

Agronomy Newsletter: July 2023

From the desk of Alex Emehiser

Topics:

- Effects of Wildfire Smoke on Crops
- Soybean Root Rots
- Potassium Deficiency
- Effects of Uneven Emergence on Yield Potential
- Soybean Herbicide Considerations

Thank you all for a great planting season! We appreciate partnering with each of you to help move your farm forward. We hope you all had a great Independence Day, and took some time to appreciate the freedoms we have.

Dane and Alex

Effects of Wildfire Smoke on Crops

With the recent wildfires in Canada sending thick smoke cover over the last few weeks, we have had a lot of questions about what effects it is having on our growing crops. Just like anything else in farming, this is a complex topic with many factors coming into play. The two main things to consider are the reduction of solar radiation (sunlight), and the increase in ground level ozone. I will explore how both can affect the crops, and what their potential impacts will be.

The first and most obvious thing to consider is the reduced sunlight to the crop due to the thick smoke cover. While the sky was very hazy, it is hard to actually quantify how much sunlight we were losing. A study conducted in California in 2018 showed that on average, wildfire smoke only reduced photosynthesis by about 5%. In short, smoke cover is not ideal, but this is not anything outside of the normal cloudy weather we frequently experience here in Northeast Indiana. We likely won't see any real yield losses unless the smoke persisted for several weeks straight during the most critical periods of crop growth (tassel and grain fill in corn, and pod fill in beans).

The effects of ground level ozone are slightly more complex than the smoke cover. I'm sure many have heard of ozone as the layer of our atmosphere keeping out harmful UV rays. However, it can be harmful to humans and plants when in high concentrations at ground level. Ozone causes damage by entering the plant through the stomata (small openings in the leaf), and causing oxidation or burning of plant tissue. This causes cell damage