UNIVERSITY OF ILLINOIS EXTENSION
College of Agricultural, Consumer and Environmental Sciences

report on **PLANT DISEASE**

RPD No. 1354
December 2025

DEPARTMENT OF CROP SCIENCES
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

BEET CERCOSPORA LEAF SPOT

Cyst nematode, *Heterodera schachtii*, was discovered by H. Schacht in 1859 in Germany and named by A. Schmidt in 1971. Since then, this nematode has been identified in most of beet growing areas in the world, especially on sugar beets. This nematode is a serious pathogen of beet, causing up to more than 50% yield losses in sugar beet fields.

Figure 1. A beet field with plants damaged by cyst nematode (Heterodera schachtii) (APS, Courtesy A. E. Steele).

Symptoms

Heterodera schachtii may affect one or more localized areas on entire fields. Localized infestations may produce well-defined circular to oval areas where plant growth is reduced or crop stands are poor (Figure 1).

Pre- and post-emergence of seedlings may occur in heavily infestedfields. Affected plants may remain stunted until harvest. Even with adequate soil moisture, leaes of infected plants typically wilt fruring the hot periods of the day. Depending on the severity of infection, leaes of affected plants may remain green or become yellow. Early infection of plants may cause branching of the main roots. From about six weeks after planting to harvest, a few to many adult famale nematodes can be observed attached to fibrious roots (Figure 2, A and B). Adult cysts of the pathogen drop from roots to soil and they be easily extracted from soil (Figure 2, C).

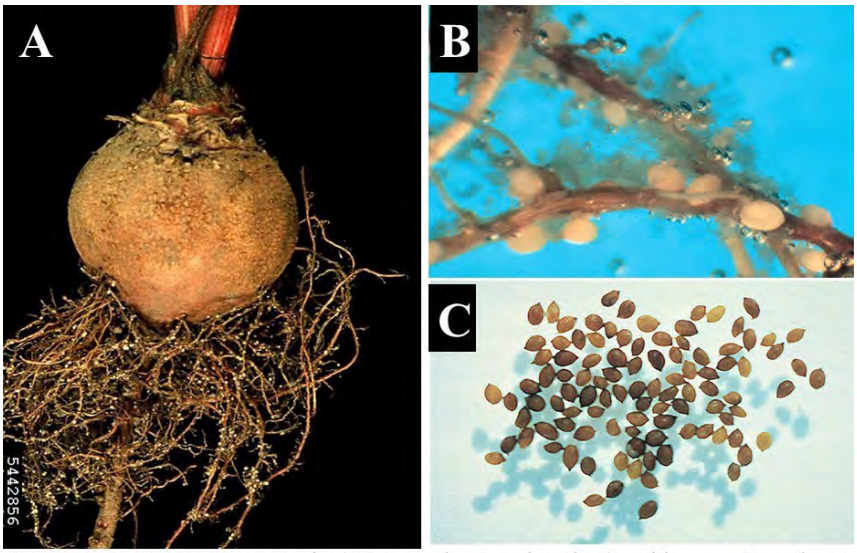

Figure 2. Cysts nematode (Heterodera schachtii) of beets. A, a beet plant with cysts on roots (University of Georgia); B, cysts on fibrous roots (APS); and C, mature cysts (APS, Courtesy A. E. Steele).

Disease Cycle

Heterodera schachtii overwinters as eggs in the cysts. Under the favorite conditions,

For further information contact ***Mohammad Babadoost****, Extension Specialist in Fruit and Vegetable Pathology, Department of Crop Sciences, University of Illinois, at Urbana-Champaign.* (***Phone: 217-333-1523; email:*** *babadoos@illinois.edu*).

and stimulated by the root exudates of host plant, eggs hatch to produce the first-stage juviniles (larvae). These juveniles grow and molt within the eggs and enter the second-stage juveniles (second stage of development). If soil moisture is adequate, the second-stage juvinales attack plant roots.

After entering roots, the second-stage juvinales migrate a short distance in the cortex and become sedentary parasites. Their further growth and development within the roots is marked by three more molds. Adult males emarge from roots and fertilize young females.

After the fourth molt, females grow larger and break through the root to its surface, and their white lemon-shape bodies can be seen attached to fibrous roots (Figure 2, A and B). After about 30 days from penetration of secon-stage juvinites in the roots, eggs completely fill the body cavity of the female. The femaile dies, and her body wall eventually hardens and is transformed into a reddish brown cyst, containing from a few to more than 600 eggs (Figure 2, C). The time required for the development of female is highly variable and depends on temperature and other environmental factores.

Heterodera schachtii may survives in the field for more than 6 year. This pathogen can spread in soil by all means that carry soil. This pathogen has a wide host range, including vegetables, field crops, ornamentals, and weeds. At least 218 plant species in 95 genera and 23 families are reported to be host of *H. schachtii*.

Disease Management

- Crop rotation with nonhost plants is the most viable method of managing this pathogen. Depending on the severity of field infestation, crop rotations of up to seven years may be required.
- Planting seeds early in the season when soil temperature is low may help to reduce the rate of hatching eggs and therefore invasion of plants by juveniles, so helping plants to get established.
- Field equipment should be thoroughly cleaned before moving between fields.
- If available, resistant or tolerant cultivars should be planted.
- Using trap crops, such as Adagio and Colonel have mentioned effective in reducing the damage.
- Controlling weeds is very important.
- Using nematicides, particularly with high level of 1,3-dichloroprpene has been reported effective for managing this nematode. However, the reports results have not been consistent.