

Pinewood Nematode – A Threat to our Pines?

Pine wilt, caused by the pinewood nematode *Bursaphelenchus xylophilus* causes great devastation to non-native pine trees across the Central United States. Spread by longhorn beetles, the nematode spends its entire life in the wood of the tree. This nematode, native to North America, is not a threat to native healthy conifers. Although this tree pest has not been found in North Dakota to date, there are at least three longhorn beetles that are native to our area that could potentially spread the nematode if it arrives here.

Pine wilt, caused by the pinewood nematode, has caused mortality in Austrian and Scotch pine throughout the Midwest and Great Plains. Therein lies the problem. Scotch pine has been used extensively in conservation plantings such as windbreaks. With an increased presence of this pest, many of those trees are dying, reducing the effectiveness of those windbreaks. Besides our native pines, are there resistant strains of Scotch or Austrian pine available to conservation districts? Possibly.

For many years, the Natural Resources Conservation Service, Plant Materials Center at Bismarck has been evaluating a Mongolian source Scotch pine (accession 9094403) because of its faster growth and denser foliage than the currently available Scotch pine of Eurasian sources. We just recently learned that this seed source may also show resistance to the nematode.

From 1983 to 1987, researchers in China inoculated 15 pine species with the nematode seeking potentially resistant tree species. Pine species from the United States showed good resistance. (That was expected as the US trees had developed for thousands of years in the presence of the nematode.) Additionally, *Pinus*



Mongolian Scotch pine is part of the lodgepole pine study at Hettinger, North Dakota

sylvestris var. *mongolica* in the Chinese study was shown to be relatively resistant.

Does this mean that 9094403 Mongolian pine is resistant to the nematode? It is too early to tell, but it is very promising. The Chinese study was conducted in the field with artificial inoculations from infested wood. Field infestation conditions could be different in the Northern Great Plains. Additionally, there could be different pathotypes of the nematode to which the Mongolian pine is not resistant.

Plant Materials field trial plantings across the PMC service area (MN, ND, SD) should provide a wealth of information within a few years. Though not currently found in North Dakota, the pinewood nematode has been found in Minnesota, South Dakota, Nebraska, and Kansas. The 9094403 seed source would be available to those states to establish test plots to study resistance and climatic adaptability at other locations.

This tree pest can be transported long distances in infested, untreated pine wood products. Be aware of the danger of moving untreated wood products and firewood across borders. Instead, use local wood and firewood.

The original research paper can be found at: <http://www.nrcresearchpress.com/doi/pdfplus/10.1139/x89-232>

For information on the life cycle of the nematode, go to the following USFS article: http://www.na.fs.fed.us/spfo/pubs/howtos/ht_pinewilt/pinewilt.htm



Scotch pine in a windbreak suffers from pine wilt
(photo by Mark Harrell, Nebraska Forest Service)