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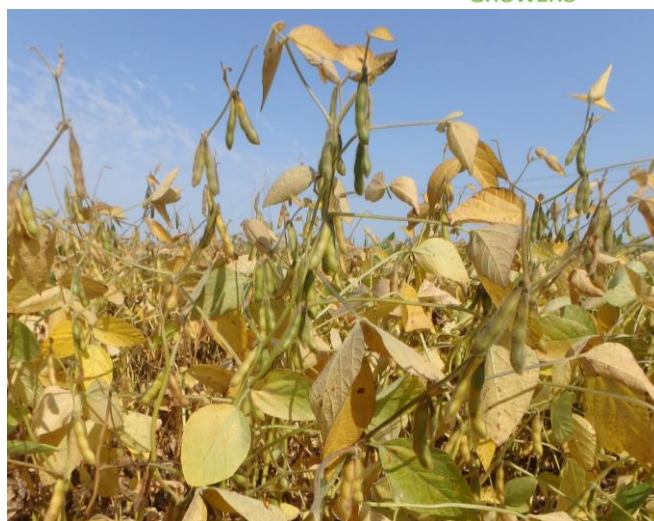
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[MPSG Soybean Maturity Guide](#)

[MPSG Bean App: Soybean Harvest Loss Assessor](#)

[Pulse Desiccants & Market Restrictions](#)



Soybeans at the R6.5-R7 stage of development, where pods at the base of the plant are turning yellow.

Soybeans

Dry conditions in many areas of Manitoba have continued the rapid development of soybean crops. Areas that have received adequate precipitation this season are more likely to produce greater yields. Soybeans currently range from the R6.5 to R7.5 stages, with some fields approaching the R8 or full maturity stage. The R7 stage is marked by at least one brown pod on the main stem, and soybeans at this stage are approximately 8-10 days away from full maturity. Late in the season, we tend to see a greater range of soybean stages due to varietal differences in maturity. Maturity ratings are underway at all MPSG soybean variety trial locations to catch these differences. Some early varieties reached R8 or full maturity as early as last week. At R8, 95% of the pods are brown and seeds rattle within the pods. Soybeans at R8 are approximately 5-10 days away from harvest. See page 3 for more soybean harvest information.

For growers considering preharvest herbicide applications due to excessive perennial weed pressure, it is recommended to spray when soybeans are at 80-90% leaf drop and pod tissue appears brown and dry. Note that preharvest glyphosate will not speed up maturity. Ensure the product you are applying will control target weeds, check preharvest intervals and pay attention to maximum residue levels (MRLs). Click [here](#) for more information on soybean preharvest application.

Dry Beans



Pinto beans ready for harvest. Appearance of oldest pods.

Most dry bean crops are at or nearing maturity in Manitoba, and harvest began for some fields this past weekend in the Pembina Valley. Early reports of dry bean yields were 1800 to 2500 lb/ac for pintos, and 2000 lb/ac for cranberries.

It is recommended to harvest dry beans at 15 to 18 percent moisture to minimize seed damage. Harvesting at lower moisture levels increases the risk of seed coat damage and splitting. When dry beans are ready for harvest, most pods will be yellow, some will be dry, and seeds will rattle within the oldest pods. The risk of shatter is increased when too many pods are dry.

SOYBEAN YIELD ESTIMATES

Compared to the 2016 growing season, 2017 has been much drier across most of Manitoba. Dry conditions increase the risk of yield loss due to rapid development and a shorter time period for pod or seed-fill. One way to determine what to expect for soybean yield is through yield estimates. These estimates can be done as early as the R6 stage, once seeds are filling the pods to capacity. However, these estimates can also be done throughout the R7 and R8 stages of development. Within the MPSG Bean App is a *Soybean Yield Estimator*, which walks you through a few simple steps to calculate expected yield. Two main pieces of information that you must input: 1) live plant stand, and 2) counts of the number of pods per plant from representative areas of the field. The app tool also helps you estimate the average number of seeds per pod and seed size to complete the calculation. The end result is estimated yield in bushels per acre.

Frost Risk

A frost event late in the season can benefit crops such as fababeans and lentils, acting as an aid for maturity. But frost is generally a concern for other long season crops like soybeans. The level of frost damage to crops will depend on the growth stage and severity of frost. It is initially important to select a variety with a maturity group suited to your region. This is to ensure the crop reaches maturity prior to any major frost events in the fall. However, weather anomalies have been known to occur and it is important to understand the potential risks.

Severity of Frost

Frost is generally referred to as temperatures of 0.0°C or lower. A “hard” or “killing” frost is considered to be temperatures of -2.2°C or lower, which can result in plant death.

Factors that contribute to the severity of frost:

- Duration of cool temperatures – longer duration of freezing temperatures can cause more damage
- Soil moisture – moisture in the soil will retain heat
- Canopy thickness – narrow rows hold heat better than wide rows
- Wind speed – stronger wind is better
- Cloud cover – more nighttime cloud cover is better

Frost Effect on Soybeans

The effect of frost on soybean yield and quality will be influenced by the growth or [maturity stage](#). The growth stage in turn depends on the variety maturity group and the date of planting. Now that it is September, the risk of frost has dramatically increased across the province. However, soybeans are also approaching maturity, reducing the risk of yield and quality loss.

R6 Full Seed: All soybean seeds and pods are green. Seeds are filling pods to capacity and maximum plant height, node number and leaf area has been reached. A hard frost can cause up to 50% yield loss at this stage. Most soybean crops in Manitoba should presently be past this stage.

R6.5: Soybean seeds and pods are mostly green, but beginning to turn yellow. There is a general yellowing across the field. A hard frost at this stage can reduce yield up to 30%.

R7 Physiological Maturity: Soybean seeds and pods are mostly yellow. At least one pod on the main stem is brown. Frost at the R7 stage will have little impact on soybean yield and quality. Soybean crops can continue to dry down slowly.

R8 Full Maturity: Soybean leaves have dropped and seeds will rattle in the pods. The field is tan to brown in colour. Soybeans are safe from frost at this stage.



Figure 4. Soybean varieties at the St. Adolphe site showcasing different maturity on September 6, 2017. Left to right: Very susceptible to frost at R6, tolerant to frost at R8, and susceptible to frost at R6.5.

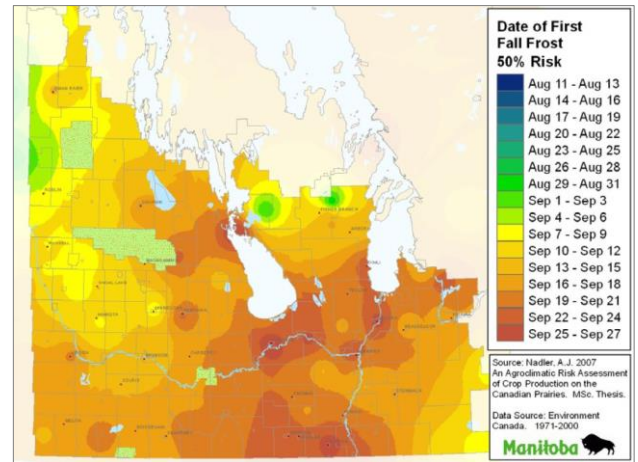


Figure 2. First fall frost dates at a 50% (one in two year) risk.

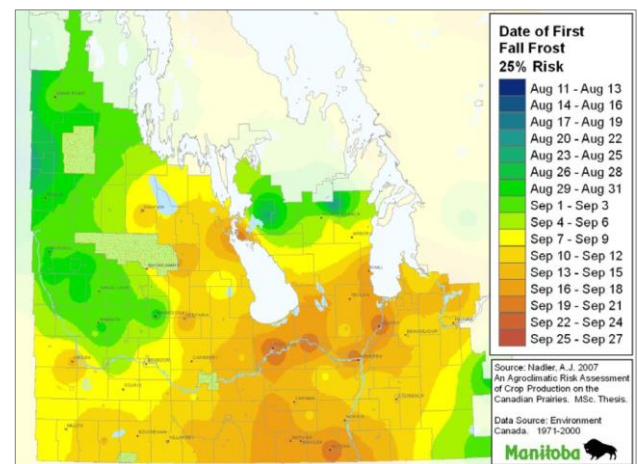


Figure 3. First fall frost dates at a 25% (one in four year) risk.

Reading the Risk Maps

Prior to selecting soybean varieties and planting in the spring, it is important to know your risk of both spring and fall frost events in Manitoba. Risk maps are available through [Manitoba Agriculture](#) and the [University of Manitoba](#). These maps provide the calendar date(s) in which you can expect the last spring or first fall frost in your area (Figure 1; 2).

According to Figure 2, there is a 25% or one in four year risk, that the first fall frost will occur as early as September 13th in the Pembina Valley, September 7th in areas spanning outside of the valley toward eastern and southwestern Manitoba, and August 26 in northern areas of the Interlake and Parkland regions.

Some areas of Manitoba experienced freezing temperatures overnight on September 5th. Read the latest [Manitoba Crop Weather Report](#) to see details on location, temperature and frost duration.

Direct Harvesting vs. Undercutting Dry Beans

There are two methods for harvesting dry beans:

- 1) **Undercutting & windrowing** – This harvest method is more common in Manitoba, especially for pinto and specialty beans. Plants can be pulled from the soil and windrowed as one operation, or they can be cut below the soil line and windrowed in two operations. Windrows are then combined.
- 2) **Direct harvesting** (i.e., straight combining) – This method has become more popular for black and navy bean crops in Manitoba. Other bean growers may also be interested, as this method is less labour-intensive. Desiccation is usually required to dry down green plant material and control weeds. Beans are then direct harvested 7-10 days later.

Research Results

A research trial comparing direct harvesting vs. undercutting of different pinto bean varieties was conducted by the MPSG On-Farm Network, collaborating with Agri-Skills Inc. Varieties included Windbreaker (bush/short-vine), La Paz (upright), Maverick (upright), Monterrey (upright) and PIN1314 (upright). Overall, this study determined that plant architecture had no effect on yield differences between direct harvesting and undercutting. Instead, the growing season and effect of environmental conditions on plant architecture had a greater influence on these yield differences.

Therefore, the decision to direct harvest should be assessed as the season progresses.

Click [here](#) for more information on this trial.

Soybean Harvest Tips

- **Monitor soybeans** every other day once they begin to mature. Consult the MPSG [Soybean Maturity Guide](#) to help time your harvest.
- Soybean fields are ready for harvest at <14% seed moisture. However, try to avoid harvesting soybeans at less than 13% moisture to prevent seed damage.
- **Direct combine** soybeans with a flex header at **4 mph or less**. Slower combine speeds (2, 3, 4 mph) have shown significantly greater yields compared to faster travel speed (5 mph), according to research conducted by the Prairie Agricultural Machinery Institute (PAMI). The use of an air reel can also result in significantly greater yield (PAMI).
- Adjust the cylinder speed and concave clearance carefully to prevent seed cracking and splitting.
- Aim to **lower the cutter bar** within two inches of the ground to capture the lowest pods, preventing stubble losses.
- **Measure losses** regularly during harvest to optimize combine settings and harvest practices.

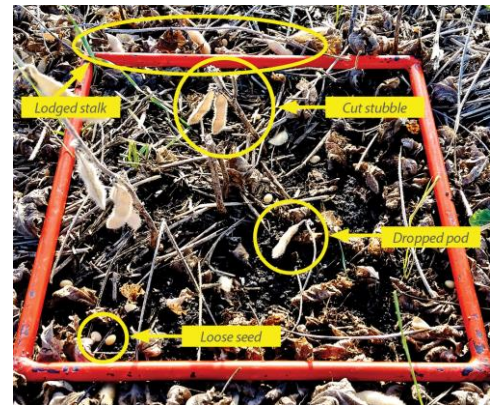


Figure 5. Loose seed, cut stubble, lodged stalk and dropped pod losses. (Source: PAMI).

New! Soybean Harvest Loss Assessor

Total Harvest Losses	
Average number of soybean seeds/ft ²	
5	
Yield Loss	1.3 bu/ac
Percentage of Yield Loss	
It is recommended to target harvest losses of less than 5%.	
Estimated Yield	% of Harvest Loss
40	3.3

Snapshot of results from the Harvest Loss Assessor.

Measuring Harvest Losses

It is estimated that 80% of soybean harvest losses occur at the header. Understanding your losses and adjusting harvest practices accordingly can put more seed in the bin and more money in your pocket.

Soybean harvest losses can be easily calculated using the MPSG Bean App [Harvest Loss Assessor](#)! This new app tool determines yield loss according to the number of seeds/ft² counted along the header or behind the combine, and estimated seed size. Calculations are based on the rule that **4 seeds/ft² equals 1 bu/ac** of yield loss.

The app tool also provides pictures and definitions to account for the four types of header loss (Figure 5):

1. Shatter – seeds and pods shattered by the cutter bar
2. Stubble – pods that remain attached to cut stubble
3. Lodged – stalks that were lodged, rather than severed by the cutter bar
4. Loose – stalks that were cut, but not delivered into the combine (similar to “lodged”)

Refer to the June 2017 Pulse Beat article, [Reducing Soybean Harvest Losses in Manitoba](#), for more research results from PAMI.