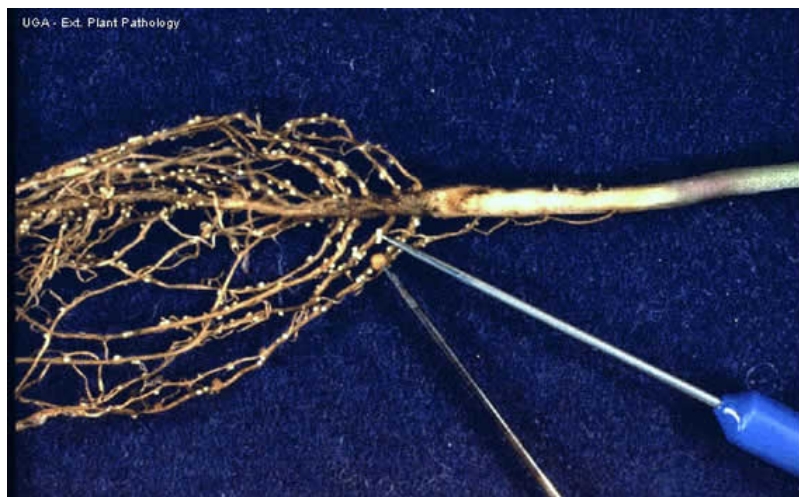


Soybean Cyst Nematodes

Soybean cyst nematodes, *Heterodera glycines*, are potentially the most serious nematode pest of soybeans. These nematodes cause concern for several reasons: 1) bodies of females become a protective cyst for the eggs which gives a degree of protection against drying out and against chemical control; 2) some eggs in the cyst can survive for long periods (possibly 4 years or longer) in the absence of a host crop; 3) eggs protected in cysts can be more easily spread to new areas than most other nematodes; and 4) new races that can overcome host-plant resistance may develop when resistant varieties are planted for two to three or more years.

The life cycle of soybean cyst nematodes is somewhat like root-knot nematodes: larvae hatch, enter roots (often near the root tips), and remain at one site throughout their lives. Females enlarge to become lemon-shaped. While the head is embedded in the root, the enlarged body breaks through root tissue to the outside. The mature female, or cyst, goes from cream colored through progressive stages to yellow, light brown, and dark brown. The younger cream to yellow cysts can be seen in early to late spring. As cysts turn brown they are more difficult to see and may easily be dislodged from the roots, so care must be taken when sampling not to dislodge cysts or diagnosis may be more difficult.



Symptoms of soybean cyst nematode injury vary slightly from symptoms of other nematode injury. In the spring, young beans may show a distinctive yellow color. Plants will be stunted, will wilt easily, and some heavily infected plants may die. Symptoms will vary according to such factors as numbers of nematodes attacking the young plants, soil moisture, temperature, and fertility. Damage may be more severe in sandy soils, but it will occur in heavier soils. It is possible for entire fields to be infested with soybean cyst nematodes, in which

case localized areas of stunted, yellowed plants may not be obvious. Root development is restricted and roots are darkened, but the most diagnostic sign is the presence of female cysts protruding from the small roots. Cysts are barely visible to the naked eye. Cysts are about the size of a pinhead and are much smaller than nitrogen nodules. Soybean cyst nematodes can inhibit nitrogen nodulation.

Soybeans are the only major field crop host of soybean cyst nematodes. Some other hosts are green beans, lespedeza, common vetch, and sicklepod. Under ideal conditions, soybean cyst nematodes can hatch, mature, and reproduce in as little as three to four weeks.

To a limited extent, optimum moisture and fertility can help plants withstand attack from soybean cyst nematodes. Though damage can still be severe, yield will be affected less if other plant stresses are minimized.

To help prevent spread, fields that are known to be infested should be cultivated and planted after non-infested fields. Equipment should be thoroughly cleaned after working in infested fields.

Control can be achieved most economically and effectively through a combination of rotation for one or two years with a non-host crop, followed by one year of a resistant variety, followed by one year with a soybean cyst susceptible variety. Resistant varieties should be grown only one year out of three or four to prevent development of new races of soybean cyst nematodes.



In the absence of soybean cyst nematodes, some resistant varieties may have slightly lower yields than susceptible varieties. When soybean cyst nematodes are present, nematicides may increase yields, but their cost may not allow an economic benefit. The cost:benefit analysis is strongly influenced by the price of soybeans. Every situation must be assessed individually.

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