



2022 Snobelen Farms Yield Challenge

What we are seeing this week in the field

- This week we have come across some sudden death syndrome in fields with soybean cyst nematode
- We have found soybean cyst nematode in fields with a resistant variety
- Seeing more and more bacterial leaf blight in fields after last weeks rains
- Saw symptoms of alfalfa mosaic virus on soybeans, this virus is caused by aphids
- A customer had a question about the difference between determinate and indeterminate soybeans, see page 5 for details

Weed of the week: Field Horsetail

Field horsetail is a perennial with tuber-bearing rhizome. These rhizomes can grow deeper than 1 meter in depth. There are dormant tubers attached to the deep rhizomes. If these rhizomes die or are separated from the tuber, the tuber will begin to grow new plants. It prefers low lying areas with poor drainage as well as sandy or gravelly soils with good drainage. This weed is very challenging to control.



<https://www.marylandbiodiversity.com/view/3878>

Seedling

Seedlings are unbranched stems with a cone like top that grow in the spring. These cone-like stems will wither and green sterile stems with branches will emerge in their place.

Mature Plant

Stems are erect with branches; the plant is 8-12 inches high and hollow. The leaves are cup shaped and toothed and are located at the joints on the stems. This weed does not have flowers or seeds. Plants emerge from the underground tuber. The plant has a similar appearance to a Christmas tree.

Management

According to OMAFRAs problem weed guide the best control for field horse tail is Glyphosate + Broadstrike RC at 35g/ac applied pre-plant to emerged field horsetail.

According to the pest manger app the best control for field horsetail for pre-emergence and post-emergence is as follows:



Pre-emerge control for field horsetail

Trade name	Percent control
Commenza (Broadstrike/Dual/Sencor)	80%
Broadstrike RC	70%

Post-emerge control for field horsetail

Trade name	Percent control
Blazer Ultra	60%
Reflex + Turbocharge	60%
Basagran Forte	50%

http://omafra.gov.on.ca/english/crops/facts/ontweeds/prostrate_knotweed.htm

<https://www.syngenta.ca/pests/weed/en/horsetail--field/Soybeans>

Grasshoppers

Grasshoppers are larger insects and can-do large amounts of damage in a short amount of time. Damage to soybeans will be found in dryer years when drought reduces natural vegetation. The grasshoppers will move to cultivated crops like the soybean to feed. The drought will also reduce the fungi that keep grasshopper populations low.

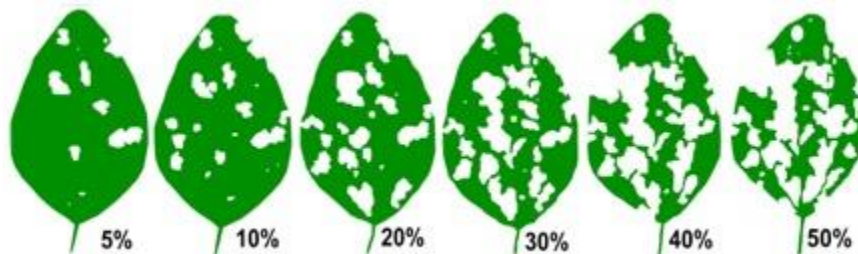


Life Cycle

Grasshopper's eggs are laid in the soil as a pod. The grasshoppers will overwinter as eggs. The eggs will hatch in the spring and nymphs will emerge and undergo 5 molts. Nymphs look similar to adults but do not have developed wings. Adults are anywhere from ¾ of an inch to 2 inches in length. Their colours can vary between brown, gray and green.

Damage

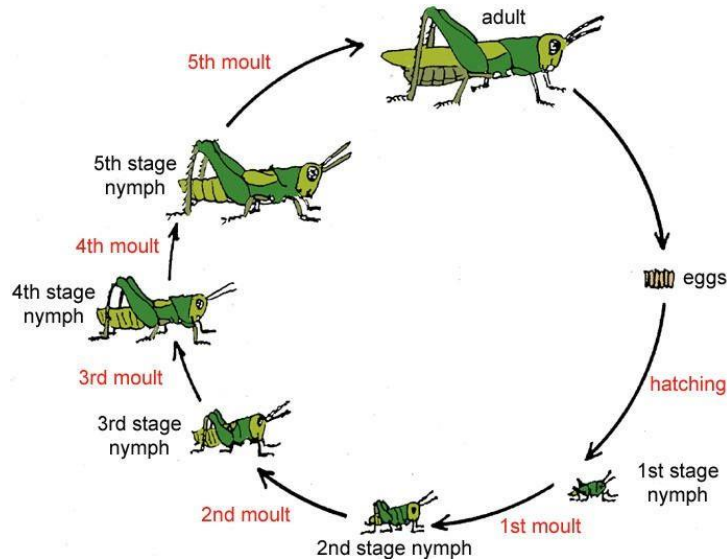
Adults and nymphs will feed on the leaves and pods of soybeans. They create jagged holes in leaves and can injure the seed or even clip pods off the plant. The edges of the field usually show feeding injury first.



At the start of the season, it suggested to scout by insect counts. Count the adults and nymphs in one square foot. 30-45 nymphs or 8-14 adults in a square foot is considered threshold and requires treatment. If the grasshoppers are only found on the edge of the field just the edges can be treated. Later in the season scouting should be done by defoliation. Before flowering when in the vegetative stage control is warranted at 30% defoliation. In the flowering to pod fill stage treatment is necessary at 20% defoliation.

Control

Adult grasshoppers are challenging to control, the best time for control is during their 3rd-4th instar when they are around ½ an inch long. Tillage of small grain stubble before eggs are laid can help deter egg laying.



<https://soybeanresearchinfo.com/soybean-pest/grasshoppers/>

<https://extension.umn.edu/soybean-pest-management/grasshoppers-soybean>

<https://www.slideserve.com/lavada/life-cycles>

Bacterial leaf blight

Bacterial leaf blight is a common disease to find in soybean fields. The disease commonly follows heavy rains and thunderstorms. Diseases known as brown spot and bacterial pustule can be confused for bacterial leaf blight. The bacteria that cause bacterial blight overwinters in crop residue and on the seed. Continual soybean crops and no-till systems favour bacterial blight. This disease generally doesn't result in yield loss.



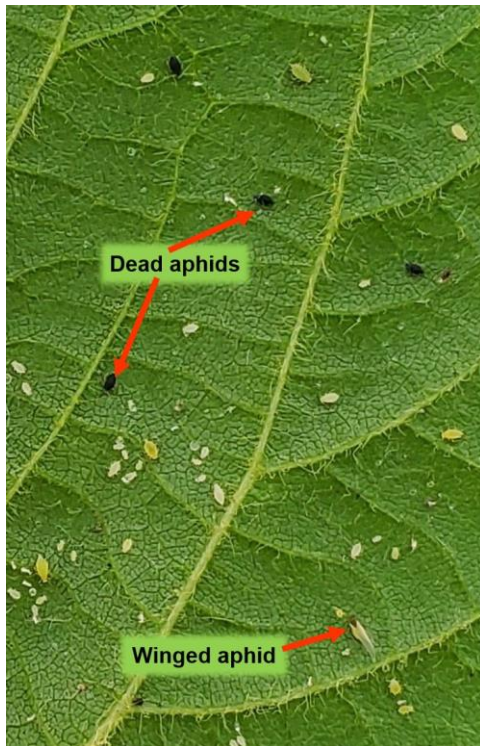
Symptoms

This disease is most noticeable on the top and middle leaves of the plant. The infection starts as small water-soaked lesions that turn yellow and brown, and the tissue dies. The dark spots are surrounded by yellowish halos. The spots will form dead patches and the dead tissue can fall off. The stems, pods and seeds can also be infected.

Management

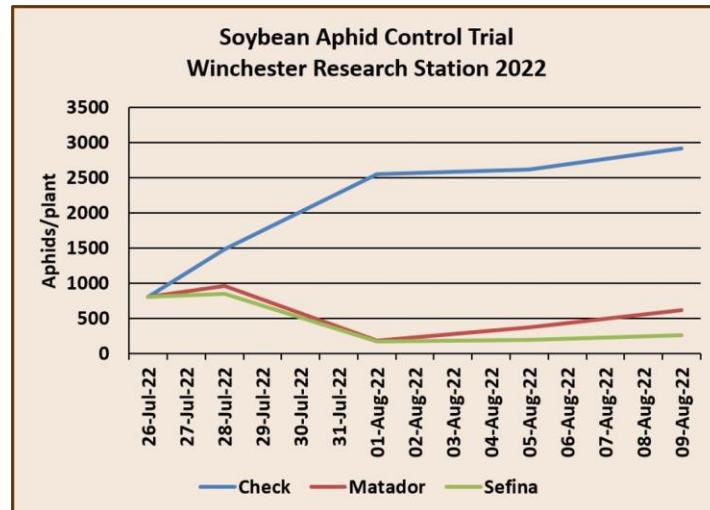
Rotating crops that are not soybeans, lima beans or snap beans is a good management practice. Tillage can help to bury residue and speed up decomposition to limit spread. Ensure your seed is pathogen free. Planting resistant varieties is also recommended. Fungicides are not effective against bacterial leaf blight. Fungicides are effective against brown spot and brown spot can look similar to bacterial leaf blight so it is important to be able to differentiate between the two.

<https://soybeanresearchinfo.com/soybean-disease/bacterial-blight/>



Aphid Update

Gilles Quesnel tweeted “Soybean aphid control trial at UoG, Winchester Research Station: seeing more beneficial insects and more diseased aphids, but overall, the healthy aphid population slightly increased over the last 4 days. Soybeans are at R5.”



Make sure to continue to monitor your field for aphid populations! In Southwestern Ontario we have not seen populations that warrant spraying, only the odd isolated field.

Sulfur Deficiency in Soybeans

Sulphur is an essential element and a secondary macronutrient in crop production. Sulphur can be one of the most limiting factors in high yielding soybean production. The nutrient is not mobile in the plant so in young plants the deficiency is seen as the yellowing of newer leaves. Sulphur can be limiting and is in many areas. With improved air quality standards and increased crop removal rates the atmospheric sulphur deposition has decreased. Sulphur can leach as it is mobile in the soil. Deficiencies are mostly noticed in soils that are coarse, eroded and have low organic matter. Hummus, a component of organic



matter is important for holding sulphur in the soil. Sulfur is a part of the amino acid's methionine and cysteine is very vital to protein synthesis in soybeans.

Nutrient Uptake & Removal: 60 Bushel Soybean

Nutrient	Required to Produce (acre ⁻¹)	Removed with Grain (acre ⁻¹)
N	245	179
P₂O₅	43	35
K₂O	170	70
S	17	10
Zn(oz)	4.8	2.0
B(oz)	4.6	1.6

Bender et al., 2015. Agronomy Journal (107:-563-573)

The best thing to do if you think you have a sulfur deficiency is to take a plant tissue sample. In most cases yield potential will already be affected by the time visual symptoms are apparent. It is best to be proactive with your soil fertility plan. The best sulphur management plan should include both early and late season availability.

There are two types of sulfur used for fertilizer applications, sulfate sulphur and elemental sulphur. Sulfate sulphur is important for plant take up where elemental sulphur is not in a plant available form and must be converted by microbes in the soil into the available form. The greatest amount of sulphur requirement is when the plants are in the seed filling stages.

<https://www.goldenharvestseeds.com/agronomy/articles/sulfur-influence-on-soybeans>

<https://www.cropnutrition.com/resource-library/sulfurs-role-in-soybean-success>

Determinate vs Indeterminate Soybeans

Determinate

- Later group soybeans
- Go through all their vegetative growth first and build a big base plant
- Then after they will flower
- All the leaves are out to catch sun light and a great root system to capture nutrients
- They can't be grown too far north as there is the potential to run out of season

Indeterminate

- They adjust based on sunlight
- Summer solstice- when the days become shorter is when the reproductive stage is triggered
- They can keep growing vegetatively even when they are flowering
- Can be raised anywhere but more common in the north



© Iowa State University Extension

https://www.youtube.com/watch?v=IQjA_iEhF6fw



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 10th.

Table 1: Cumulative growing degree days and crop heat units

Location	Growing Degree Days August 2-9	Crop Heat Units August 2-9	Cumulative Growing Degree Days	Cumulative Crop Heat Units
Brantford	485.2	211.6	5608.8	2214.4
Lucknow	478.6	205.9	5508.9	2150.9
Palmerston	469.0	202.7	5335.3	2039.0
Stratford	447.1	188.7	5357.4	2056.0
Tiverton	477.0	205.1	5506.3	2153.5

