BIOCONTROL OF SOIL-BORNE FUNGAL PATHOGEN OF CHICKPEA AND PIGEONPEA

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Antagonistic activity of microorganisms can usefully be employed to control soil-borne plant diseases where genetic resistance is not available or to enhance the efficacy of low level of resistance. We evaluated 30 bacterial and 6 fungal cultures (Aspergillus spp.) for in vitro growth inhibition of Fusarium oxysporum f. sp. cicer, (wilt), Rhizoctonia bataticola (dry root rot) Sclerotium rolfsii (collar rot) of chickpea and F. udum (wilt) of pigeonpea. In vitro promising cultures were tested for the control of R. bataticola in laboratory and collar rot in pots as well as in field condition. The cultures showed major differences for their antagonistic activities against different pathogens. Aspergillus spp. were not very effective against any of the above fungal pathogens. However, four bacterial cultures inhibited growth of these pathogens in dual culture test (inhibition zones ranged from 1-2 cm). No culture was effective in controlling dry root rot infection using paper towel technique. Two of the bacterial cultures (Pseudomonas spp.) considerably reduced collar rot incidence in pots. Efficacy of the two cultures was substantially increased with the additions of Thiram. The collar rot incidence was reduced from 88% to 54%, showing a clear synergistic effect. Similar results were also obtained in two field tests. Both the bacteria, however, did not control wilt disease of chickpea in a wilt sick field. These results show that collar rot disease for which good genetic resistance has not yet been identified can be managed using this approach.