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Harveson, R. M., "A New Soilborne Disease of Dry, Edible Beans in Western Nebraska" (2002). *Panhandle Research and Extension Center*. 86.

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plant disease

Published by The American Phytopathological Society

September 2002, Volume 86, Number 9, Page 1051

<http://dx.doi.org/10.1094/PDIS.2002.86.9.1051B>

Disease Notes

A New Soilborne Disease of Dry, Edible Beans in Western Nebraska

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During July 2001, wilting, dry bean plants (*Phaseolus vulgaris* L.) at the 3- to 4-leaf stage were observed in a field near Ogallala, NE. Affected plants exhibited dark brown lesions on the hypocotyls and lower stems. Isolations from lesions on diseased plants on potato dextrose agar (PDA) yielded several isolates of an unknown fungus containing binucleate hyphal cells and numerous clamp connections. After growth on PDA for 6 weeks, all fungal isolates remained sterile and did not produce identifying spores, chlamydospores, or sclerotia. Two of the recovered field isolates were randomly selected for pathogenicity tests. Great Northern bean plants (cv. Beryl) were grown in a peat moss/perlite mix (3:1) in 10-cm plastic pots and inoculated separately with each of the two isolates at the two-true leaf stage. Two-week-old cultures grown on PDA (two 100 × 15 mm plates) were ground in 400 ml water in a blender for 3 to 4 min. Approximately 50 to 60 ml of the mycelial suspension was drenched around stems in each pot (two plants per pot), and incubated in growth chambers at 20, 30, and 35°C with a 12-h photoperiod. Six replicates were used for each isolate/temperature combination. After 4 weeks at both 30 and 35°C, fungi were consistently reisolated from stem lesions of wilting plants like those from the field-infected specimens. These fungi were also morphologically identical to the original isolations, thus confirming pathogenicity of the isolates and completing Koch's postulates. No disease was observed at 20°C. The pathogenicity evaluations were repeated twice with similar results. A group of fungi initially called sterile, white, basidiomycetes (SWBs) have been reported causing disease in other legumes from subtropical climates, including snap bean (2,4) and pigeon pea (3). Similar fungi isolated from bermudagrass were identified as *Marasmius* spp. after induction of sporocarps in vitro (1). The Nebraska isolates appear to be similar, if not identical to those from previous reports (1,2,3), but will be referred to as SWBs until a teleomorph has been identified. To my knowledge, this is the first report of these pathogens on dry, edible beans and on a legume crop from a temperate climate.

References: (1) R. E. Baird et al. *Plant Dis.* 76:244, 1992. (2) C. M. Howard et al. *Phytopathology* 67:430, 1976. (3) W. J. Kaiser et al. *Plant Dis.* 71:1006, 1987. (4) D. R. Sumner et al. *Plant Dis. Rep.* 63:981, 1979.