

YEAR-OVER-YEAR TESTING VS. EVERY 2-4 YEARS



Pattern Ag

Pattern Ag's test is designed to help make more informed decisions for rotation, seed genetics, and inputs.

Many of our soil insights are impacted by weather events and/or crop rotation, and annual testing is beneficial for year-over-year spending decisions. Some pathogens or biomarkers are more stable than others and sampling at a reduced frequency may be a reasonable option. Below is a brief overview of our recommendations and why we have them, and more insights into which of Pattern Ag's analytics demonstrate more year-over-year changes.

Soybean Cyst Nematodes (SCN) can have up to 6 generations in a single season, and studies have observed a 3-150 times increase in populations for a single growing season¹². Managing SCN can mitigate the likelihood of such a population explosion, and, in cases where SCN is already high in a field, steadily bring the population under control within a few years. **Yearly measurement of SCN is not necessary** unless you are actively managing to reduce SCN populations in a field.

Corn Rootworm (CRW) are highly mobile and have behavioral characteristics that have them show up in a wide variety of fields. Adult females are particularly mobile, often showing up in soybean fields as a part of behavior that has them leaving their natal fields in search of places to lay their eggs. Because of their high degrees of mobility, **we recommend sampling every year before planting corn** to make the most effective decisions on where traited genotypes are needed.

Seedlings and root rots are often highly variable year over year, reflecting management and weather conditions. It is important to understand if a field impacted by these rots is predominantly Fusarium/Rhizoctonia or Pythium because the protective chemistries for Pythium have no impact on Fusarium or Rhizoctonia, and vice versa. **We recommend annual sampling of any field with a history of root rots.**

Soybean diseases vary in how much they change from year to year. The two of highest concern are Sudden Death Syndrome (SDS) and Soybean Stem Canker, both of which can be highly variable depending on the weather of a given year. Sudden Death Syndrome, in particular, can explode in fields with high spring soil moisture, leading to higher inoculum loads going into the following year. **We recommend sampling for SDS and the other soybean diseases any time a field will be rotated into soybean**, as these are very damaging diseases that are strongly related to weather years.

The **Biomarkers** in Pattern Ag's report are predominantly those that are strongly impacted by field management and soil moisture, and thus make good metrics for managing a field and benchmarking its progress through management strategies. If a field is in the low risk categories across these metrics then a reduced sampling regime of every 2-4 years is likely sufficient to ensure a field remains on track. **However, we recommend annual sampling where the goal is to improve the soil quality** through management interventions and evaluate the soil for possible amendments or reductions in fertilizer inputs.

¹ Tylka, G. (2019, January 3). 2018 SCN-resistant Variety Trial Results Show Yield Effects and SCN Buildup | Integrated Crop Management. Integrated Crop Management. Retrieved May 23, 2023, from <https://crops.extension.iastate.edu/cropnews/2019/01/2018-scn-resistant-variety-trial-results-show-yield-effects-and-scn-buildup>

² De Bruin, J. L., & Pedersen, P. (2008). Response of Old and New Soybean Cultivars to *Heterodera glycines* Ichinohe. *Agronomy Journal*, 100(5), 1347-1353.



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For more information, call 800-933 -8644

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	Higher YoY variability- We recommend yearly testing	Lower YoY Every 2-4 years is likely fine
Corn Pests & Diseases		
Rootworm	✓	
Anthrachnose of Corn	✓	
Gibberella Stalk Rot		✓
Seedling & Root Rots		
Fusarium	✓	
Pythium	✓	
Rhizoctonia	✓	
Soybean Pests & Diseases		
Soybean Cyst Nematode		✓
Sudden Death Syndrome	Some years are ver different (ex. 2022-2023)	Some years are very similar (ex. 2021-2022)
Soybean Stem Canker	✓	
Soybean Brown Stem Rot		✓
White Mold (beta)	✓	
Phytophthora		✓
Beneficial Biomarkers		
Soybean Nitrogen Fixation	✓	
P solubilization activity	✓	
Plant Growth Promoters	✓	
Diversity		✓
Arbuscular Mycorrhizal Fungi (AMF)		✓
Harmful Biomarkers		
Denitrification activity		✓
Anaerobic activity		✓

