Two New Fruit Rots of Ashgourd from India

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ABSTRACT

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New fruit rots of ashgourd caused by *Fusarium oxysporum* and *Pythium aphanidermatum* have been reported from India. The former developed discolored patches and the latter formed brown-black lesions. Both were wound pathogens and initiated rots 5 days after inoculation. *P. aphanidermatum* was most destructive on young fruits in fields, whereas *F. oxysporum* decayed mature fruits in storage.

Fruits of ashgourd (*Benincasa hispida* Cogn.) were found to be spoiled to the extent of 3–7% in fields (July–October 1980) and 20–25% in storage (November–February, 1980–1981) at Agra, India. A range of 26–30 C atmospheric temperature and 60–98% RH prevailed in the fields, whereas in warehouses, these factors varied between 7 and 21 C and between 38 and 63%, respectively. The fruits exhibited wet rot symptoms and carried mixed infections. Most of the infected lesions were circular and olive-gray when young and irregular and brownish black or dark gray when old.

The rotten portions of the fruits were surface-sterilized with 0.1% $HgCl_2$, washed in sterile distilled water (SDW), and cut into small pieces. The pieces were plated on Czapek-Dox and potato-dextrose agar (PDA) media and incubated at 28 ± 2 C for 1 wk. Fungi were isolated and purified by the single spore culture.

Each of 10 different fungi isolated was inoculated on surface-sterilized mature healthy fruits by the cork-borer method (1). The injury site was sealed with wax after reinserting the cylindrical core in its original position. The amount of inoculum was maintained constant by taking disks of uniform diameter from the periphery of a 10-day-old culture grown on Czapek-Dox agar medium. A disk of uninoculated medium was used for the control. Five replicates, each consisting of three fruits, were employed for each fungus. The test was repeated twice. In another test, a dense spore suspension (360 spores per milliliter) was sprayed on surface-sterilized uninjured fruits. Spraying with SDW served as the control in this case.

The inoculated and control fruits were incubated in desiccators at 28 ± 2 C at 80% RH (3). The amount of rot induced by the pathogens was determined by measuring the diameter and depth of the lesions (2).

None of the organisms caused infection on uninjured fruits. On injured mature fruits, only *Fusarium oxysporum* Schlecht. and *Pythium aphanidermatum* (Edson) Fitz. reproduced the rotting symptoms. Although the latter was isolated mostly from young immature fruits from the field, it did survive on mature fruits during the early storage period. The other eight isolates, *Aspergillus sulphureus, A. tamarii, Alternaria nidulans, Rhizopus* sp., *Curvularia lunata, Cladosporium herbarum, Papulaspora sepedonioides,* and *Chaetomium globosum*, failed to incite rotting.

Natural cracks or injuries from insect feeding, agricultural implements, and transportation might be the sites for fungal invasion of fruits in fields and in storage.

P. aphanidermatum initially induced small circular and slightly sunken discolored patches 5 days after incubation. The lesions increased gradually, became irregular, and were covered with luxuriant growth of white mycelia bearing sporangia. The diseased tissue was macerated and water-soaked and emitted a foul odor. The mean lesion size was 6 × 8, 8 × 12, and 25 × 26 mm at 7, 15, and 21 days after inoculation, respectively.

F. oxysporum induced circular to irregular brown-black lesions. The death of infected tissue resulted in the formation of shallow depressions. Mycelium and conidia were not visible on the lesion surface. Rotting was first observed 5 days after inoculation. The mean lesion size was 10 × 9, 26 × 28, and 35 × 36 mm at 7, 15, and 21 days after inoculation, respectively.

The diseases have not been reported previously from India. Pythium fruit rot of ashgourd was, however, recorded in China (6). *F. solani, F. moniliforme,* and

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Penicillium citrinum are also known to cause diseases on this fruit (4,5).

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