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Correlation study on population dynamics of ginger soft rot inciting pathogens under different organic amendments, disease incidence and its survival in Darjeeling hill soils

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Abstract. Ginger soft rot complex disease incited by *Pythium spp.*, *Fusarium spp. a*nd *Ralstonia solanacearam* survived extended periods in naturally infested ginger rhizosphere soil. In pieces of organic matter or dead roots application of Farm Yard Manure (FYM) along with different locally available organics like neem cake, FYM, leaves extract of *Scima walllichi*, garlic extract and mustard oil cake were investigated the effect on the population dynamics of the pathogens. The inoculum densities were decreased markedly due to amendments of the different organics in the plots in comparison to the check plots. Analysis of variance implicated that propagule density of two fungal pathogens viz. *Fusarium spp*. and *Pythium spp.,* in the ginger rhizosphere soil steadily declined with the application of the organic extracts. The correlation matrix study on the propagule density of the pathogens at the different growth stages revealed that decreasing inoculum density of two fungal pathogens was highly significant with decreasing disease. The application of FYM with mustard cake and neem cake showed significant reduction of *Fusarium spp*. and *Pythium spp*. and population of *Ralstonia solanacearam,* respectively and increased the fresh rhizome yield.The microscopic observation also revealed that the survival of fungal pathogens in the plant debris presented several epidemiological considerations**.**