 aphids/plant tip or 90-120 aphids/10 sweeps**, an insecticide application when 50% of plants have produced some young pods will be cost effective. Research in Manitoba has shown that insecticides applied when pods first form protects pea yield better than earlier or later applications. Control at the early pod stage provides protection through the pod formation and elongation stages, which are very sensitive to aphid

damage. Whether or not aphid levels will increase will depend on populations of natural enemies and weather conditions (rain and high winds can potentially decrease populations). More information on pea aphid biology, scouting, thresholds is [available here](#) from Manitoba Agriculture (Acknowledgements: John Gavloski).



**Figure 3.** Field pea aphids are small (1/8" long which is 2x longer than soybean aphids) and can be winged or wingless.

## Ultimate Soybean Challenge Update



**Figure 4.** Team A with 9" spacing nearing canopy closure on June 28.



**Figure 5.** Team B's 30" row spacing is common in southern Manitoba.



**Figure 6.** Team C's twin rows are a new concept for soybeans.

All teams made their first glyphosate application on June 9 when soybeans were at the unifoliate stage (V-E) and second application is planned for this week (V-4). High green foxtail density is the main target along with some dandelion and volunteer canola (non-RR). Crop emergence was fairly even among teams with no visible differences despite varying seeding depths, seed treatments, seeding equipment and varieties. Plant stand assessments were taken 2, 3 and 4 weeks after planting. Plant populations as of June 27 are 170,000 for Team A, 100,000 for Team B and 128,000 for Team C. Do Team A and C have an advantage with their plant populations being higher and within the current recommended range compared to Team B? Or will Team B have less white mould with wide rows? Nodulation, canopy closure and date to flowering will be monitored next week. Weather conditions have been warm (777 CHU) and wet (146mm). Pictures and more updates can be [found here](#).

	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 seeds/ac
Seeding Depth	1 inch	2 inch	2 inch
<b>Plant population</b> (plants/ac) June 2	108,000	64,000	n/a
June 20	161,000	111,000	123,000
June 27	170,000	110,000	128,000

### 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.

### Field Description

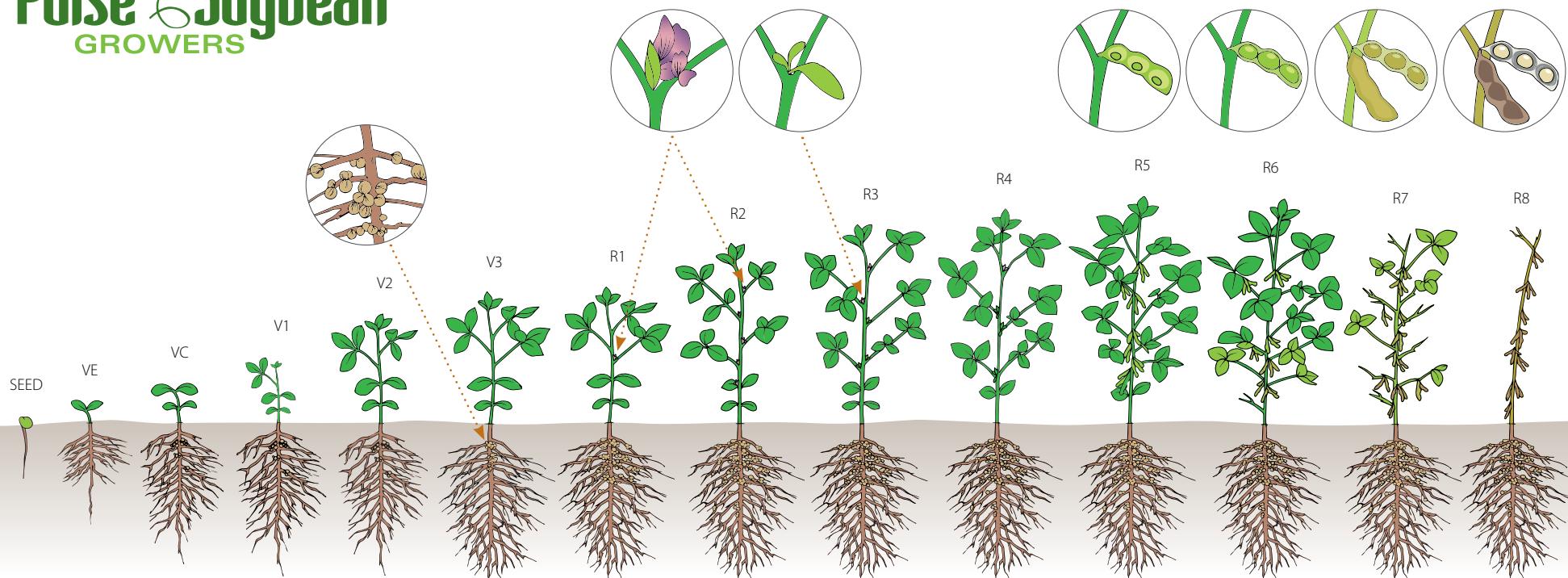
The USC Challenge is on a 15-acre parcel seeded into spring tilled millet residue comprised of an imperfectly drained clay loam soil. Field history includes soybean. Soil pH is 8 with relatively high soil organic matter, low soluble salts and high fertility (84 lbs/ac N, 22 ppm P, 289 ppm K).

# SOYBEAN PLANT DEVELOPMENT

2016



..... Seed development in uppermost part of stem .....



SEED	VE	VC	V1	V2	V3, V4...	R1	R2	R3	R4	R5	R6	R7	R8
Average days from planting (range)	10 (7-21)	20 (20-30)	25 (25-30)	30 (30-35)	35 (35-40)	45 (40-50)	50 (45-55)	60 (50-70)	70 (65-75)	80 (75-85)	90 (85-95)	110 (105-115)	120 (105-125)
	May		June			July				August		September	

## KEY CROP SCOUTING ACTIVITIES

