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DISEASE NOTES



First Report of White Mold Caused by *Sclerotinia sclerotiorum* on Faba Beans in North Dakota

V. Chapara, K. Chittem, and L. E. del R. Mendoza

Affiliations ▾**Authors and Affiliations**V. Chapara[†], Langdon Research Extension Center, North Dakota State University, Langdon, 58249

K. Chittem

L. E. del R. Mendoza, Department of Plant Pathology, North Dakota State University, Fargo, 58108.

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Faba bean (*Vicia faba* L.) is a pulse crop grown for its nutritional value for both human and animal consumption worldwide. In addition to its nutritional value in terms of high protein content ($\approx 28\%$), faba bean improves soil fertility by fixing atmospheric nitrogen (Sahile 2011). With the decline in the total hectares planted to field pea (*Pisum sativum* L.) owing to root rots, faba bean research has recently been initiated to determine its adaptability to North Dakota agroecosystems and the feasibility of using it as an alternative to field pea. Faba bean plants exhibiting white mold symptoms, characterized by white cottony mycelium of the pathogen growing on stems and bleached disease tissues, on the cultivar Tabasco were observed at the early pod-filling stage in research plots during late July 2017 at Langdon, North Dakota, with a general incidence of 6%. Dark, round sclerotia, characteristic of those produced by *Sclerotinia sclerotiorum* (Lib.) de Bary, were observed by opening infected stems. Sclerotia were collected from infected stems, and each sclerotium was cut in half after surface sterilization with 5% NaOCl. One half of the sclerotium was plated on potato dextrose agar (PDA) media in Petri plates and incubated at room temperature in the

dark for 7 days on the laboratory bench. All isolates were tentatively identified as *S. sclerotiorum* (Kohn 1979) based on the mycelial color, growth, and transformation of white masses of the mycelia toward the edge of the plates into dark-colored sclerotia. Identity of five isolates was confirmed by performing a multiplex polymerase chain reaction (PCR) assay designed to discriminate four species of *Sclerotinia* (Abd-Elmagid et al. 2013). Amplicons of ≈ 171 bp were observed on a 1% agarose gel, confirming the identity of the isolates as *S. sclerotiorum*. Pathogenicity tests were conducted using four representative isolates of confirmed *S. sclerotiorum* based on molecular tests to fulfill Koch's postulates and repeated. Faba bean cultivar Tabasco seeds were planted in 13-cm-deep, 10 × 10-cm square plastic pots filled with Sunshine Mix No. 1 (SunGro Horticulture, Agawam, MA) and grown for 4 weeks in a greenhouse maintained at 21°C with a 16-h photoperiod. Four-week-old plants were inoculated by wrapping a 5-mm-diameter mycelial plug removed from the leading edge of a 3-day-old actively growing colony on PDA. The mycelial plug was affixed to the stem approximately 2.5 cm above the soil with clear tape. Four pots, each containing two plants, were inoculated for each isolate. Plants inoculated with noncolonized PDA plugs served as controls. Necrotic lesions appeared 2 days postinoculation. Lesions expanded rapidly, resulting in death of plants within 7 days postinoculation. The plants were maintained in the greenhouse for an additional 2 weeks to allow sclerotia production. Control plants remained healthy. Dark black sclerotia were produced on dead stems by 3 weeks postinoculation. Pure cultures were reisolated from sclerotia collected from dead stems, and the identity was confirmed by morphology and PCR-based analysis. White mold is endemic in North Dakota and causes economic losses on many economically important broad leaf crops including dry bean, canola, soybean, and sunflower. To our knowledge, this is the first report of white mold occurrence on faba bean in North Dakota. Growers considering inclusion of faba bean in their rotations should consider the history of white mold in the fields to be planted.

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The American Phytopathological Society

(APS)

📍 3285 Northwood Circle, Suite 100, St. Paul,

MN 55121 USA

☎ +1.651.454.7250

FAX +1.651.454.0766



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