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Effective biocide options for eliminating *Ceratocystis* spp associated with coir products

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This study describes the determination of suitable methods for eliminating the fungus *Ceratocystis* associated with coir products. *Ceratocystis* spp is a pathogen causing diseases in several plants including coconut. The occurrence of this organism in coconut cultivations in Sri Lanka has been reported since 1906. Sri Lanka has extensive coconut cultivation and many coir products are exported. It is a quarantine requirement that the coir products are free from this organism. Currently, methyl bromide is used as a fumigant to eliminate the organism, but the use of this chemical is restricted due to its high toxicity and because it affects the ozone layer.

In this study the organism was isolated from the coir dust samples collected from the areas of Lunuwila and Kurunegala. The morphological characters of spores were similar in the isolates obtained from these two different locations. However, the color of the chlamydospores was darker in the isolates obtained from Kurunegala than in the samples collected from Lunuwila. The effectiveness of the fumigant formaldehyde (37% formaldehyde 120 ml with 60 g potassium permanganate for 2.83 m³ or 100 ft³ air space) was tested in fumigation chambers parallel with methyl bromide (48 g/m³) on a Potato Dextrose Agar culture and in inoculated coir dust. The formaldehyde was effective for inoculated coir dust but not for the fungus grown on culture plates, while methyl bromide was effective for both. As an alternative method, water vapor heat treatment was applied at different time temperature combinations on coir dust inoculated with fungal spores. At 55 °C for 5 min., the vapor heat treatment destroyed the viable spores in it. For the elimination of *Ceratocystis* associated with coir dust, formaldehyde can be used in place of the currently used methyl bromide. Formaldehyde is less effective when the organism is grown on culture media due to the different conditions prevalent in culture media and coir dust. Besides the chemical formaldehyde, heat treatment can be applied for eliminating the organism. A temperature of 55 °C generated from water vapor for 5 minutes is sufficient for eliminating the fungal spores.