



## Management of Late-Planted Soybeans

### Introduction

- Continuous rain during spring months can saturate fields, causing severe delays in the timeliness of planting.
- As crop planting is postponed, the development of the crop is set back, making the management of some field pests crucial.
- Smaller crops are more vulnerable to pests, making scouting very important.
- In this *Crop Focus* article, we will display a brief overview of a selection of pests that might pose a risk to late planted soybeans, as well as management practices when applicable.

#### Before using pesticides, consider the following:

- Percent of leaf area affected/damage inflicted
- Corn growth stage
- Cost of treatment
- Expected value of the crop

### Insects

#### Defoliating Insects

- Insects that defoliate small and vulnerable plants may pose more of a threat in growing seasons with late planting.
  - Defoliating can cause significant damage to plants that are already behind on vegetative growth (Figure 1).
- Bean leaf beetle pod feeding can also cause significant damage.
- If insects are present and feeding, and defoliation exceeds 30% of the leaf surface area, treatment may be necessary (Hunt, Jarvi, Ohnesorg, & Mueller, 2016).
- Common pests that defoliate soybeans are bean leaf beetles, Japanese beetles, Mexican bean beetles, a variety of caterpillars, etc.



**Figure 1.** Bean leaf beetles feeding on soybean, can vector bean mottle virus.



**Figure 2.** Skeletonization of soybean leaf due to Japanese beetle feeding.

#### Soybean Aphid

- Aphids pose a threat to soybeans from May – August.
- Piercing sucking mouthparts damage already stressed soybeans and can vector viruses.
- Females are parthenogenetic, meaning they can reproduce without mating, causing infestations to progress rapidly.
- There are many beneficial organisms that are natural enemies to aphids and can suppress their numbers.
- The economic threshold for aphids is 250 per plant, monitoring their numbers is crucial to proper management.



**Figure 3.** Ladybird beetle preying on aphids.



**Figure 4.** Close up of soybean aphid.

#### Stink Bugs

- Found throughout the temperate and tropical areas of the world.
- Stink bugs are most problematic when appearing in soybean fields during pod fill and maturation.
- Feeding may cause delayed maturity, green stem, and abnormal pods. Seeds fed upon may be shriveled, deformed, undersized, or aborted.
- Late planted and late maturing soybeans are at a particular risk.
- Fields with broadleaf weed growth, especially shepherd's purse, may be more susceptible, field margins can contain higher numbers.



**Figure 5.** Brown stink bug showing piercing-sucking mouthparts below head and between legs.

#### Soybean Podworm – Corn Earworm

- Corn earworm can also feed on soybean foliage and pods.
- Open canopies of late planted crops can serve as egg laying sites.
- If defoliation reaches 20% or more during pod fill, or 5-10% of pods are damaged, then treatment is justified (Bailey, 2014).



**Figure 6.** Soybean podworm feeding on soybean.

## Diseases

### Rhizoctonia

- *Rhizoctonia solani* is a soilborne fungus that infects the roots and stems of soybeans.
  - Overwinters as survival structures called sclerotia.
- Symptoms of this disease are rusty brown, dry, sunken lesions on stems and roots near the soil line.
- Soybeans can also appear stunted, chlorotic, and wilted as a result of root decay.
- This pathogen is favored with high soil moisture and warm soil temperatures, 81°F (27°C).
  - Because of this, it is common in late planted soybean fields.



**Figure 8.** Cankers in roots due to rhizoctonia root rot

### Phytophthora Root and Stem Rot

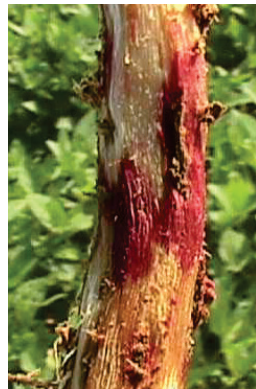
- Caused by the soil-borne fungus *Phytophthora sojae* (also known as *Phytophthora megasperma* f.sp. *glycinea*).
- Associated with wet soil conditions.
  - Commonly occurs on heavy, poorly drained or compacted soils.
  - May occur on any soil saturated for an extended period of time.
- Displays seed rot, seedling blight and root/stem rot phases.



**Figure 11.** Soybean plants wilted due to Phytophthora rot.



**Figure 7.** Red discoloration at soil line due to *Rhizoctonia solani*.



**Figure 9.** Close up of red discoloration due to *Rhizoctonia solani*.



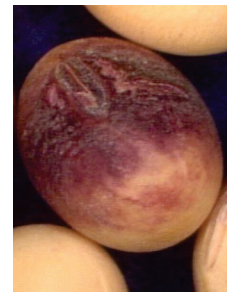
**Figure 10.** Phytophthora infected soybean on right, compared to a healthy soybean on the left. Note the dark brown lesion.

### Cercospora Leaf Blight and Seed Stain

- Caused by the fungal pathogen *Cercospora kikuchii*, which attacks both the leaves and the seeds of soybeans.
- Favored by warm and wet conditions.
- The disease is spread as spores are blown or splashed onto soybean plants from infected residue, weeds or other soybean plants.
- Leaves will have a general bronzing to purpling discoloration.
- Seeds are infected through their attachment to the pod. Infected seeds may show a pink to pale or dark purple discoloration



**Figure 12.** Bronzing on leaves due to *Cercospora*.



**Figure 13.** *Cercospora* seed stain on soybean.

### Frogeye Leaf Spot

- Frogeye leaf spot, *Cercospora sojina*, is most common in the mid-South, Mississippi Delta, and Southeastern soybean growing areas.
- Disease development is favored by warm, humid conditions and frequent rains following disease onset can lead to serious epidemics.
- The center of lesions become light brown to light gray, and the border remains dark.



**Figure 14.** Frogeye leaf spot on soybean.

### Viruses

- An increase in vector populations can increase the chance of viral infections in soybean fields.
  - Soybean mottle virus is vectored by bean leaf beetle.
  - Soybean mosaic virus is vectored by aphids.



**Figure 15.** Soybean leaf with symptoms of bean mottle virus.

### References

Bailey, W. C. (2014, September 3). Soybean Podworm in Soybean. Retrieved from Integrated Pest Management University of Missouri.



**Figure 16.** Aphid feeding on soybean leaf.

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