purified chitinase was highly inhibitory to *Rhizoctonia solani and Trichoderma viride in vitro.* The ***N*** terminal sequence of the purified pearl millet chitinase had no homology with known protein sequences in the database.

23 **Effect of organic amendments against sclerotial** wilt of jasmine – B. MEENA, V. RAMAMOORTHY and M. MUTHUSAMY – *Department of Plant Pathology, Tamil Nadu Agricultural University, Coimbatore 641 003*

The use of organic amendments is one of the successful management practices of soil borne plant disease. The organic amendments were applied to the pot containing three kg of soil 15 days prior to the transplanting of jasmine *(Jasminum sambac)* seedlings and allowed to decompose. The pathogen *(Sclerotium rolfsii)* multiplied in send maize medium was used to inoculate at 20% level. Wilt incidence was recorded after 30 days. The results revealed that neem cake and Farm Yard Manure were effective in reducing the wilt incidence which recorded 26.81 and 28.52 per cent respectively as against 100 per cent in the control. Ethylene, a volatile component produced during the decomposition of organic matter played a definite in the lysis of soil borne plant pathogens.

24 **Evaluation of bacterial endophytes from** coconut **leaves lor biocontrol of** *Phytophthora palmivora*-**the causal** organism of bud **rot of coconut** – HEROOR MOOSA[1], RASHEED AHMED[2], ROHINI IYER[3] and S.R. PRABHU[4] – *Central Plantation Crops Research Institute, Kasaragod 671 121* [2] *Applied Botany, Mangalore University, Mangala Gangotri 574 199*

Bud rot caused hy *Phytophthora palmivora* is the most important killer disease of coconut palm *(Cocos nucifera* L.) at all stages of its growth, causing a loss up to 10%. Spraying 1% Bordeaux mixture to the crown as a prophylactic to check the disease was recomended. However it has some drawbacks. it is labour intensive and time of fungicidal application is very critical. In addition to this, some dwarf varieties are highly sensitive to copper. Therefore, an alternative method like biocontrol is necessary. Bacterial endophytes such as *Bacillus macerans, B amyloliquefaciens* and *B.subtilis* were present as benign endophytes in the leaves of one year old WCT coconut seedlings raised in CPCRI Kasaragod. Population of these endophytes were of the order of 10^2/g dry leaf weight. These bacteria were evaluated for ***in vitro*** antagonism against the *P.palmivora.* The growth of the pathogen was significantly inhibited in dual cultures up to 75%. The *Bacillus* sp. when further evaluated for antibiosis against *P. palmivora* also significantly inhibited the growth of the pathogen up to 70%. When the bacteria and *P. palmivora* ***were*** inoculated on opposite sides of solid medium in petriplates, growth of *P.palmivora* was completely inhibited due to diffusion of the anitbiotics produced by the bacteria. The cell-free culture filtrate when incorporated in the medium at a concentration of 15%, completely inhibited the growth of the pathogen. Thus the spore forming *Bacillus* spp offer themselves as highly promising biocontrol agents against ***P.*** *palmivora* infecting coconut plams.

25 **Effect *of Trichoderma*** and fluorescent **pseudomonads and their combination an disease suppression** of rhizome rot of ginger – N. BEENA, and Y.R. SARMA – *Division of Crop Protection Indian Institute of Spices Research, Calicut 673 012*

Ginger is one of the economically important spice crops and Kerala itself accounts for 1/3 of the total production of ginger. Rhizome rot of ginger caused by *Pythium aphanidennatum* is a serious disease and crop lass to the extent of 50-80% has been reported Seed treatment with Metalaxyl (Ridomil MZ) and soil application of *Trichoderma harzianum* have been found to be effective in the suppression of this disease. The disease suppressive effects of certain fluorescent pseudomonads have also been established both *in vitro* and ***in*** *vivo.* The present study was undertaken in order to test the combined activity of the biocontrol agents in disease suppression. Five species of *Trichoderma* and five isolates of fluorescent pseudomonads have been tested in various combinations. The data obtained revealed that a reduced disease incidence of 0-35% was obtained in all the treated plants when compared to 50% in control However 15 different combinations of the BCAS, 2 isolates of bacteria and 2 isolates of Trichoder7na showed a reduced disease incidence of 0- 15%. Twelve combinations of the BCAs showed an increased height of 37-52% and twenty combinations gave a increased yield of 82-89% over control. Thus from the data it is implied that there is a synergistic suppression of rhizome rot of ginger with the combination of Trichoderma and fluorescent pseudomonads.

26 The role **of PAL, Peroxidase, Chitnase, Glucanase,** and Phenolics in non-host resistance of rice – S. D. DEBORAH, M. PALANISWAMI and P. VIDHYASEKARAN – *Department of Plant Pathology, Tamil Nadu Agricultural, University, Coimbatore 611 003*

Changes in activity of chitinase, glucanase, peroxidase, Phenylalanine ammonia-lyase (PAL', and and phenolic content were measured in extract of rice sheaths at different times after inoculation of *Rhizoctonia solani* (pathogen) and *Pestatloia palmarum* (non pathogen) *R solani* inoculation induced the activities of chitinase, glucanase, peroxidase, PAL and accumulation of phenolics in rice There was no significant changes in chitinase, glucanase, peroxidare and phenolic content in rice in response to inoculation with non-pathogen, However inoculation with P. *palmarum* caused massive increase in the PAL activity within a day after treatment