The Plant Pathology Journal 26(4): 299-305, 2010

Assessment of Pathogenic Variation Against Pitch Canker Pathogen, *Fusarium circinatum* in *Pinus thunbergii* and Responses of Natural Selection *Pinus* x *Rigitaeda* to Branch Inoculation in a Seed Orchard[1]

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ABSTRACT

A half-sib family of two 4-year-old seedlings of *Pinus x rigitaeda* was inoculated with each of 20 *Pinus thunbergii* isolates of *Fusarium circinatum* (syn. *Fusarium subglutinans* f. sp. *pini*)from two pitch canker damaged sites in Jeju Island, South Korea. Initial symptoms of needle damages were visible on most of the seedlings at 18 days after inoculation. The tested 20 isolates were not statistically varied in the degree of disease severity on the seedlings based on the lesion length ($p = 0.217$). However, the lesion length of the seedlings inoculated with isolate FT-7 was 82% greater than total mean. Some seedlings began to die 46 days after inoculation. All but one seedling inoculated with each of isolates FS-2 and FS-13 were dead by 68days after inoculation. Using the most virulent isolate FT-7, 38-year-old 11 natural selection *P. x rigitaeda* trees were inoculated on branches in a seed orchard in Jeju Island to determine their variation in susceptibility to the pathogen. The 11 trees differed significantly ($p < 0.001$) in susceptibility to *F. circinatum* based on average lesion lengths measured 56 days after inoculation. The susceptibility of natural selection *P. x rigitaeda* trees are more likely affected by interaction with *F. circinatum* rather than environmental conditions.

Keywords : *Fusarium circinatum, Natural selection, Pinus thunbergii, Susceptibility*

1 Received on April 12, 2010
Accepted on September 18, 2010
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