



There is a big problem affecting pine trees in Nebraska, but its cause might surprise you. Pine wilt is caused by a tiny organism that can produce big effects. With a little education you can be well informed on this problem and know what to do if it happens.

The cause of pine wilt is smaller than we can see with the naked eye. The pinewood nematode is a very small worm-like organism that attacks the tissues that move water and nutrients throughout the tree. The nematode doesn't travel very far by itself, so it uses a 'friend' to help it move around. Nematodes hitch a ride on pine sawyer beetles and fall off when they reach a new tree to infest.

There are varying ranges of susceptibility within pine trees species. The mature scotch pine, *Pinus sylvestris*, has the highest susceptibility. The Austrian pine, *Pinus nigra*, is moderately susceptible while the native pines like the ponderosa pine, *Pinus ponderosa*, are more tolerant of infestations. Spruces, firs, junipers, and red cedar are not susceptible to pine wilt because they are not pines. Knowing the type of pine you have will give you an idea of its susceptibility. A few simple tricks will help you to know which type of pine tree you have. One is to count the number of needles in a bundle, or fascicle. The Austrian pines have 2 long needles in a fascicle, while scotch pines have 2 medium length needles that are slightly twisted. Ponderosa pines usually have 2 to 3 needles in a fascicle and the pine cones are prickly. If you count 2 needles and can't quite tell if they are twisted or not, look at the bark. The bark on the scotch pine is flakey and orange or cinnamon colored. The bark on an Austrian pine is plate-like and more grayish brown.

The symptoms of pine wilt can be spotted with a little training. The first symptom is the tree or a major branch will have a grayish green tint to it. As the nematodes progress and multiply, the tree turns tan and then eventually brown. One important thing to remember is that the dead brown needles can occur at any time during the growing season and will remain on the tree for a year or more. The wood from the tree will also be very light in weight and have almost no sap or sticky resin in the wood.

Unfortunately, there isn't a good way to avoid getting pine wilt. The treatments could help to protect high value, susceptible trees, but rarely are cost effective to apply to all trees. For treatments to be effective, the trees need to get the treatment before they are ever infested by nematodes. The cost of the treatment depends on the size of the tree, but on average it would be around \$200-\$300 per tree (approx. 10 inch in diameter) and it must be injected into the tree at least every 2-3 years. There is no curative treatment - once a tree develops pine wilt and it cannot be saved. If you have a susceptible species, it isn't a matter of if they will become infected, but a matter of when.

The timeline from infection to decline isn't set in stone, but it will eventually happen. There are several factors that play a role in how long it will take a tree to decline once infested such as tree health prior to infection and weather conditions. Once a tree dies, it needs to be removed. The diseased tree needs to be destroyed to prevent the pine sawyer beetle from leaving the infected tree and spreading the nematodes to nearby healthy trees. If a tree dies May 1 through October 1, it needs to be removed and destroyed immediately. If a tree dies after October 1, it will need to be removed and destroyed by April 30. The tree needs to be burned, buried, or chipped as soon as possible to prevent the beetles from emerging out of the wood. The wood should not be saved for firewood, but the wood chips can be used as mulch.

Spaces left by the removal of pine wilt infested trees offer new opportunities. It offers the chance to practice species diversity. A good rule of thumb is to plant less than 10% of one species in the landscape. If pine wilt has affected your landscape, take advantage of this opportunity to plant something new.

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