Disease Note

FIRST REPORT OF RHIZOPUS SOFT ROT OF SWEET POTATO (*IPOMOEA BATATAS*) CAUSED BY *RHIZOPUS MICROSPORUS* IN KOREA

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Rhizopus soft rot caused by *Rhizopus* spp. is one of the most important post-harvest diseases of sweet potato storage roots all over the world (Harter *et al*., 1921). In 2016, a soft rot diseased sweet potato was collected from a farmer's field in Haenam region, Jeonnam province, Korea. Blackish sporangia along with fungal mycelia were observed at the surface of sweet potato roots. The fungus was isolated on PDA forming a white, dense colony with globose or subglobose sporangia that turned blackish upon sporulation. Sporangial size varied and the sporangiospores were uniform, oval with pointed ends and (3.8-6.5 × 3.3-5.8) µm (n = 20) in size. To confirm the identity, total genomic DNA was extracted and the ITS region of rDNA was amplified using the ITS5/ITS4 primer pair. The purified product was sequenced and the sequence deposited in the GenBank (accession No. KY606252). Maximum parsimony phylogenetic analysis clustered our isolate SPL16012 with the type strain of *R. microsporus* (CBS 699.68). Molecular and morphological observations described above suggested the microorganism was *Rhizopus microsporus* (Walther *et al*., 2013). Koch's postulates were completed by inoculating two local sweet potato varieties with 5 mm agar plugs and three replications. A disease symptom similar to the original rot was seen on the inoculated sweet potatoes and the pathogen was reisolated. No symptoms were seen on the non-inoculated agar plug control. To the best of our knowledge, this is the first report of *R. microsporus* on sweet potato in Korea.

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Disease Note

FIRST REPORT OF BLUE-STAIN IN *PINUS YUNNANENSIS* CAUSED BY *OPHIOSTOMA TINGENS* ASSOCIATED WITH *TOMICUS MINOR* IN CHINA

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Yunnan pine (*Pinus yunnanensis* Franch.) is a crucial economic and ecological tree species in Yunnan Province, China. In February 2015, small pieces of stained phloem were collected from the galleries of *Tomicus minor* infesting *P. yunnanensis* and transferred to 2% malt extract agar (MEA) at 20°C. The resulting brown to black colonies had light brown and irregular margins. The globose conidia (5.6-) 6 × 10 (-11) µm in size exhibited non-phialidic conidiogenesis. The morphological characteristics suggested an identification of *Ophiostoma tingens* (Lagerb. & Melin) Z.W. de Beer & M.J. Wingf., previously described as *Ambrosiella tingens* (Lagerb. & Melin) L.R. Batra (Batra, 1967). PCRs were conducted using primers NS1/NS4, ITS3/LR3 and BT2E/BT12 for nSSU, nLSU and β-tubulin, respectively (Alamouti *et al*., 2009). The obtained sequences of strain YMF 1.04939 (1023 bp, 931 bp and 730 bp) were submitted to GenBank with the accession Nos. MF043741, MF043742 and MF043743. BLASTn analysis showed 99% identity with the corresponding sequences of *A. tingens* isolate CBS 366.53, now *O. tingens* (EU170277, AF282871 and EU977468). A pathogenicity test was conducted by placing mycelia and sterile agar with 1 cm iron borers in healthy wood of *P. yunnanensis*; each treatment had ten repeats. After 10 days at 20°C, the staining in the phloem of wood inoculated with *O. tingens* reached 3.64 cm in average length, while that for control was 2.18 cm. The fungus was reisolated only from inoculated wood. Although it has been reported in some European countries (Harrington *et al*., 2010), this represents the first report that *O. tingens* causes blue-stain in *P. yunnanensis* in China.

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