

First Report of Phytophthora Guava Fruit Rot in Bangladesh

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Commentary

During a recent study an outbreak of fruit rot disease of guava, caused by *Phytophthora nicotianae*, was identified for the first time in Bangladesh. In July 2017 *Phytophthora nicotianae* was successfully isolated from guava fruits grown at gardens of a village in Srirampur Union of Dumki Upazila next to the University in Patuakhali, a southern district of Bangladesh. In India the disease was first observed in 2007 at several guava orchards of West Bengal province and later Ray et al. [1] conducted a research to manage the devastating disease.

The guava fruit rot disease causes rotting of fruits approaching its maturity stage, usually during the period from June to October. The symptom starts at calyx disc of the fruit during rainy season.

Affected area of fruit is covered with white mycelial growth which develops very fast as the fruit matures and pathogen is able to cover almost the entire surface within a period of 3-4 days during humid weather (Figure 1).

During the study it was observed that under high relative humidity, the fruit covered with dense foliage are severely affected. The skin of the fruit below the mycelial growth turns slightly soft and the color changes from light brown to dark brown.

On investigation it is revealed that close plantation, high humidity, temperature from 28°C-32°C, poorly drained soils and injuries are favorable for initiation of such disease. Cool, wet environmental conditions with high soil moisture favor attacking of the disease. Released spores spread from the infected plant material or soil by rain splashes.

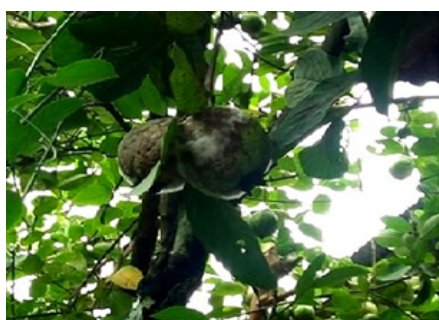


Figure 1: Infected guava fruit.



Figure 2: Colony of *Phytophthora nicotianae*.

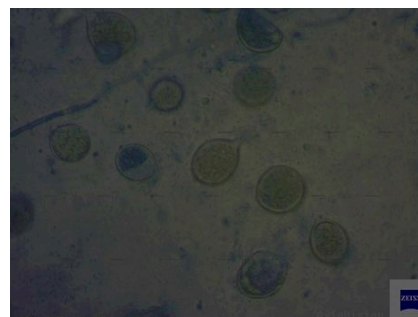


Figure 3: Sporangia of *Phytophthora nicotianae*.

Phytophthora nicotianae was successfully isolated in Corn Meal Agar (CMA) and morphological characteristics of the pathogen were observed and measured (Figure 2). Arachnoid mycelia were present. Sporangia were abundant, variable in shape like ovoid, ellipsoid to pyriform or limoniform, occasionally gourd shaped or irregular (Figure 3). Sporangia were papillate, noncaducous, measuring 40 to 49 × 33 to 37 μm, with short pedicels. The sporangial shape was ovoid or ellipsoid. Chlamydospores were mostly solitary, intercalary, or terminal, measuring 29 μm-33 μm in diameter. The oomycete was identified as *Phytophthora nicotianae* based on descriptions of Gallegly and Hong [2].

Pathogenicity tests were conducted on healthy mature fruit. Surface of the fruit was sterilized by 0.8% NaOCl solution for 20 min. Thus, the fruit was inoculated with a drop (about 0.05 ml) of zoospore suspension (17 × 10⁴ spores per milliliter). Inoculated fruit was incubated in a moist chamber at 24°C [3]. Inoculated fruit developed lesions covered with a whitish fungal growth within 10 days after inoculation. The pathogen was re-isolated from the diseased fruits and it was morphologically identical to the original isolate, confirming its role as the causative agent of the disease, thus fulfilling Koch's postulates. To our knowledge, this is the first report of *Phytophthora* guava fruit rot in Bangladesh.

References

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