Nema Note 2

Nematode Management in Soybeans

www.ncagr.gov/agronomi/uyrnem.htm

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Note **Comment**

2-1 Soybean cyst nematode is present. Soybeans and snap beans are the only host crops for this nematode that are commonly grown in North Carolina. Crop rotation is useful in managing soybean cyst nematode:

year 1	nonhost crop
year 2	cyst-resistant soybean variety
year 3	nonhost crop
year 4	cyst-susceptible soybean variety.

Growing small grains in winter is not equivalent to growing a nonhost crop for an entire year. If soybean cyst nematode populations are very high, grow nonhost crops for at least two consecutive years. Three years is even better. If high populations of cyst nematodes occur after a year of cyst-resistant soybeans, see Note **2-3** below.

2-2 This sample indicates an infestation of soybean cyst nematode. Take another sample from this field before planting soybeans or snap beans.

2-3 This sample indicates a high population of soybean cyst nematodes on or following a cyst-resistant variety. Therefore, currently available varieties with the same cyst-nematode resistance will probably not be effective against this population. Choose a variety with different resistance. See comments on managing nematodes on soybeans with resistant varieties following Note **2-6** below.

If possible, follow soybeans with nonhost crops for two consecutive years. After nonhost rotation, you can grow a susceptible soybean variety without significant damage. If only a one-year rotation is possible, then planting a variety in maturity group V after June 15th may give acceptable yields.

'Hartwig,' 'Delsoy 5710,' 'Anand' and 'Fowler' are highly resistant to cyst nematodes but may not yield as well as other resistant varieties. New varieties with resistance derived from 'CystX' may be available also. Consider using the following rotation when fields have high cyst pressure and no other resistance is available.

year 1	nonhost crop	year 3	nonhost crop
year 2	highly resistant soybean variety	year 4	cyst-susceptible soybean variety.

2-4 This sample indicates the presence of root-knot nematodes. Plant a resistant soybean variety this year to help manage the nematode and prevent it from becoming a problem for future crops.

2-5 The information sheet did not indicate the variety of the previous soybean crop. If a cyst-resistant variety was used, it was not effective. Follow the suggestions in Note **2-3** above.

2-6 The information sheet did not provide complete cropping history. The sample indicates the presence of soybean cyst nematodes. If it has been two or more years since soybeans or snap beans were grown in the field, then these nematodes are not likely to damage next year's soybean crop. However, if these crops have been grown within the last two years, damage may be severe.

Managing the Columbia Lance Nematode

Soil type affects damage by the Columbia lance nematode. Damage is most severe on sandy soils. The information in TABLE 1 can be used to predict the likelihood of damage by lance nematodes.

Soybean varieties that are tolerant to Columbia lance nematode are included in TABLE 2. A tolerant variety will yield more than a susceptible one at low to moderate nematode populations but can be severely damaged if nematode populations are high. Tolerant varieties, however, neither prevent nor limit nematode reproduction and development.

TABLE 1. Potential for Columbia lance nematode damage based on nematode populations level and soil type.

Nematode Numbers per 500 cc of soil	Potential Damage Based on Soil Type	
	Sandy	Clay, Mineral or Organic
10–50	low	low
50–100	moderate	low
100–200	high	low
200–400	high	moderate
400+	high	high

Managing Nematodes on Soybeans with Resistant Varieties

Cyst-nematode-resistant soybean varieties are not all the same. There are at least nine races of cyst nematodes (identified by numbers), and varietal resistance is specific. For example, a variety listed as resistant to races 3 and 14 is only resistant to those races. The grower should take care to select the correct variety. If soybeans resistant to races 3 and 14 have not been effective in reducing cyst populations (as determined by assays before and after planting), select a variety with resistance to other races (for example, 2, 5 or 9).

Lists of soybean varieties with resistance to the various races of soybean cyst and root-knot nematodes are available from many sources, including seed companies and N.C. Cooperative Extension. Varietal response to nematodes is addressed in the most recent issue of *N.C. Measured Crop Performance* [Official Variety Tests] published by the N.C. State University Crop Science Department and in *Soybean Disease Information Note 6* published by N.C. State University Plant Pathology Extension. You can search for resistant varieties at the Web site www.soybean.ncsu.edu/soyvar/.

Information on soybean resistance to other nematodes tends to be less accessible. See TABLE 2 for a list of soybean varieties that exhibit tolerance or resistance to lesion, reniform or Columbia lance nematodes. ***Resistant*** varieties grow well in infested fields and actually suppress existing nematode populations. ***Moderately resistant*** varieties may permit some nematode reproduction. As mentioned in the previous section, ***tolerant*** varieties will grow in infested fields but do not suppress nematode populations and still exhibit some yield loss.

TABLE 2. Selected list of soybean varieties with nematode resistance or tolerance.*

Variety	Maturity Group	Lesion	Reniform	Columbia Lance
Asgrow A4715	IV		MR	
Asgrow A5979	V	MR†		
Bedford	V		R	
Bragg	VII	MR†		
Centennial	VI		R	T
Cook	VIII	R†		
Davis	VI	R†		
Deltapine 417	VII	R†		
Deltapine 726	VI			
Deltapine DP3606	VI		R	T
Dillon	VI			T
Essex	V	R†		
FFR 595	V		MR	
Forrest	V	R‡	R	
Foster	VIII			T
Hagood	VII			T
Hartwig	V		R	
Hartz 5171	V		R	
Hartz 5252	V		R	
Hartz 5370	V		R	
Hartz 6130	VI		MR	
Hartz 6200	VI		MR	
Hartz 7110	VII		R	
Hartz H5240	V		MR	
Hartz H5566	V		MR	
Hartz H7190	VII		R	
Hutton	VIII	MR†		
Kirby	VIII			T
Maxcy	VII		R	T
McNair 600	VI	R†		
NK Coker 136	V	MR†		
NK Coker 156	VI			T
NK Coker 317	VII			T

* R = resistant; MR = moderately resistant; T = tolerant

(continued)

† The resistance indicated is to *Pratylenchus brachyurus*.

‡ The resistance indicated is to *Pratylenchus scribneri*.

TABLE 2 (*continued*). Selected list of soybean varieties with nematode resistance or tolerance.*

Variety	Maturity	Lesion	Reniform	Columbia Lance
NK Coker 338	VIII	R†		
NK Coker 368	VIII			T
NK Coker 485	V			T
NK Coker 488	VIII			T
NK Coker 6738	VIII			T
NK Coker 6847	VII		R	T
NK S64-23	VI			T
NK S83-30	VIII			T
Pickett	VI	MR†	R	
Pioneer 9641	VI		R	
Pioneer 9761	VII		R	
Ransom	VII	R†		
Stafford	IV		R	
TN 5-92	V		R	

* R = resistant; MR = moderately resistant; T = tolerant
† The resistance indicated is to *Pratylenchus brachyurus*.
‡ The resistance indicated is to *Pratylenchus scribneri*.

For Additional Assistance

- Call your NCDA&CS regional agronomist or the Agronomic Division office in Raleigh (919-733-2655).
- Visit the NCDA&CS Agronomic Division Web site at www.ncagr.gov/agronomi/.
- Visit your county Cooperative Extension office.
- Refer to the following online publications.
  - ***Disease resistance in soybean*** (N.C. State University Plant Pathology Extension, 2000)
    — www.ces.ncsu.edu/depts/pp/notes/Soybean/soy006/soy006a.htm
  - ***North Carolina soybean variety program*** (N.C. State University, date not given)
    — www.soybean.ncsu.edu/soyvar/
  - ***Soybean nematodes*** (University of Nebraska, date not given)
    — nematode.unl.edu/soynemas.htm
  - ***Soybean varieties with cyst nematode resistance*** (University of Illinois Extension, 2005)
    — netfiles.uiuc.edu/tjw/www/cover.htm