



## 2022 Snobelen Farms Yield Challenge Newsletter

### Early Season Frost on Emerged Soybeans



With the talk of frost in some areas on Tuesday night you might be wondering what will happen to your soybeans if they get frosted. The possibility of frost can have you worried but it may not have yield damaging impacts. The amount of injury your soybeans sustain will depend on what developmental stage they are at and how long they are exposed. The injury to the plant occurs when ice forms around or inside the plant's cells. The water that sits around the cell can freeze at 0°C but the water located inside the cell will require temperatures a few degrees lower to freeze. Since the soybeans growing point sits above the ground it experiences the impacts of colder temperatures when its cotyledons emerge.

Soybeans can handle temperatures from -1°C to -2°C for a short period of time in the emergence (VE) and cotyledon and unifoliate (VC) growth stages. If the plant has experienced a few days of cool temperatures, the plant will harden making it easier for the soybeans to tolerate temperatures of -2°C. Plant death is not expected until the soybean crop withstands temperatures at -2°C and below for a long period of time. Plants with trifoliate leaves will be more susceptible to damage from temperatures below 0°C for long periods of time. If you think your soybeans experienced frost damage, you should wait 3-5 days to determine if your plants have new growth before considering replanting. Replanting is not recommended unless plant populations reach less than 100,000 plants/ac.

<https://fieldcropnews.com/2013/09/what-happens-to-soybeans-when-they-get-frosted/>

<https://www.dekalbasgrowdeltapine.com/en-us/agronomy/frost-damage-soybeans-planting.html>

### Growing Degree Days and Crop Heat Units

The following table will provide a look at the approximate growing degree days and crop heat units in your area for a planting date of May 10<sup>th</sup>.

**Table 1:** Cumulative growing degree days and crop heat units for May 10<sup>th</sup>- May 17<sup>th</sup>

Location	Growing Degree Days	Crop Heat Units
Brantford	418.1	147.7
Lucknow	430.3	159.6
Palmerston	402.3	140.4
Stratford	423.3	154.9
Tiverton	431.1	160.7

## Soybean Soil Insects

Now that soybeans are going into the ground it is time to start thinking about what else might be in your soil. *Information from Guide to Early Season Field Crop Pests.*



### GRUBS

There are a few different species of grubs that can be pests of your soybean seedlings; the June beetle, masked chafer and the Japanese beetle.

#### **Identification**

Grubs have white C-shaped bodies with a brown-orangish head and darker posterior. They typically range from ¼-1 inches long and have 6 legs on the front of their body. The different types of grubs can be distinguished by the difference in their raster patterns.

Figure 1:  
<https://extension.entm.purdue.edu/fieldcropsipm/insects/soybean-white-grubs.php>

### **Scouting**

Scouting for all species of grubs in the fall can be beneficial for predicting spring populations

European Chafer Grub: Mid April until the end of May and again the end of July to the start of November

Japanese Beetle Grub: The month of May as well as the end of August to the middle of September

June Beetle Grub: The end of April to the middle of June and again mid-August to the end of October

### **Favourable conditions**

- Grubs prefer sandy soils and can be found in areas near tree lines
- Fields that previously grew alfalfa, soybeans, canola, pasture, sod, corn, potatoes or cereals
- Fields beside places with pastures, sod farms, park lands, and golf courses
- Fields with a history of grubs

### **Damage**

The damage depends on crops growth stage, time of planting and actively feeding grubs.

- Fibrous roots can be chewed and pruned
- Plants can have less vigour, be yellow, wilted, stunned or dying
- Reduced seed production
- Thinned plant population, uneven and circular problem patches

### **Threshold**

2 or more larvae per square foot; higher populations warrant the higher rate of an insecticide seed treatment like Fortenza.

## Management

### Preventative Control:

- Avoid planting soybeans in cool wet conditions as it delays the crops emergence
- Use seeds treated with insecticides if there is a history of grubs in the field
- Delayed planting of soybeans in years 1 and 3 of the June beetles life cycle will decrease grub feeding

### Biological Control:

- Parasitoids: Flies, wasp parasitoid and rove beetles
- Predators: Birds and mammals
- Pathogens: Nematodes, bacteria and fungi

### Chemical Control:

- Tillage can kill some larvae as well as expose them to predators
- Granular insecticides applied in furrow
- Insecticide seed treatments for fields with a history of grubs

## When is a good time to roll soybeans?



Some may question how rolling over your planted soybeans is a beneficial management practice. Well, the practice of rolling helps to level the soil, push rocks into the ground and aids in soil moisture conservation. Rolling immediately after planting helps improve soil-seed contact. It limits the risk of injury to the plant but can lead to an increase chance of soil crusting which can negatively affect soybean emergence. OMFARA conducted a study on yield response to rolling. See table 2 below. Rolling after seeding provided a slight yield increase. In this study rolling after emergence between the first and third trifoliolate provided strong evidence that no yield loss is associated with rolling if the best

management practices are followed. Rolling at the first trifoliolate offered the greatest yield increase. The data below demonstrates that rolling during the first, second, and third trifoliolate provides the best yield increases.

**Table 2:** Soybean Yield Response to Land Rolling

	Bu/ac	Adv.
1) Untreated	62.6 b	-
2) Rolling immediately after seeding	63.5 ab	0.9
3) V1 Rolling (first trifoliolate)	64.4 a	1.8
4) V2 Rolling (second trifoliolate)	63.8 a	1.2
5) V3 Rolling (third trifoliolate)	63.8 a	1.2

2017-2018, 11 Ontario trials, 3 replications, LSD = 1.6 (P = 0.25)

<https://fieldcropnews.com/2020/06/the-1st-trifoliolate-is-the-best-time-to-roll-soybeans/>