

A list of widely prevalent nematodes is displayed on a website sponsored by the Society of Nematologists:

<https://www.prevalentnematodes.org/index.cfm> The widely prevalent list and information from scientific studies was used for the column in Table 1 labeled “Detected in Soybean Fields”.

State	<i>Pratylenchus</i> species known to be associated with soybean								<i>Pratylenchus</i> species reported from other crops				
	<i>P. alleni</i>	<i>P. brachyurus</i>	<i>P. coffeae</i>	<i>P. dakotaensis</i>	<i>P. hexincisus</i>	<i>P. neglectus</i>	<i>P. penetrans</i>	<i>P. scribneri</i>	<i>P. crenatus</i>	<i>P. pratensis</i>	<i>P. thornei</i>	<i>P. vulnus</i>	<i>P. zaeae</i>
AL		X	X		X	X	X	X		X		X	X
AR	X	X	X		X	X	X	X	X	X		X	X
AZ	X	X			X	X	X	X				X	X
CA		X	X		X	X	X	X	X		X	X	X
CT						X	X		X				
CO					X		*5				X		
DE					X		X						
FL		X	X		X	X	X	X		X		X	X
GA		X			X		X	X		X		X	X
HI		X	*1				X	X					
IA	X		??		X	X	X	X	X			X	
ID		??	??		X	X	X	X	X		X	X	
IL	X				X	X	X	X		X		X	X
IN					X	X	X	X	X	X	X		
KS					X	X		X			X		
KY			X				X	X	X	X			X
LA			X				X	X					X
MA							X		X				
MD			X		X	X	X	X	X		X	X	X
ME		??	??				X	X	X	X			??
MI							X	X	X				

MN			??		X	X	X	X	X	*7		X	
MO	X				*3		*3	X				X	
MS			X			X	X	X		X		X	X
MT						X	X	X			X		
NC		X					X	X				X	
ND				X		X		X					
NE	X		??		X	X	X	X		X	X		*6
NH							X		X				
NJ						X	X	X	X				
NM						X		X				X	
NV						X	X						
NY						X	X	X	X	X		X	??
OH	X				X	X	X	X	X		X	X	
OK							X	X			*6		
OR						X	X		X	X	X	X	
PA		??			X		X	X	X	X		X	??
RI							X		X				
SC			X			X	X	X		X		X	
SD					X			X					
TN	X				X	X	X	X	*7	*7	X	X	X
TX			X		X	X	X	X		X		X	X
UT						*4	*5				X		
VA		*2					X	*2	*2				
VT						X	X		X				
WA						X	X		X		X		
WI		??		X	X	X	X	X	X	X	X	X	
WV						X	X	X	X	X	*2	*2	
WY						X		X					

- X Distribution of *Pratylenchus* species associated with soybean in the U.S. according to the Widely Prevalent Nematode List sponsored by the Society of Nematologists. <https://www.prevalentnematodes.org/>
- ?? Included in the Widely Prevalent list but suspect because this species is considered tropical or subtropical.
- \* Not included in the Widely Prevalent List but documented in a publication shown below:
- 1 Raabe et al., 1981. Checklist of plant diseases in Hawaii. Hawaii Institute of Agriculture and Human Resources. Information Text Series 022.
  - 2 Eisenback, J. D. 2018. Nematodes of Virginia and West Virginia *in* Plant Parasitic Nematodes in Sustainable Agriculture, Volume 2.
  - 3 Niblack, T. L. 1992. Journal of Nematology 24(4S):738-744.
  - 4 Griffin, G. D. 1997. Journal of Nematology 29:82-89.
  - 5 Griffin, G. D. 1993. Journal of Nematology 25:461-465.
  - 6 Ozbayrak et al., 2019. Journal of Nematology DOI:10.21307/jofnem-2019-081.
  - 7 Bernard, E. C. 1980. Identification, Distribution, and Plant Associations of Plant-Parasitic Nematodes in Tennessee.
  - 8 Taylor et al., 1958. Plant Disease Reporter 42:195-198.

The published research studies shown below were used to develop the columns in Table 1 about the reproduction, plant damage, and yield loss attributed to each RLN species.

### ***Pratylenchus agilis***

*Rebois, R. V., and A. Morgan Golden. 1985. Pathogenicity and reproduction of Pratylenchus agilis in field microplots of soybean, corn, tomato, or corn-soybean cropping systems. Plant Disease 69:927-929.*

Microplots of sandy loam soil were fumigated and infested with 2200 *Pratylenchus agilis* harvested from pot cultures of corn. Populations of *P. agilis* increased after three years of continuous soybean (cv. Williams) but yield of soybean in the third year was not reduced as compared to the no-nematode control.

### ***Pratylenchus alleni***

*Acosta, N., and Malek, R. B. 1979. Influence of temperature on population development of eight species of Pratylenchus on soybean. Journal of Nematology 11:229-232.*

Soybean (cv. Clark 63) was planted in pots with loamy sand soil infested with 1000 *Pratylenchus alleni*. The pots were maintained for 75 days in controlled temperature tanks. Populations of *P. alleni* increased at temperatures ranging from 20 to 30 degrees Celsius.

*Acosta, N. 1982. Influence of inoculum level and temperature on pathogenicity and population development of lesion nematodes on soybean. Nematropica 12:189-197.*

Soybean (cv. Clark 63) planted in pots with loamy sand soil were inoculated with 1,000, 10,000, or 20,000 *Pratylenchus alleni* and grown for 90 days. The highest level of *P. alleni* reduced soybean shoot weight by 45% and root weight by 49%.

*Belair, G., Mimee, B., Duceppe, M. O., and Miller, S. 2013. First report of the root-lesion nematode, Pratylenchus alleni, associated with damage on soybean in Quebec, Canada. Plant Disease*

Stunted soybean plants were noticed in a field. The field was divided into multiple plots so that yield could be collected from areas with symptoms as well as from areas that appeared healthy. Yield for the plots with stunted soybean were 38 to 54% less than for the healthy plots. *Pratylenchus alleni* was recovered from the stunted plants.

### ***Pratylenchus brachyurus***

*Acosta, N., and Malek, R. B. 1979. Influence of temperature on population development of eight species of Pratylenchus on soybean. Journal of Nematology 11:229-232.*

Soybean (cv. Clark 63) was planted in pots with loamy sand soil infested with 1000 *Pratylenchus brachyurus*. The pots were maintained for 75 days in controlled temperature tanks. Populations of *P. brachyurus* increased at temperatures ranging from 20 to 35 degrees Celsius.

*De Oliveira Lima, F. S., dos Santos, G. R., and Nogueira, S. R.. 2015. Population dynamics of the root lesion nematode, Pratylenchus brachyurus, in soybean fields in Tocantins State and its effect to soybean yield. Nematropica 45:170-177.*

Yield data collected from soybean fields infested with *Pratylenchus brachyurus* in Brazil showed soybean pod numbers were 39.7% lower in symptomatic areas versus areas showing no nematode symptoms.

*Dias-Arieira, C. R., de Araujo, F. G., Kaneko, L., and Santiago, D. C. 2018. Biological control of Pratylenchus brachyurus in soya bean crops. Journal of Phytopathology 166:722-728.*

Two species of nematode-parasitic fungi were tested in greenhouse and field environments for their ability to reduce *Pratylenchus brachyurus*. A combination of both fungi plus a moss bioactivator agent decreased nematode numbers and increased yields more than 11%.

*Lindsey, D. W., and Cairns, E. J. 1971. Pathogenicity of the lesion nematode, Pratylenchus brachyurus, on six soybean cultivars. Journal of Nematology 3:220-226.*

Six cultivars of soybean were inoculated with 1000 *Pratylenchus brachyurus* and grown in pots of sandy soil until maturity in the greenhouse. “Hood” soybean showed reduced yields and all cultivars showed impaired root growth.

*Schmitt, D. P., and Barker, K. R., 1981. Damage and reproductive potentials of Pratylenchus brachyurus and Pratylenchus penetrans on soybean. Journal of Nematology 13:327-332.*

Microplots established in four fields with different soil textures were planted with soybean (cvs. Essex and Forrest) and infested with *Pratylenchus brachyurus* cultured in the greenhouse. Data from the two-year study showed reduced yield of “Forrest” soybean grown in loamy sand, sand, and muck soils as compared to the no-nematode control.

***Pratylenchus coffeae***

Acosta, N., and Malek, R. B. 1979. Influence of temperature on population development of eight species of *Pratylenchus* on soybean. *Journal of Nematology* 11:229-232.

Soybean (cv. Clark 63) was planted in pots with loamy sand soil infested with 1000 *Pratylenchus coffeae*. The pots were maintained for 75 days in controlled temperature tanks. Populations of *P. coffeae* increased at temperatures ranging from 25 to 30 degrees Celsius.

### ***Pratylenchus crenatus***

Briar, S. S., Grewal, P. S., Somasekhar, N., and Stinner, D. 2007. Soil nematode community, organic matter, microbial biomass and nitrogen dynamics in field plots transitioning from conventional to organic management. *Applied Soil Ecology* 37:256-266.

An organic cropping system of soybean, corn, oats, and hay was compared to a conventional corn-soybean rotation in a field infested with *Pratylenchus crenatus*. Populations of *P. crenatus* thrived in the corn-soybean rotation and all but the hay phase of the organic system rotation.

### ***Pratylenchus dakotaensis***

Chowdhury, I. A., Yan, G., Kandel, H., and Plaisance, A. 2022. Population development of the root-lesion nematode *Pratylenchus dakotaensis* on soybean cultivars. *Plant Disease* 106:2117-2126.

Reproduction of *Pratylenchus dakotaensis* was evaluated on 20 cultivars and lines of soybean in 15-week greenhouse experiments. No cultivar was resistant and populations increased on many of the cultivars, with a maximum increase of 3.4-fold.

### ***Pratylenchus fallax***

Sakai, K., Handoo, Z. A., and MacGuidwin, A. E. 2019. First report of the root-lesion nematode, *Pratylenchus fallax*, on soybean in Wisconsin. *Plant Disease* <https://doi.org/10.1094/PDIS-02-19-0288-PDN>.

*Pratylenchus fallax* was recovered from a soybean field in Wisconsin, a first for the United States as the only other report of this species was from oak in North Dakota. A culture was established and reproduction on soybean was confirmed.

### ***Pratylenchus hexincisus***

Zirakparvar, M. E. 1982. Susceptibility of soybean cultivars and lines to *Pratylenchus hexincisus*. *Journal of Nematology* 14:217-220.

Populations of *Pratylenchus hexincisus* increased on 13 of 41 soybean cultivars and lines grown in pots filled with sandy loam soil infested with 3000 nematodes. Shoot and root biomass after three months were reduced for five cultivars inoculated with 5000 nematodes.

### ***Pratylenchus neglectus***

Acosta, N., and Malek, R. B. 1979. Influence of temperature on population development of eight species of *Pratylenchus* on soybean. *Journal of Nematology* 11:229-232.

Soybean (cv. Clark 63) was planted in pots with loamy fine sand infested with 1000 *Pratylenchus neglectus*. The pots were maintained for 75 days in controlled temperature tanks. Populations of *Pratylenchus neglectus* increased at temperatures ranging from 25 to 35 degrees Celsius.

### ***Pratylenchus penetrans***

Acosta, N., and Malek, R. B. 1979. Influence of temperature on population development of eight species of *Pratylenchus* on soybean. *Journal of Nematology* 11:229-232.

Soybean (cv. Clark 63) was planted in pots with loamy sand soil infested with 1000 *Pratylenchus penetrans*. The pots were maintained for 75 days in controlled temperature tanks. Populations of *P. penetrans* increased at temperatures ranging from 15 to 30 degrees Celsius.

Saikai, K., and MacGuidwin, A. E. *Impact of Pratylenchus penetrans on soybean grown in Wisconsin. Plant Disease* 106:2904-2910.

Yield models were developed using data collected from fields naturally infested with *Pratylenchus penetrans* and plants inoculated with cultured nematodes grown in the greenhouse. An estimate of 0.02% yield loss for each nematode detected the week after planting was proposed. *Pratylenchus penetrans* reduced vegetative growth of soybeans at the V2 stage and numbers of seeds, pods, and grain yield at harvest.

Schmitt, D. P., and Barker, K. R., 1981. *Damage and reproductive potentials of Pratylenchus brachyurus and Pratylenchus penetrans on soybean. Journal of Nematology* 13:327-332.

Microplots established in a field with loamy sand soil were planted with soybean (cv Lee 68) and inoculated with *Pratylenchus penetrans* cultured in the greenhouse. Data from two years showed yield reductions in microplots infested with *P. penetrans* as compared to the no-nematode control.

### ***Pratylenchus scribneri***

Acosta, N., and Malek, R. B. 1979. *Influence of temperature on population development of eight species of Pratylenchus on soybean. Journal of Nematology* 11:229-232.

Soybean (cv. Clark 63) was planted in pots with loamy sand soil infested with 1000 *Pratylenchus scribneri*. The pots were maintained for 75 days in controlled temperature tanks. Populations of *P. scribneri* increased at temperatures ranging from 20 to 35 degrees Celsius.

Acosta, N., and Malek, R. B. 1981. *Symptomology and histopathology of soybean roots infected by Pratylenchus scribneri and Pratylenchus alleni. Journal of Nematology* 13:6-12.

Soybean (cv. Clark 63) were inoculated with 950 *Pratylenchus scribneri* and grown in loamy sand soil under greenhouse conditions for 45 days. Root damage and the relationship between nematode numbers and lesion size were described.

Acosta, N. 1982. *Influence of inoculum level and temperature on pathogenicity and population development of lesion nematodes on soybean. Nematropica* 12:189-197.

Soybean (cv. Clark 63) planted in pots with loamy sand soil were inoculated with 1,000, 10,000, or 20,000 *Pratylenchus scribneri* and grown for 90 days. The highest level of *P. scribneri* reduced soybean shoot weight by 23% and root weight by 47%.

### ***Pratylenchus sefaensis***

Germani, G, Mugnier, J., and Dommergu, Y. 1984. Influence of pathogenic nematode on nodulation and seed yield of soybeans in Senegal. *Revue Nematologie* 7:335-340.

Greenhouse experiments showed that soybean (cv 44A73) was a good host for *Pratylenchus sefaensis* and that the number and weight of Rhizobia nodules were lower for infected plants than for plants grown in soil free of nematodes.

### ***Pratylenchus vulnus***

Acosta, N., and Malek, R. B. 1979. Influence of temperature on population development of eight species of *Pratylenchus* on soybean. *Journal of Nematology* 11:229-232.

Soybean (cv. Clark 63) was planted in pots with loamy sand soil infested with 1000 *Pratylenchus vulnus*. The pots were maintained for 75 days in controlled temperature tanks. Populations of *P. vulnus* increased at temperatures ranging from 15 to 30 degrees Celsius.

### ***Pratylenchus zaeae***

Acosta, N., and Malek, R. B. 1979. Influence of temperature on population development of eight species of *Pratylenchus* on soybean. *Journal of Nematology* 11:229-232.

Soybean (cv. Clark 63) was planted in pots with loamy sand soil infested with 1000 *Pratylenchus zaeae*. The pots were maintained for 75 days in controlled temperature tanks. Populations of *P. zaeae* increased at temperatures ranging from 20 to 35 degrees Celsius.

Silva, E. J., Melo, A. S., Tarini, G., Schwengber, R. P., Futigami, C. Y., Silva, B. A., and Dias-Arieira, C. R. 2020. *Nematropica* 50:211-217.

Rice, corn, and soybean were grown in pots of a soil/sand mix soybean inoculated with *Pratylenchus zae* in multiple experiments. Nematode population size was greatest on rice and corn, known to be excellent hosts for *Pratylenchus zae*, but the numbers of nematodes per gram of root were the same for all three crops and reproduction on soybean was confirmed.