# CROPFOCUS

## Field Saturation Effects on Soybeans

- **Periods of consistent rainfall can lead to field saturation, resulting in anaerobic conditions (lack of oxygen) in the seed zone.**
- **Soybean seed viability can be impacted by short periods of field saturation, especially in temperatures above 50°F.**

## What is field saturation?

- Field saturation occurs when soil airspace is filled with water.
- When soil pores are filled with water, the seed is in an anaerobic condition, resulting in an absence of oxygen for the seed or seedling.
- Conditions that increase field saturation include compaction and heavier soils.
- Field saturation can significantly stress the crop if present for more than 3 to 4 days.
- If conditions persist for more than 6 days, yield will be significantly impacted due to stand loss.

## Assessing Damage

- Due to the nature of anaerobic conditions, it will take several days to assess the damage.
- Injury may seem extreme, but plant recovery is possible.
- Wait one week to do field assessments. If temperatures are above 70°F, you may be able to get an accurate stand count in a matter of a few days.
- Take accurate, random, and replicated stand counts across the field or field area that is being considered for replant.
- Seedling diseases such as *Phytophthora, Pythium, Fusarium*, and *Rhizoctonia* can occur under saturated conditions. These pathogens can cause damping off and affect plant health, with symptoms sometimes appearing later in the season.

**Table 1.** Stand assessment using a hula hoop. Count the number of soybeans within the hoop and multiply by the correlating factor to obtain population (plants/acre) in drilled soybeans.

| Hoop Inside Diameter | Multiplication Factor |
|---|---|
| 28 inches | 10,200 |
| 30 inches | 8,900 |
| 32 inches | 7,800 |
| 34 inches | 6,900 |
| 36 inches | 6,200 |
| 38 inches | 5,500 |

**Table 2.** Population (plants/acre) and percent of maximum yield potential for stand counts taken per 10 feet of row.

| Row Spacing | | | Population (Plants/Acre) | Percent Maximum Yield |
|---|---|---|---|---|
| Drilled | 15-inch | 30-inch | | |
| Plants per 10 feet of Row | | | | |
| 23 | 46 | 92 | 160,000 | 100 |
| 17 | 35 | 69 | 120,000 | 100 |
| 14 | 29 | 57 | 100,000 | 94 |
| 11 | 23 | 46 | 80,000 | 86 |
| 9 | 17 | 34 | 60,000 | 76 |
| 6 | 11 | 23 | 40,000 | 64 |

### Seedling Diseases

**Early season diseases can cause damping of seedlings. *Pythium*, (left), and *Rhizoctonia*, (right), are examples of seedling disease damage.**