

RED CROWN ROT (RCR) - Soybean Sampling Guide

What is RCR?

A soilborne fungal disease caused by *Calonectria illicicola*. Infects roots and lower stem. Most damaging during warm (77–86°F soil), wet conditions at mid- to late-season

Diagnostic hallmark: Small red-orange **perithecia** (sexual fruiting structures) embedded on the crown and lower stem at or just below the soil line.

Caution: Perithecia may be absent - especially after rain or early in infection. Lab confirmation is essential for management decisions.

Range: Confirmed across the Midwest (IL, IN, KY, MN, MO, OH, WI) and historically present in the Southeast

See the [Crop Protection Network](#) for current distribution.



Images courtesy of Stephanie Porter and Hari Karki



Image courtesy of Boris Camiletti

Feature	Red Crown Rot (RCR)	Sudden Death Syndrome (SDS)
Foliar	Interveinal chlorosis/necrosis; leaves usually stay attached	Interveinal chlorosis/necrosis; leaves drop early
Stem exterior	Red-brown discoloration; red-orange perithecia at crown	External stem usually healthy or lightly discolored
Root/Crown Symptoms	Red-Brown discoloration and possible red-orange perithecia at crown	Root rot present but no red-orange perithecia

Think you might have RCR? Look where you have SDS.

RCR and SDS share the same conditions (warm, wet, compacted or poorly drained soils) and produce similar symptoms. Scout them together.

How to Collect a Sample

When to sample: R1–R6, when foliar symptoms first appear. NOTE: perithecia degrade after heavy rain.

What to bring: Spade or soil knife: dig, don't pull. Zip-lock bags. Permanent marker. Shipping Materials

Steps:

1. **Scout symptomatic patches.** Focus on areas with SDS history, poor drainage, or compaction.
2. **Dig the whole plant.** Use a spade to loosen soil 6–8 inches around the plant. Keep roots intact.
3. **Collect 3–10 symptomatic plants** from within or at the edge of the affected area.
4. **Note field observations:** photograph foliar symptoms, root discoloration, and any visible red perithecia on the crown before bagging.
5. **Bag loosely and do not add water.** One bag per sampling area. Remove excess air
6. **Label each bag:** grower name, county/GPS, date, crop stage (R-stage), variety, and treatment history.
7. **Keep cool; ship promptly.** Refrigerate (do not freeze) if holding overnight. Use ice packs.

Clean tools between fields and wash hands after handling samples

Submission forms: Most state diagnostic labs or state soybean board provide sample submission sheets. Check your with your state or use the form included in your RCR sample submission kit.