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New Outbreaks of Bacterial Wilt of Dry Bean in Nebraska Observed from Field Infections

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DISEASE NOTES

New Outbreaks of Bacterial Wilt of Dry Bean in Nebraska Observed from Field Infections

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Bacterial wilt caused by *Curtobacterium flaccumfaciens* pv. *flaccumfaciens* was one of the more problematic diseases of dry bean (*Phaseolus vulgaris* L.) throughout the irrigated High Plains (Colorado, Nebraska, and Wyoming) in the 1960s and early 1970s, but has not been observed since that time. However, in August of 2003, plants exhibiting wilting and irregular, interveinal necrotic foliar lesions surrounded by a bright yellow border were found in three dry bean fields (market class Great Northern) in Scotts Bluff County, Nebraska. During 2004, plants exhibiting identical symptoms were additionally found occurring in more than 40 dry bean fields in western Nebraska. Affected fields were planted with dry bean from multiple market classes and seed sources, including yellow bean, Great Northern bean, and pinto bean, and incidence varied from trace levels to 80 to 90%. Isolations were made from leaf and stem tissues and seeds collected after harvest from infected plants, and all yielded slow-growing, creamy yellow or orange, fluidal colonies on nutrient broth-yeast extract medium. The bacterium was identified as *C. flaccumfaciens* pv. *flaccumfaciens* based on cell morphology (coryneform-shaped motile rods), positive Gram stain and KOH reactions, fatty acid profiles, and BIOLOG (Hayward, CA) identifications. Great Northern (cv. Orion) plants were inoculated by bacterial suspensions (5×10^7 CFU/ml) injected into leaf axils adjacent to the first fully expanded trifoliolate and were incubated in the greenhouse under ambient conditions fluctuating between 24 and 35°C. Wilting symptoms developed 7 days after inoculation with foliar necrosis and yellowing symptoms appearing after 24 days. Identical bacterial colonies were reisolated from inoculated tissues, completing Koch's postulates. Although recent reports of wilt have been made in North Dakota (2) and western Canada (1) in 1995 and 2002, respectively, they were based only on the presence of discolored seeds observed in dockage from processing plants after harvest. To our knowledge, this report represents the first widespread observations of bacterial wilt from field infections in Nebraska in more than 30 years.

References: (1) J. R. Venette et al. Plant Dis. 79:966, 1995. (2) T. F. Hsieh et al. Plant Dis: 86:1275, 2002.