

RED CROWN ROT (RCR) - Soybean Sampling Guide

What is RCR?

A soilborne fungal disease caused by *Calonectria ilicicola* that affects soybean roots, crown, and lower stem. Infection is favored by warm (77–86°F soil) and wet soil conditions during planting and seedling stages.

Diagnostic hallmark: Small brick red, sphere-shaped **perithecia** (sexual fruiting structures) present on the lower stem at or near the soil line, and occasionally on roots.

Caution: Perithecia may be absent or difficult to see. 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 [Crop Protection Network](#) for current distribution.



Images courtesy of Stephanie Porter and Hari Karki



Image courtesy of Esneider Mahecha Bojaca.

Feature	Red Crown Rot (RCR)	Sudden Death Syndrome (SDS)
Foliar	Interveinal chlorosis/necrosis; wilting, and premature senescence	Interveinal chlorosis/necrosis; leaves drop after death, while petioles remain attached
Stem exterior	Maroon/brick-red discoloration; brick-red perithecia may be present	External stem usually healthy or lightly discolored
Root/lower stem Symptoms	Roots discolored; lower stem and roots may have brick-red perithecia	Roots discolored or decaying; taproot cortex may be brown to dark gray, but pith remains white

Think you might have RCR? Look where you have SDS-like symptoms.

RCR and SDS can produce similar foliar symptoms and may occur in wet or poorly drained areas. Scout them together and submit suspicious samples for confirmation.

How to Collect a Sample

When to sample: R1–R6, when foliar symptoms first appear. NOTE: perithecia may be absent.

What to bring: Spade or soil knife: DIG, don't pull. Plastic bags (**NO paper 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 with soil attached.
3. **Collect 3–5 symptomatic whole 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 and field ID.
7. **Keep cool; ship promptly.** Use ice packs. Refrigerate (do not freeze) if holding overnight. Ship within 4 days.

Clean tools between fields and wash hands after handling samples

Submission forms: Include a completed Red Crown Rot Sample Submission Form with samples shipped to the U of IL Plant Clinic (see form for address). Contact esmabo@illinois.edu or 217-333-0519 for more forms if needed.