NEWS RELEASE

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Mutated pathogen infecting NH white pines: study

DURHAM, N.H. – A mutated pathogen earlier feared to pose a threat to white pines has been positively confirmed as infecting those trees in New Hampshire, a recent joint study reported.

White pine blister rust (WPBR), *Cronartium ribicola*, is infecting white pines in Epsom and Concord, N.H., and possibly elsewhere in the Northeast. It is considered a major forest health threat and affects all North American five-needle pines.

Lead author and U.S. Forest Service Northeastern Area State and Private Forestry Plant Pathologist Isabel Munck said the results were unfortunately expected and are a cause for concern.

“In North America, we have several five-needle pine species susceptible to WPBR, and most of them occur in the West. White bark pine is also very susceptible to WPBR,” she added.

“The pathogen causes cankers that can girdle a tree if they occur on the main stem,” said Munck. “How long it takes the tree to die depends on the size of the stem. Smaller trees die more quickly because they have smaller stems.

The Forest Service announced in October 2013 that a mutated race of the fungal pathogen was recently observed on black currant plants said to be immune in New Hampshire.

“When we found out the currants were infected, they changed the law,” she said. “You can no longer plant a Cr-type *Ribes* plant in New Hampshire.”

Cr *Ribes* are European black currants with the Cr dominant gene for white pine blister rust resistance. Cr is the name of that gene.

At that time forest health managers feared the new race of WPBR had moved to nearby pines. The disease requires both currants and pines to complete its life cycle.

Munck said they had to wait until the following spring to look at the pines, because that’s when spores come out.

The Forest Service and New Hampshire Division of Forests and Lands forest health managers sent off hundreds of white pine samples last April - May to a Canadian Forest Service lab for testing.

Canadian Forest Service from Natural Resources Canada Molecular Forest Pathologist Philippe Tanguay said some samples collected from New Hampshire pines were able to infect leaves of reference Cr *Ribes*

obtained from the Canadian Clonal Genebank, therefore confirming the presence of the new race in this state.

The pines were later confirmed as being infected with the new race of the fungal pathogen.

In all they evaluated samples from 255 plants of 19 *Ribes* groups and 445 neighboring eastern white pines from 42 sites across New Hampshire.

Of the 19 *Ribes* varieties evaluated, 15 were considered as having a partial resistance to WPBR. Another four varieties were labeled as black currants with the Cr gene, on which no disease should have been observed.

“Our sample was limiting,” Munck said. “We only did New Hampshire samples in the study. However, the Canadian Forest Service has been sampling pines and *Ribes* all over eastern Canada.”

“Results from this study suggest that the breakdown of *Cr*-based resistance in *Ribes* poses a threat to the cultivated *Ribes* production and the nearby white pine resource,” she added.

Some varieties of ribes are more resistant to WPBR than others, but varieties that were not showing any signs of WPBR before are now found heavily infected.

“Most of the growers in this state use resistant varieties of *Ribes*,” said Connecticut Agricultural Experiment Station Plant Pathologist Yonghao Li. “As such, there have not been many cases here of WPBR before this new strain appeared.”

“Those resistant varieties are still resistant to the common strain of WPBR, however, they *are* susceptible to the new strain,” he said.

“We suggest *Ribes* growers monitor their fields for WPBR infection,” Li added. “If they appear infected, they should contact their university extension office to report it.”

“It’s not a huge concern for the present generation,” said Massachusetts Dept. of Conservation and Recreation Forest Health Program Director Ken Gooch. “But for future generations, it will become a huge concern.”

“We need to work together with the ribes community on this issue,” he added.

White pine and *Ribes* are valuable natural resources in North America.

The Forest Service, Canadian Forest Service from Natural Resources Canada, New Hampshire Division of Forests and Lands and Cornell University collaborated on the study.

The journal *Plant Disease* accepted the study for publication earlier this month.

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On the Net: http://apsjournals.apsnet.org/doi/abs/10.1094/PDIS-12-14-1338-RE