Karnal Bunt of Wheat Newly Reported from the African Continent

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In December 2000 seed harvested from wheat (*Triticum aestivum* L.) cultivars SST 876 and SST 825 produced under sprinkler irrigation near Douglas, Northern Cape Province, South Africa, contained a substantial amount of partially bunted kernels. Kernel embryos contained black masses of teliospores, and in many instances the endosperm was partially degraded. Teliospores were brown to dark brown, densely echinulate, 25 to 45 μm in diameter with a short mycelial fragment on some of the spores. Hyaline, smooth-walled sterile cells were also present. Teliospores were soaked in sterile distilled water for 2 days, streaked on 2% water agar plates and incubated at 22°C in the dark. Teliospores germinated after 5 days, producing 50 to 250 filiform, nonconjugating, primary basidiospores and forcibly discharged allantoid, secondary basidiospores. Based on kernel appearance, a rotten fish odor in infected grain, teliospore morphology, and germination characteristics, the pathogen was identified as *Tilletia indica* Mitra, the cause of Karnal bunt (1). This morphological identification was confirmed at the USDA-ARS Systematic Botany and Mycology Laboratory, Beltsville, MD. Molecular verification of 12 South African isolates was provided by the Foreign Disease-Weed Science Research Unit at Fort Detrick, MD, using real-time polymerase chain reaction with the Tin3/Tin10 *T. indica*-specific primer set (2). Four additional isolates were confirmed as *T. indica* using the same primer set as well as ITS rDNA sequencing at the Beltsville laboratory. Reference specimens were deposited at the National Fungal Collection in Pretoria, South Africa (PREM 57214), and at Beltsville (BPI 748170). At present, the mode of introduction of *T. indica* into South Africa, as well as its precise distribution, is not known. It appears, however, that the pathogen is restricted to the Douglas production area in the Northern Cape where quarantine measures have been taken to contain and possibly eradicate the disease.

References: (1) L. A. Castlebury and L. M. Carris. Mycologia 91:121, 1999. (2) R. D. Frederick et al. Phytopathology 90:951, 2000.