First report of *Aspergillus versicolor* associated with fruit rot disease of tomato (*Solanum lycopersicum*) from India

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Tomato (*Solanum lycopersicum* L.) is an important vegetable crop and cultivated throughout India. During 2019-20, Karnataka produced 2163 tonnes of tomato, accounting for 10.51 percent of total production ([https://agricoop.gov.in/horticulture-reports](https://agricoop.gov.in/horticulture-reports)). During a survey conducted in September 2019 in southern Karnataka region, severe fungi fruit rot symptoms were observed on at harvest in a 18 hectare production operation. The incidence of fruit rot disease was estimated around 12–14% in an area of 18 hectares (~62 fields). The necrotic lesions on infected fruit were covered with. The fruit rot was characterised by necrosis lesions filled with black fungal fruiting bodies, which later became soft and fully necrotic. A total of 20 samples were used for isolation and diagnostics. Infected fruit rot samples were surface sterilized with 2% NaOCl for 2 min, rinsed thrice in sterile distilled water, and plated on potato dextrose agar (PDA) medium amended with chloramphenicol (40mg/L). The plates were incubated at 28±2 °C and pure cultures were obtained by hyphal tip excision. On PDA medium, fungal colonies were initially white, but later turned to yellow green, often intermixed with pink sections. They produced sulcate and centrally raised sporulating conidiophores which were hyaline or slightly pigmented with smooth walls. Vesicles produced on conidiophores were sub-globose to ellipsoidal with phialides borne on metulae. Conidia were globose, brownish and conspicuously echinulate. On the basis morphological and cultural characteristics, the causative pathogen was identified to be *Aspergillus versicolor* (Jurjevic et
Further molecular characterization was also done by amplifying internal transcribed spacer (ITS) region using universal ITS1-ITS4 primers with three representative isolates (White et al. 1990). Genomic DNA was isolated using CTAB using 15 days old culture followed by PCR amplification using ITS1-ITS4 primer pair and sequencing. The sequences analysis had 100% (561/561 base pairs) similarity with the reference sequences of *Aspergillus versicolor* (KU318417.1, MT798844.1) according to BLAST analysis in GenBank. The representative sequence of ITS-rDNA for three isolates viz., *A. versicolor* NCM_1, NCM_2 & NCM_3 were deposited in GenBank (Accession number: MZ520551.1 – MZ520553.1). Pathogenicity tests were conducted on 10 healthy mature fruit of tomato F1 hybrid (INDAM 3003) using wound inoculation (conidial suspension $3 \times 10^6$ conidia mL$^{-1}$). Several tomato fruit (n=5) were only inoculated with sterile water to serve as controls. The experiments were conducted in triplicates with 10 fruits each and repeated three times (Mahadevakumar et al. 2019). Within 7 days of post-inoculation, fruit rot symptoms similar to those in the original out break in Karnataka were observed on all inoculated fruit. Control fruit remained asymptomatic even after 10 days. The pathogen was reisolated from diseased fruit and the identity was confirmed based on morphology and ITS sequencing. *A. versicolor* has been reported as a post-harvest fungal pathogen on other various vegetable crops (Aidoo, 1993). Tomato fruit rots are known to be a major problem (Nizamani et al., 2021) in the region. However, there no reports of tomato fruit rot caused by *A. versicolor* in India (Farr and Rossman, 2021), which warrants additional attention as a potential threat to regional production.

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