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Once It Warms Up - Consider Cyst Nematode Sampling

by Matt Montgomery

They are some of the most numerous multi-cellular organisms on the planet, and they come in various forms. Some are saprophytic (they clean up dead stuff), some are predatory (they hunt down and feed upon others of their "same kind"), some are animal parasitic (they enter and feed upon animals), and some … unfortunately … are plant parasitic (they feed upon and cause damage to plants). What do we call these small microscopic, eel-like organisms? We call them "nematodes." For those raising beans, the most important plant parasitic nematode is the Soybean Cyst Nematode, and growers should not forget to sample suspect fields this spring.

Soybean Cyst Nematodes, sometimes referred to simply by the acronym SCN, were introduced into the United States during the 1950s. Because the pest is microscopic, it does not move very far on its own. However, tillage tools and other implements have allowed the pest to go where it could not go on its own. By the early 70s, such equipment had moved SCN to southern Illinois and the boot heel of Missouri. By the '80s, the pest covered the southern half of Illinois. By the '90s, it had traversed into all the soybean producing regions of Missouri. Today, if your area grows beans and you are in the Burrus footprint, equipment has successfully moved SCN into your neighborhood. It is literally everywhere.

Microscopic describes the size of this pest, but it does not describe the size of its economic impact in soybean fields. An intense infestation of cysts can slash soybean yields by deep double digits, and it sometimes does so with stealth (the yield loss is there but you don't see it until the combine goes through the field). As little as one cyst in a half coffee cup of soil is deemed economically significant.

This brings up the interesting question of what exactly a cyst nematode looks like. The description depends upon the stage of the cyst nematode. When mature, the female cyst nematode has a lemon-like appearance (See Figure 1). The cyst starts life as pill-shaped egg (Figure 2), it develops inside that egg and hatches out as a second stage juvenile (eel-like in appearance – see Figure 3), and eventually the female swells with eggs taking on the lemon shape noted earlier. In extreme cases, those females can be spotted on the root with the unaided eye as small white/yellow dots (see Figure 4). Cysts suck juices from the plant and also cause root injury (which can provide an entry point for disease).

Sampling for cyst nematode is really not a complicated process, and it is definitely not as time sensitive as other nematode sampling techniques. A soil probe is all that is necessary. The soil core is only pulled from the top six to seven inches of soil (just like cores pulled for soil fertility). Because the cyst nematode only ruptures as temperatures warm up in the spring, as root exudates are released, etc., cysts should still be present for sampling in the early spring or in the fall. The grower should collect six to seven cores, mix them in a pot, and put about a quart of soil in a plastic bag. The sample should be promptly sent to a reputable lab which will then conduct egg counts. Depending upon the egg levels detected, resistant soybean may be recommended or additional years of corn may be recommended. (http://web.extension.illinois.edu/plantclinic/)

Where should sampling occur? Ideally, growers should sample every field. However, sampling every field is sometimes just not practical. Growers may therefore wish to pay special attention to fields prone to SDS symptoms (cysts often, but not always, accompany SDS), bean fields that just seem to struggle with yield, or fields prone to winter annual weed infestations (winter annuals tend to be host plants for cyst nematodes).