

COMPARATIVE STUDY OF FUNGI ASSOCIATED WITH POST-HARVEST FRUIT ROT DISEASE OF CHILLI AND EFFICACY OF DIFFERENT FUNGICIDES, BIOAGENTS AND BOTANICAL EXTRACT FOR CONTROLLING THE DISEASE CAUSED BY *Colletotrichum* sp.

Fatema Begum*

Executive Summary

Chilli (*Capsicum annum* L.) is an economically important and widely cultivated crop in Bangladesh as well as worldwide. Post-harvest chilli fruit is being attacked by several fungal pathogens. These fungi were detected from the infected fruits by moistened blotter paper and potato dextrose agar media methods as recommended by the ISTA collected from six different markets (Taltola Bazar, Kawran Bazar, Krishi Market, Farmgate Bazar, Town Hall Bazar and student's research fields). Five fungi with nine species such as *Alternaria alternata*, *Alternaria solani*, *Aspergillus flavus*, *Aspergillus niger*, *Colletotrichum capsici*, *Fusarium* sp., *Fusarium poae*, *Fusarium oxysporum*, *Rhizoctonia solani*, *Penicillium* sp. and *Rhizopus stolonifer* were isolated from infected chilli fruits. Maximum incidence was found in Taltola Bazar compared with other locations. The highest percent frequency and relative abundance were found in *Colletotrichum capsici* compared to other identified fungi. All fungi were identified as compared with international literature. The pathogenicity of these isolates through different inoculation methods on detached chilli fruits revealed that *C. capsici* was most virulent with an average lesion size. Studies on different treatments in *in vitro* evaluation with five extracts (Zinger and garlic bulb, neem and mahendi leaf, neem seed oil), one bioagent (*Trichoderma solution*) and one fungicide (mancozeb) treatments were carried out for fulfilling the objectives to find out the effective treatment to control of post-harvest fruit disease of chilli caused by *Colletotrichum capsici* fungi. In *in vitro* evaluation by plant extracts, biocides and fungicides showed that mancozeb increased the percent inhibition of fungal growth compared to others. The efficacy of Zinger and neem seed oil were found good in controlling fruit rot fungi associated with chilli fruit in *in vitro*. Overall maximum inhibition was found in using mancozeb, zinger and neem seed oil respectively, while minimum found in control. In case of botanical Zinger showed more effective followed by the extracts of Neem seed oil. Thus, the fruits of chilli should be treated invariably by less phytotoxic fungicide and botanical fungicide agents to reduce the post-harvest fruit diseases mycoflora of chilli.

*Professor, Dept. of Plant Pathology, Sher-e-Bangla Agricultural University, Dhaka, Bangladesh