

List of Tables

Table 1	List of RAPD and ITS universal primers.
Table 2	GIS locations of the sampling sites.
Table 3	Fungal and bacterial population in the forest, rhizosphere and riverine soil samples collected from different regions of Darjeeling District.
Table 4	Morphology and Microscopical Characters of fungal isolates obtained from various sources.
Table 5	NAIMCC accession numbers of common fungal isolates of Darjeeling hills.
Table 6	GIS position and location of the sampling area of source of bacterial isolates.
Table 7	Morphological and biochemical characterization of bacterial isolates.
Table 8	Screening of Phosphate solubilization in solid PVK medium by fungal isolates.
Table 9	<i>In vitro</i> quantification of phosphate solubilization by fungal isolates in modified PVK broth.
Table 10	Chitinase activities of different isolates of <i>Trichoderma</i> obtained from different sources of Darjeeling Hills.
Table 11	Potential PSF isolates deposited to NAIMCC.
Table 12	Evaluation of net exocellulase activity of the fungal isolates.
Table 13	Inhibition of phytopathogenic test fungi by <i>T. flavus</i> RHS/P-51 <i>in vitro</i>
Table 14	Inhibition of phytopathogens by <i>Trichoderma</i> isolates.
Table 15	Inhibition of mycelial growth of <i>S. rolfsii</i> and <i>T. cucumeris</i> by culture filtrate of <i>Trichoderma</i> isolates.
Table 16	Potential BCA isolates deposited to NAIMCC.
Table 17	Quantification of Phosphate solubilizing, IAA production and ACC deaminase activities of bacterial isolates in modified liquid broth medium.
Table 18	<i>In vitro</i> pairing of bacterial isolates with phyto- pathogens for evaluations of antifungal activities.
Table 19	Scanning electron Micrographic characteristics of the bacterial isolates.
Table 20	Spectrophotometrical A_{260}/A_{280} ratio of genomic DNA of PSF and BCA isolates.
Table 21	Spectrophotometrical A_{260}/A_{280} ratio of Bacterial genomic DNA.
Table 22	Total number of polymorphic bands produced by different primers (PSF).
Table 23	Determination of polymorphisms based on the RAPD of PSF isolates.
Table 24	Genetic Similarity matrix obtained as a result of Simqual analysis of RAPD bands of PSF isolates.
Table 25	Total number of polymorphic bands produced by different primers.
Table 26	Genetic similarity matrix, obtained as the result of Simqual analysis of the RAPD bands of BCA isolates.
Table 27	Determination of polymorphisms based on the RAPD.
Table 28	Total number of polymorphic bands produced by different primers.
Table 29	Genetic similarity matrix, obtained as the result of Simqual analysis of the DGGE bands of BCA isolates.
Table 30	Genetic similarity matrix, obtained as the result of Simqual analysis of the DGGE bands of BCA isolates.
Table 31	Genetic similarity matrix, obtained as the result of Simqual analysis of the DGGE bands of PGPR isolates.
Table 32	Genetic similarity matrix, obtained as the result of Simqual analysis of the DGGE bands of <i>Trichoderma</i> isolates.
Table 33	Nucleotide sequence alignments of the parts of the rDNA repeats encoding ITS region of different isolates of <i>T. cucumeris</i> used for analysis with ex-type strain sequence.
Table 34	Nucleotide combinations and frequencies of different combinations of ITS

	sequences of <i>T. cucumeris</i> RHS/V-566.
Table 35	Nucleotide sequence alignments of the parts of the rDNA repeats encoding ITS region of different isolates of <i>T. flavus</i> .
Table 36	Genbank Accession numbers and geographic location of the Ex- Type strains of <i>Talaromyces flavus</i> .
Table 37	DNA Stats results for 565 residue sequence " <i>Talaromyces flavus</i> strain RHS/P-51- GU324073" starting "TTGTTTTAAC".
Table 38	NCBI accession numbers of Identified <i>Trichoderma</i> isolates.
Table 39	Nucleotide sequence alignments of the parts of the rDNA repeats encoding ITS region of different isolates of <i>T. harzianum</i> .
Table 40	Nucleotide sequence alignments of the parts of the rDNA repeats encoding ITS region of different isolates of <i>T. asperellum</i> .
Table 41	Nucleotide sequence alignments of the parts of the rDNA repeats encoding ITS region of different isolates of <i>T. erinaceum</i> .
Table 42	DNA stats results for 18S rDNA nucleotide frequencies of different isolates of <i>T. harzianum</i> and <i>T. asperellum</i> .
Table 43	DNA stats results for 18S rDNA nucleotide frequencies of different isolates of <i>T. erinaceum</i> .
Table 44	DNA molecular weight of different <i>Trichoderma</i> isolates calculated on the basis of 18S rDNA sequences.
Table 45	NCBI Genbank Accession number of PGPR isolates.
Table 46	Nucleotide sequence alignments of the parts of the 16S rDNA repeats encoding ITS region of different Bacilli isolates.
Table 47	Nucleotide sequence alignments of the parts of the 16S rDNA repeats encoding ITS region of different <i>Enterobacter</i> isolates.
Table 48	Nucleotide sequence alignments of the parts of the 16S rDNA repeats encoding ITS region of different <i>Paenibacillus</i> isolates.
Table 49	Nucleotide sequence alignments of the parts of the 16S rDNA repeats encoding ITS region of different isolates of <i>Burkholderis</i> isolates.
Table 50	Nucleotide combinations and frequencies of different combinations of 16S rDNA sequences of PGPR isolates belonging to Bacilli group.
Table 51	Nucleotide combinations and frequencies of different combinations of 16S rDNA sequences of PGPR isolates (Non-Bacilli).
Table 52	DNA molecular weight of different <i>Trichoderma</i> isolates calculated on the basis of 18S rDNA sequences.
Table 53	SDS-PAGE analysis of total soluble proteins of <i>T. flavus</i> , <i>T. harzianum</i> , <i>T. asperellum</i> , <i>T. erinaceum</i> and <i>T. cucumeris</i> .
Table 54	Scoring of dots obtained with DIBA of <i>T. flavus</i> and other heterologous antigens.
Table 55	Analysis of molecular weights of bands obtained in western blot analysis of <i>T. flavus</i> antigen and probed with its homologous antibody
Table 56	Scoring of dots obtained with DIBA of <i>T. harzianum</i> and other heterologous antigens
Table 57	Analysis of molecular weights of bands obtained in western blot analysis of <i>T. harzianum</i> antigen and probed with its homologous antibody.
Table 58	Analysis of molecular weights of bands obtained in western blot analysis of <i>T. harzianum</i> , <i>T. asperellum</i> and <i>T. erinaceum</i> antigens and probed with PAb of <i>T. harzianum</i> (3 rd bleed).
Table 59	Scoring of dots obtained with DIBA of <i>T. cucumeris</i> and other heterogonous antigens.
Table 60	Analysis of molecular weights of bands obtained in western blot analysis of <i>T. cucumeris</i> antigen and probed with its homologous antibody.
Table 61	Alkaline and acid phosphatase content of rhizosphere soil treated with PSF isolates.

Table 62	Effect of PGPR on Alkaline and Acid phosphatase activities of rhizosphere soil.
Table 63	Acidic and alkaline phosphatase activities of the soil following application of the <i>B. pumilus</i> and <i>B. altitudinis</i> .
Table 63a	ANOVA of the data presented in table 60 (Acid Phosphatase activity).
Table 63b	ANOVA of the data presented in table 60 (Acid Phosphatase activity).
Table 64	Sclerotial blight development in the roots of <i>Vigna radiata</i> in presence and absence of <i>T. harzianum</i> and <i>T. flavus</i> in pot conditions.
Table 65	Percent survival of <i>C. aeritinum</i> seedlings in presence and absence of <i>T. harzianum</i> , <i>T. flavus</i> and <i>T. asperellum</i> in pot conditions.
Table 66	Defense enzyme activities in the shoots and roots of <i>Cicer arietinum</i> following inoculation with <i>T. cucumeris</i> and treatment with <i>T. harzianum</i> , <i>T. flavus</i> and <i>T. asperellum</i> .
Table 67	Root rot development in the roots of <i>Glycine max</i> in presence and absence of PGPR isolates in pot conditions.
Table 68	Root rot development in the roots of <i>Lycopersicon esculentum</i> in presence and absence of PGPR isolates in pot conditions.
Table 69	Root rot development in the roots of <i>Brassica juncea</i> in presence and absence of PGPR isolates in pot conditions.
Table 70	Sclerotial blight development in the roots of <i>Glycine max</i> in presence and absence of PGPR isolates in pot conditions.
Table 71	Sclerotial blight development in the roots of <i>Vigna radiata</i> in presence and absence of PGPR isolates in pot conditions.
Table 72	Disease Index of Sclerotial blight incidence of tea seedling following bacterial treatment and pathogen challenge.
Table 73	Changes in the Total Phenol content of the roots and leaves of tea seedlings following PGPR application and pathogen challenge.
Table 73a	ANOVA of the data presented in Table 70, Total Phenol content (Roots).
Table 73b	ANOVA of the data presented in Table 70, Total Phenol content (Leaves).
Table 74	ELISA and DIBA values of rhizosphere soil antigens (<i>S. rolfsii</i>).
Table 75	ELISA and DIBA values of rhizosphere soil antigens (<i>S. rolfsii</i>).
Table 76	ELISA and DIBA values of rhizosphere soil antigenspathogen (<i>T. cucumeris</i>).