

Disease Profiles

Nematodes of Nebraska Field Crops

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1. Yellowing (chlorosis)



2. Stunting



3. Uneven plant height



4. Root lesions



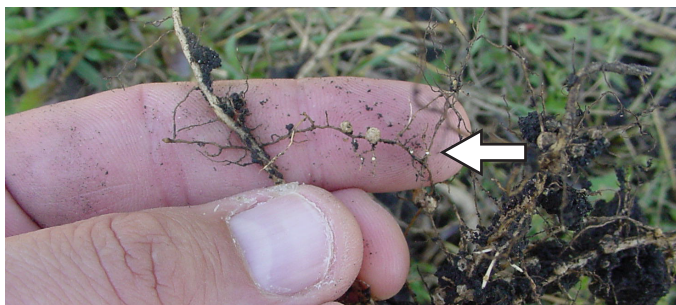
5. Root death (necrosis)



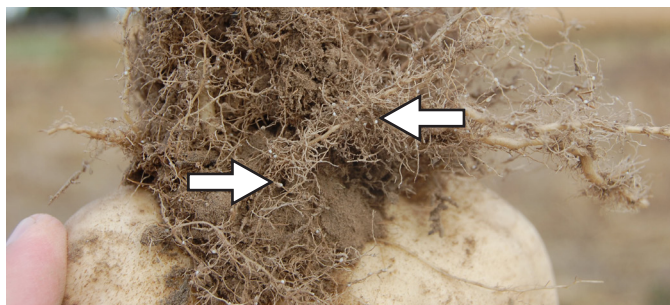
6. Disfigured roots



7. Wilting



8. Soybean Cyst Nematodes



9. Sugar Beet Cyst Nematodes

Plant Parasitic Nematodes of Nebraska Field Crops

Many species of plant parasitic nematodes affect Nebraska field crops. Some of the more common and/or damaging nematodes are described here. The extent of crop injury depends on the species present, their abundance, and other crop stresses. Diagnosis of nematode injury is difficult because most plant parasitic nematodes can't be seen with the naked eye and the type and severity of symptoms can vary widely. Most nematodes cause general symptoms that are not diagnostic and may mimic symptoms caused by other biotic or abiotic problems, such as herbicide damage, nutrient imbalances, water stress, and insect feeding. It is also common for multiple species to occur in a single field, as most of them are native. Samples should be collected for nematode analyses to confirm diagnoses and determine management.

Symptoms of Nematode Injury

- Yellowing (chlorosis) (Fig. 1)
- Stunting (Fig. 2)
- Uneven plant height (Fig. 3)
- Root lesions (Fig. 4)
- Root death (necrosis) (Fig. 5)
- Disfigured roots (Fig. 6)
- Wilting (Fig. 7)
- Yield loss

Nematode	Description
1. Soybean Cyst Nematode (SCN) Sampling: Anytime Management: C, R, Nema	SCN is the most damaging pathogen of soybean. It can cause substantial yield loss, often with no other visible symptoms. Mature females can be observed (Fig. 8) with the naked eye on soybean roots 40-50 days after planting. Major SCN hosts include soybean, dry bean, and some other bean species, as well as some common weeds, such as common chickweed, henbit, pennycress, and purslane.
2. Sugar Beet Cyst Nematode (SBCN) Sampling: Anytime Management: C, R, Nema	SBCN (Fig. 9) is closely related and appears identical to females of SCN (Fig. 8). SBCN infection can cause sugar beet plants to appear wilted, stunted, and yellowed. Host range includes sugar beet, various crops in numerous plant families, and weeds such as dock, lambsquarters, and shepherdspurse.
3. Root-lesion Nematode <i>Pratylenchus</i> spp. Sampling: Anytime Management: C, Nema, N	One of two common endoparasitic nematodes, root-lesion nematodes can spend much of their lives moving and feeding inside roots. These smaller nematodes have species that vary widely in their host range and can affect most Nebraska crops. Lesion nematodes are very common, occurring in more than 80% of Midwest corn fields. They can cause noticeable lesions on roots that can allow secondary infections by fungi (Fig. 4).
4. Others Sampling: Anytime Management: C, Nema, N	Many other nematodes, such as spiral, lance, dagger, and stunt, can occur in crop fields, but there is less research on their potential impacts. Damage potential depends on population density, species present, and conditions causing crop stress.

The nematodes listed above are found in sandy and non-sandy soils. Those listed below are only found in sandy soils and can move deep into the soil profile. For best results sample sandy fields for nematodes early in the growing season, by V5 growth stage in corn.

5. Sting Nematode <i>Belonolaimus</i> spp. Sampling: Early Management: C, Nema	Sting nematodes are large and require very sandy soil. These nematodes have a wide host range that includes most rotational crops in the Midwest, except alfalfa. They may cause severe stunting (Fig. 2) and root necrosis (Fig. 5) that usually appears in smaller, isolated patches of fields. They are often first noticed in corn (Fig. 2).
6. Needle Nematode <i>Longidorus</i> spp. Sampling: Early Management: C, Nema	Needle nematodes are up to 1/8 inch long and are the longest plant parasitic nematodes, thus requiring the larger pore spaces found in very sandy soil. The host range is restricted to several grassy crops and weeds. Like sting nematodes, their damage usually occurs in small patches in fields (Fig. 2) and may be accompanied by severely damaged roots (Fig. 5).
7. Stubby-root Nematode <i>Paratrichodorus</i> minor Sampling: Early Management: C, Nema, N	Despite their smaller size, stubby-root nematodes are usually found only in sandy fields. Like sting and needle nematodes, they can travel deeper in the soil. Stubby-root nematode feeding can cause enlarged, stubby root tips (Fig. 6). This nematode has a wide host range, including corn, sorghum, and soybean.

Photo Credit: Figure 8 courtesy of Greg Tylka, Iowa State University

***Sampling** – Optimal time to collect samples - **Early** season, by V5 in corn planted in fields with sandy soil; **Anytime**, including after harvest
****Management Codes:** C – cultural practices, such as the use of crop rotation; R – resistant varieties; **Nema** – nematicide; **N** – management may not be necessary, practical, or possible.