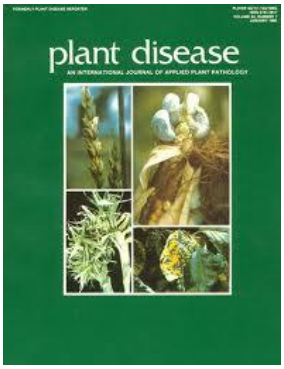

Plant Disease

First report of Fusarium acuminatum on pigeonpea in India

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First report of *Fusarium acuminatum* on pigeonpea in India

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Pigeonpea (*Cajanus cajan* (L.) Millsp.) is the most important protein rich grain legume crop being cultivated worldwide. During surveys (2010-2012) conducted in major pigeonpea growing states in southern and central India (Andhra Pradesh, Karnataka and Maharashtra), rapid mortality of pigeonpea plants was observed. This occurred in all of the surveyed areas with disease incidence of 20-60% irrespective of cultivars and crop growth stage. Symptoms included chlorosis, drooping and rolling of the leaves followed by rapid mortality of whole plant. Pinkish growth on infected stems and branches was observed and inner layer of the

infected stem had brown discoloration. Xylem vessels of the infected plants were healthy and did not show any blackening.

Isolations from infected stem tissues consistently yielded cultures of *Fusarium* sp. on potato dextrose agar (PDA) medium. Monoconidial isolation from three separate isolates was used to establish pure cultures. The morphological characters of the fungus were consistent with descriptions in *Fusarium* keys (1) for *Fusarium acuminatum* (Ellis & Everhart). The mean colony growth was 86 mm after 7 days; with white aerial mycelium, developing brownish pigmentation in the center on PDA. The dorsal side of the colony had rose to burgundy pigmentation. Macroconidia were broadly falcate with 3-5 septa, and 3 to 8 × 39 to 64 µm. Microconidia were absent and chlamydospores formed in chains, 20 to 50 µm. Koch's postulates were established on seedlings of pigeonpea (cv. ICP 7119) using root dip inoculation of 10-day old seedlings. The roots were immersed in a conidial suspension (6×10^6 conidia/ml) for 2-3 minutes; the control plants roots immersed in sterilized distilled water in beaker. Inoculated seedlings were transplanted into pre-irrigated pots (12 cm) containing sterilized vertisol and sand (3:1). Five seedlings were used for each of 3 replications. Inoculated plants were kept in the greenhouse at 28±2°C and irrigated with sterilized water. Inoculated plants developed symptoms identical to those observed in the field and disease incidence reached 100% within 96 hours after inoculation. Experiment was conducted twice with two independent sets of plants. No symptoms were observed in water-inoculated control plants. The rDNA internal transcribed spacer (ITS sequence) was amplified with ITS1 and ITS4 primers (2). The amplicons of both forward and reverse (438 bp) were sequenced and submitted to GenBank (Accession no. JX177431). A BLASTn search revealed 100% sequence similarity to the nucleotide sequence of *Fusarium acuminatum* (Ellis & Everhart) (GenBank Accession no. HQ 443205). To our knowledge, this is the first report with confirmed molecular identification of *F. acuminatum* on

pigeonpea. Occurrence of *F. acuminatum* on various plant species have been reported by Summerell *et al.* (3). Presence of *F. acuminatum* from soils of pigeonpea fields have been reported, however, no information on location, symptoms, plant mortality and identification of pathogen has been provided (4).

References

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