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NOTES AND NEWS

Capsule Rot of Cardamom: *Pythium vexans* de Bary as a Causal Agent

CAPSULE rot ('*azhukal*' in Malayalam language) is the second major disease of cardamom in India after the 'katte' disease. It causes upto 30% losses. At present it occurs in the High Ranges (Idikki District) of Kerala State (south India) which is a major cardamom growing tract. *Phytophthora* spp. have been reported to be the causal agents of the disease[1,2]. We report here another fungus, *Pythium vexans* de Bary, as an important causal agent of the disease.

The disease occurs during July–December with a peak incidence in August–September. During this season, the prevailing temperature is 7·0–25·0° C and relative humidity 73–94%. The total annual rainfall is 1100–4200 mm. The disease is characterised by water-soaked spots on capsules and panicles. These spots spread rapidly imparting a dull green colour to the affected tissues. The capsules and panicles may contract infection at any point, and later, it may spread to the adjoining capsules/panicles in the same clump. The affected capsules fall off. In advanced stages of infection, the affected tissues turn brown and emit a foul smell. Capsules at all stages of maturity are susceptible to infection. But the immature capsules rot more rapidly. The infection spreads from the panicles to the base of clumps and causes decay of affected pseudostems. These turn yellow and break off at the collar region at the slightest disturbance.

The affected capsules and panicles were collected from five differen testates of Santhampara and Udumbanchola, Idikki district. The causal organisms were isolated from the advancing margins of the lesions employing oats agar medium. For pathogenicity tests, detached capsules were surface-sterilized and washed with sterile water. The mycelial mat of seven-day-old cultures grown on oats medium was blended with sterile distilled water. Drops of this mycelial suspension were placed on detached capsules kept in sterile petri plates lined with a wet filter paper at the bottom and these were incubated at 24–28° C. Capsules treated with sterile water and incubated as above served as controls. For field inoculation, healthy panicles of healthy clumps were used. Capsules from these were cleaned with sterile distilled water, and inoculated by placing small bits of mycelium of the test isolate on them. A small piece of wet cotton was then kept over the inoculum. They were then enclosed in a polythene bag the inside of which was moistened to ensure high humidity. Uninoculated controls were also maintained.

Pythium sp. and *Fusarium* sp. were isolated in addition to *Phytophthora* sp. However, *Pythium* sp. was more frequently isolated from capsules and diseased pseudostems than *Phytophthora* sp. The *Pythium* sp. isolated from affected capsules has been identified as *Pythium vexans* (IMI 172537). Both *Pythium* sp. and *Phytophthora* sp. were found to be pathogenic causing capsule rot. A *Phytophthora* isolate from coconut also induced rotting of cardamom capsules. Though *Fusarium* sp. alone was not pathogenic, it enhanced the decaying process in capsules already infected by *Pythium vexans*. Incidentally, *Pythium* sp. isolated from seedlings affected by damping-off was also pathogenic to capsules under both laboratory and field conditions.

Though both *Pythium* sp. and *Phytophthora* sp. are pathogenic, the higher number

of isolations of the former from infected capsules coupled with the fact that *Pythium* sp. causing damping-off of cardamom seedlings is also pathogenic to capsules, indicates the important role that this fungus plays in the disease epidemiology. It is possible that *Pythium* sp. and *Phytophthora* sp. either indivirdually or in combination can cause the disease. A thorough survey of the different estates in the High Ranges and the isolation of the fungi associated with affected capsules along with pathogenicity tests alone will give a clear picture of the involvement of these organisms in the causation of the disease.

In a severely affected estate, panicles from 25 clumps each of the cultivars *Malabar*, *Mysore*, and *Vazhukka* were examined to assess the relative susceptibility under field conditions. The disease incidence in these cultivars was 51·2%, 33·3%, and 65·9% respectively, showing that all the cultivars are susceptible to the disease.

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