# BIBLIOGRAPHY

AHN, S. W., DELA PENA, R. C., CANDOLE, B. L. AND MEW, T. W., 1986. A scale for rice sheath blight (ShB) disease assessment. **Intl. Rice Res, Newsl**, 11:17.

AHUJA, S.C. AND PAYAK, M.M., 1985. **Indian Phytopath**, 38: 771-773.

AMITA SINGH, RASHMI ROHILLA, SINGH, U.S., SAVARY, S., WILLOCQUET, L. AND DUVEILLER, E., 2002. An improved inoculation technique for sheath blight of rice caused by *Rhizoctonia solani*, **Can. J. Plant Pathol**, 24: 65–68.

ANDERSON, N.A., 1982. The genetics and pathology of *Rhizoctonia solani*. **Annu. Rev. Phytopathol,** 20: 329-347.

ANJANA ROY, PRADEEP KUMAR, TRIPATHI, H.S., 2007. Evaluation of bio-agents against *Rhizoctonia solani* kuhn the cause of aerial blight of soybean. **Indian phytopathology,** 60:532-534.

ANONYMOUS., 2002. Rice productivity analysis in India. By Directorate of Rice Development, Patna. Website: www.drdpat.bih.nic.in.

ARUNYANART, P., SURIN, A., ROJANAHASADIN, W., DHITIKIATTIPONG, R. AND DISTHAPORN, S., 1984. Rice yield loss to sheath blight (ShB). **Int'l Rice Res. Newsl,** 9: 10.

AUSTIN, B., DICKSON, C.H. AND GOOD FELLOW, M., 1977. Antagonistic interactions of phylloplane bacteria with *Dreschlera dictyoides* (Dreschler) shoemaker. **Can.J.Microbiol**, 23: 710-715.

BABY, U.I., 1992. Studies on the control of rice sheath disease blight with organic soil amendments. **Ph.D. Thesis**, University of Madras. pp. 128.

BABY, U.I., 1998. Biocontrol potential of fungicide resistant mutants of *Trichoderma* spp. **Indian J. Microbiol**, 38: 165-166.

BAHARUM, S. N., SALLEH, A.B., RAZAK, C.N.A., BASRI, M., RAHMAN, M.B. A., RAHAMAN, R.N.Z.K.A., 2003. Organic solvent tolerant lipase by *Pseudomonas* spp. strain SS, stability of enzyme in organic solvent and physical factors affecting its production. **Ann. Microbiol**. 53:75-83.

BANNIZA, S., SY, A.A., BRIDGE, P.D., SIMONS, S.A. AND HOLDERNESS, M., 1999, Characterization of population of *Rhizoctonia solani* of paddy rice fields in **Cote d' Ivoire. Phyotpathology,** 89: 414-420.

BANNIZA, S., RUTHERFORD, M.A., BRIDGE, P.D., HOLDERNESS, M. AND MORDUE, J.E.M., 1996. Biological characterization of *Rhizoctonia solani* in rice-based cropping systems. **In: Proc. Brighton Crop Prot. Conf. Vol. 1. The British Crop Protection Council, Farnham, United Kingdom.** pp. 399-404.

BANSAL, R.K., SOBTI, A.K. AND MEHTA, S.M., 1990. Cultural variability among seven isolates of *Rhizoctonia solani*. **Indian Phytopath**, 43: 448-450.

BARAH, B.C., 2005. Dynamic of rice economy in India: Emerging scenario and policy options. Occasional paper-47. Published by the National Bank for Agriculture and Rural development, Department of Economic Analysis and Research. pp. 1-82.

BENITEZ, T., RINCON, A.M., LIMON, M.C. AND CODON, A.C. 2004. Biocontrol mechanisms of *Trichoderma* strains. **Int. Microbiol**, 7, 249-260.

BISWAS, S.K., VED. RATAN., SRIVASTAVA, S.S.L., RAMESHSINGH., 2008. Influence of seed treatment with biocides and foliar spray with fungicides for management of brown leaf spot and sheath blight of paddy. **Indian Phytopathology**, 6 : 55-59.

BLACKMAN, J. P., 1972. Effect of plant age on inhibition of *Botrytis cinerea* spores by bacteria on beetroot leaves. **Physiol. Plant**, 2: 145-152.

BLACKMAN, J.P.I.D.S., BORDIE AND NELSON, R.J., 1992. Breeding rice for resistance to pests. **Annu. Rev. phytopath**, 30: 507-523.

BONMAN, J.M., KHUSH, G.S. AND NELSON, R.J., 1992. Breeding for resistance to pests. **Annu. Rev. Phytopathol**, 30: 507-528.

BOYATEE, C.D. AND LEE, F.N., 1979. Reduction in rice yield caused by sheath blight. **Arkasas Farm Res**, 28: 5.

CARLING, D.E., MEYER, L. AND BRAINARD, K.A., 1996. Crater disease of wheat caused by *Rhizoctonia solani* AG-6. **Plant Dis**, 80: 1492.

CASTRIC, K.F. and CASTRIC, P., 1983. Method for rapid detection of cyanogenic bacteria. **Appl. Environ. Microbiol**, 45: 701-702.

CENIS, J. L., Rodriguez, C. and Tello, J., 1995. Genetic variation of Spanish strains of *Rhizoctonia solani* estimated by PCR and RAPD markers. **Investigacion Agraria Produccion y Protection Vegetales,** 10: 113-123.

CHAKRABARTI, N.K., 2001. Epidemiology and disease management of brown spot of rice in India. **In: Major fungal diseases of Rice: Recent advances**. (eds. S. Sreenivasa prasad, and R. Johnson) **Kluwer Academic Publishers**, pp. 293-306.

CHATTERJEE, A., VALASUBRAMANIAN, R., VACHANI, A., MA, W.L., GNANAMANICKAM, S.S. AND CHATTERJEE, A.K., 1996. Biocontrol of rice diseases with *Pseudomonas fluorescenes* 7-14: isolation of ant mutants altered in antibiotic production, cloning of $ant^+$ DNA and an evaluation of a role for antibiotic production in the control of blast and sheath blight. **Biological Control**, 7: 185-195.

CHEN,ZHIYI., XU., ZHIGANG., MEW.TW., CHEN.ZY., XU.ZG., 2000. The molecular marker of antagonistic genes of biological bacteria against rice sheath blight RAPD. CRRN- **Chinese rice research news letter,** 8 : 4-10

CHET, I., 1997. *Trichoderma* application, mode of action and potential as a biocontrol agent of soil borne plant pathogenic fungi. In: Chet I., Ed., Innovative approaches to plant disease control, **Wiley, Newyork** pp:137-160.

CHIEN, C.C. AND CHUNG, S.C., 1963, Physiological races of *Pellicularia sasakii* in Taiwan. **Agricultural Research Taiwan**, 12 : 1-6.

CHOWDHURI, A.K., 2003. Control of sclerotium blight of ground nut by plant growth substances, crop Res, 25: 355-359.

COOK, R.J. (1993), Making greater use of introduced microorganisms for biological control of plant pathogens. **Ann.Rev. Phytopathol**, 31:53-80.

CU, R.M., MEW, T.W., CASSMAN, K.G. AND TENG, P.S., 1996. Effect of sheath blight on yield in tropical, intensive rice production system. **Plant Dis,** 80 : 1103-1108.

DASGUPTA, M.K., 1992. Rice sheath blight: the challenge continues. *In* Plant diseases of international importance: diseases of cereals and pulses. *Edited by* U.S., Singh, A.N., Mukhopadhyay, J., Kumar and H.S. Chaube. Prentice Hall, Englewood Cliffs, N.J. pp. 130–150

DE CURTIS, A., LIMAA, G., VITTULOA, D., CICCOA, V. 2010. Biocontrol of *Rhizoctonia solani* and *Sclerotium rolsfii* on tomato by delivering antagonistic bacteria through a drip irrigation system. **Crop protection,** 29: 663-670.

DENIS, C. AND WEBSTER, J., 1971. Antagonistic properties of some groups of *Trichoderma* I-II. **Trans. Br. Mycol. Soc**, 57:41-48.

DODD, S.L., HILL, R.A. AND STEWART, A., 2004. Monitoring the survival and spread of the biocontrol fungus *Trichoderma atroviride* (C65) on kiwifruit using a molecular marker. **Australian Plant Pathology**, 33: 189-196.

DUNCAN, S., BARTON, J. E. and O'-BRIEN, P. A., 1993. Analysis of variation in isolates of *Rhizoctonia solani* by random amplified polymorphic DNA assay. **Mycological Research**, 97: 1075-1082

ELAD,Y., CHET, I., HENIS, Y., 1982. Degradation of plant pathogenic fungi by *Trichoderma harzianum* .**Can.J. microbiol**. 28: 719-725.

ELAD , Y. & KIRSHNER, B., 1992. Establishment of an active *Trichoderma* population in the phylloplane and its effect on grey mould *Botrytis cinerea*. **Phytoparasitica**, 20 (suppl.): 137-141.

ELAD, Y. AND KIRSHNER, B., 1993. Survival in the phylloplane of an introduced biocontrol agent (*Trichoderma harzianum*) and populations of the plant pathogen *Botrytis cinerea* as modified by abiotic conditions. **Phytoparasitica,** 21: 303-313.

EXPERT, J.M., 1995. Lutte biologique contxeles attaques precoces de *Sclerotinia sclerotiorum* aide de *Pseudomonas spp.* Fluorescents et de *Bacillus spp.* These Universite Claud Bernard-Lyonl.France, pp: 130.

FENG-DIANXING., ZHENG-AIPING., WANG-SHIQUAN., XIANG-XUNCHAO., LI-PING., 2005. Genetic diversity and pathogenicity variation of different *Rhizoctonia solani* isolates in Sichuan province. **Acta-Phytopathologica-Sinica**, 35: 520-525

FENG-SHUJIE., YANG-MEI., ZHAU-DENGBO., ZHAU-ERXUN., 2008. Fungal and bacterial species isolated from sclerotia of *Rhizoctonia solani* and their effects on the growth of *R. solani*. **Acta- Phytopathologica-sinica**, 38: 557- 560

FRANCESCO VINALE., GAVIN FLEMATTI., KRISHNAPILLAI SIVASITAPARM.and MATTETO LORITO., 2009. Harzianic acid, and plant growth promoting metabolite from *Trichoderma harzianum*. **The American chemical society and American Society of pharmacognosy**, 72:2032-2035.

GANGOPADHAY, S. AND CHAKRABARTI. N.K., 1982. Sheath blight on rice. **Rev. Plant.Pathol**, 61: 451-460.

GNANAMANIKAM, S.S., ANA MEW, T.W., 1992. Biological control of blast disease of rice (*Oryza sativa* L.) with antagonistic bacteria and its mediation by *Pseudomonas* antibiotic. **Ann. Phytopathol. Soc. Japan**, 58:380-385.

GNANAMANICKAM, S.S., CANDOLE, B.L. AND MEW, T.W., 1992. Influence of soil factors and cultural practices on biological control of sheath blight of rice with antagonistic bacteria. **Plant and Soil**, 144: 67-75.

GNANAMANICKAM, S. S., PRYIYADARASANI, V., NARAYANAN, N.N., VASUDEVAN, P. AND KAVITHA., 1999. An overview of bacterial blight disease of rice and strategies for management. **Curr. Sci**, 77: 1435-1444.

GOHEL,V., MEGHA, C., VYAS, P., CHHATPAR, H.S., 2004. Strain improvement of chitinolytic enzyme producing isolate pantorea dispersa for enhancing its biocontrol potential against fungal plant pathogens. Ann. Microbiol. 54:503-515.

GULERIA, S., AGGARWAL, R., THIND, T.S., SHARMA, T.R., 2007. Morphological and pathological variability in rice isolates of *Rhizoctonia solani* and molecular analysis of their genetic variability. **Journal of Phytopathology**, 155: 654-661

HAGEDRON,C., W.D.GOULD AND BRADINELLI,T.R., 1989. Rhizobacteria of cotton and their repression of seedling disease pathogens. **Appl. Environ. Microbiol.,** 55:2793-2797.

HASHIBA, T., 1984. Estimation method of severity and yield loss by rice sheath blight disease. **Bull. Hokuriku Natl. Agric. Expt. Stn**, 26: 155-164.

HASHIOKA, Y., 1970. Rice diseases in the world-VI. Sheath spots due to sclerotial fungi (fungal diseases-3). **IL Riso,** 19: 111-128.

HORI, M., 1969. On forecasting the damage due to sheath blight of rice plants and the critical point for judging the necessity of chemical control of the disease. **Rev. Plant Prot. Res**, 2: 70-73.

HUANG, C.J., CHEN, C.Y., 2004. Gene cloning and biochemical characterization of chitinase CH From *Bacillus ceseus* 28-9. **Ann. Microbiol.** 53: 289-297.

JABAJI-HARE, S.H., MELLER, Y., GRILL, S. AND CHAREST, P.M., 1990. Investigation of genetic relatedness among anastomosis groups of *Rhizoctonia solani* using cloned DNA probes. **Can. J. Plant Pathol**,12: 393-404.

JOHNK, J.S. AND JONES, R.K., 1992. Determination of whole-cell fatty acids in isolates of *Rhizoctonia solani* AG-1 IA. **Phyotpathology**, 82: 68-72.

JOHNK, J.S. AND JONES, R.K., 1994. Comparison of whole-cell fatty acids compositions in intraspecific groups of *Rhizoctonia solani* AG-1. **Phyotpathology**, 84: 271-275.

JOHNSON, TED, R. and CHRISTINE, L. CARE (1989). Laboratory experiments in Microbiology. Brief Edition,2nd ed. The Benjamin / Cunmings Publishing co., Redwood.

JOHNSON, L.F., AND CURL,E.A., 1972. Methods for Research on the Ecology of soil borne plant pathogens. Burgess publishing company. Minnsota.

JONES, R.K. AND BELMAR, S.B., 1989. Characterization and pathogenicity of *Rhizoctonia* spp. isolated from rice, soybean and other crops grown in rotation with rice in Texas. **Plant Dis**, 73: 1004-1010.

KALITA, M.K., SAIKIA, A.K. AND BHAGABATI, K.N., 1996, Reaction of some rice cultivars to tungro virus disease in Assam. **J. Virology**. 12: 63-64.

KANNAIYAN, S., 1987. Sheath blight disease of rice. In: Advances in rice pathology (ed. S. Kannaiyan) Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India, pp. 210-233.

KANNAIYAN, S. AND PRASAD, N.N., 1978. In: Recent advances in plant pathology (eds. A. Hussain, K. Singh, B.P.Singh, V.P. Agnihotri), Lucknow Print House, India, pp. 386-392.

KAZEMPOUR, M.N., 2004. Biological control of *Rhizoctonia solani*, the causal agent of rice sheath blight by antagonistic bacteria in greenhouse and field conditions. **Plant Pathology Journal** (Pakistan), 3: 88-96.

KHAIR,H., KHALIFA, R.K.M., KARIMA., HAGGAG,H.E., 2010. Effect of *Trichoderma* spp. in damping off disease incidence, some plant enzyme activity and nutritional status of bean plant. **Journal of American science**, 2:487-487.

KHAN, A.A., SINHA, A.P., 2006. Influence of fertilizers on *Trichoderma harzianum* against sheath blight of rice. **Ann of Plant Protection Sciences**, 14: 481-482.

KHAN, A.A., SINHA, A.P., 2007. Biocontrol potential of *Trichoderma* species against sheath blight of rice. **Indian Phytopathology**, 60: 208-213.

KNUDSEN, G.R. AND ESCHEN, D.J., 1991. Potential for biocontrol of *Sclerotinia sclerotirum* through colonization of sclerotia by *Trichoderma harzianum*. **Plant Dis**, 15: 466-470.

KOHLI, C.K., 1966. Pathogenicity and host range studies on the paddy sheath blight pathogen *R. solani* Kuhn. **J. Res. Ludhiana**, 3: 37-40.

KOZAKA, T., 1970. *Pellicularia* sheath blight of rice plants and its control. **JARQP**, 5: 12-16.

KOZAKA, T., 1975. Sheath blight of rice plants and its control. **Rev. Pl. Prot. Res,** ,8: 69-80.

KREIT LOW, K.W., 1949. Agriculture Experiment Station. In: http.Izaak.unh.edu/archives/guides/scicontributions. Htm-101k.

KRISHNAMURTHY, K., 1997. Biological control of rice blast and sheath blight with *Pseudomonas* spp. Survival and migration of the biocontrol agents and the Induction of systemic resistance in biological disease suppression. **Ph.D. Thesis,** University of Madras, pp. 109.

KRISHNAMURTHY, K. AND GNANAMANICKAM, S.S., 1997. Biological control of sheath blight of rice. Induction of systemic resistance in rice by plant associated *Pseudomonas* spp. **Curr. Sci**, 72: 331-334.

KRISHNAMURTHY, K. AND GNANAMANICKAM, S.S., 1998, Biological control of rice blast by *Pseudomonas fluorescens* Pf7-14: evaluation of a marker gene and formulations. **Biological control**, 13: 158-165.

KRISHNAMURTHY, K. AND GNANAMANICKAM, S.S., 1998. Biological control of rice sheath blight with formulated *Pseudomonas putida.* **Indian Phytopath**, 51: 233-236.

KRISHNAMURTHY, J., SAMIYAPPAN, R., VIDHYASEKARAN, P., NAKKEERAN, S., RAJESWARI, E., RAJA, J.A.J. AND BALASUBRAMANIAN, P., 1999. Efficacy of *Trichoderma* chitinases against *Rhizoctonia solani*, the rice sheath blight pathogen. **Journal of Biosciences**, 24: 207-213.

KUBICEK, C.P., MACH, R.L., PETER BAUER, C.K. AND LORITO, M., 2001. *Trichoderma* from genes to biocontrol. J.plant pathol.83:11-23.

KUNINAGA, S. AND YOKOSAWA, R., 1982. DNA base sequence homology in *Rhizoctonia solani* Kuhn I. Genetic relatedness with anastomosis group 1. **Ann. Phytopathol. Soc. Jpn**, 48: 659-667.

LAI VAN, E., NGUYEN THI PHONG LAN., PHAM VAN DU., TM MEW., 2001. current status and future prospects in biological control of rice sheath blight in Mekong Delta, **Omonrice,** 9 : 79 - 86

LEE, F.N. AND RUSH, M.C., 1983. Rice sheath blight: a major rice disease. **Plant Dis**, 67: 829-832.

LEMANCEAU, P. and ALBOUVETTE, C., 1993. Suppression of *Fusarium* wilt by fluorescent *Pseudomonads*; mechanisms and application. **Biocont. Sci. Technol, 3:** 219-223.

LEVY, E., CHET, I., 1998. Supression of *Septoria tritici* blotch and leaf rust on wheat seedling leaves by *Pseudomonas.* **Plant pathol**. 37:51-57.

LIM, H., KIM, Y., KIM, S., 1991. *Pseudomonas stutzeri* YLP-1 genetic transformation and antifungal mechanism against *Fusarium solani*, an agent of plant root rot. **Appl. Environ. Microbiol**, 57: 510-516.

LIU, Z.L. AND SINCLAIR, J.B., 1993. Differentiation of intraspecific groups among anastomosis group 1 of *Rhizoctonia solani* using ribosomal DNA internal transcribed spacer and isozyme comparison. **Can. J. Plant Pathol**, 15: 272-280.

MAHESH KUMAR, JAIN. A. AK., PRAVEEN KUMAR., SAVITHA CHAUDHARY., SANJAY KUMAR., 2008. Bioefficacy of *Trichoderma* spp against management of chickpea damping- off caused by *Rhizoctonia solani* kuhn. **Plant Archives,** 8: 399 - 400

MANCEAU, C. and KAZEMPOUR, M.N., 2001. Endophytic versus epiphytic colonization of plants: what comes first. In: Phyllospher Microbiology. Lindow, S.E., E.I.Heacht-Poinar and V.J.Elliott (Eds.) **American Phytopathol**, Soc., pp: 115-123.

MANOJ KUMAR., VINEETA SINGH., SINGH.K.N., PRASHANT VIKRAM., 2008. Morphological and virulence characterization of *Rhizoctonia solani* causing sheath blight of rice. **Environment and Ecology**, 26:1158-1166.

MARSHALL. D.S. AND RUSH.M.C., 1980. Infection cushion formation on rice sheaths by *Rhizoctonia solani*. **Phytopathology,** 70: 947-950

MATHIVANAN, N., PRABAVATHY, V.R., VIJAYANANDRAJ.,V.R., 2005. Application of talc formulations of *Pseudomonas fluorescens* Migula and *Trichoderma viride* Pers. ex S.F. Gray decrease the sheath blight disease and enhance the plant growth and yield in rice. **Journal of Phytopathology**, 153: 697-701.

MATSUYAMA, N., MOROMIZATO, Z., OGOSHI, A. AND WAKIMOTO, S., 1978. Grouping *Rhizoctonia solani* with non-specific esterase zymogram. **Ann. Phytopathol. Soc. Jpn**, 44: 652-658.

MATHUR, M and GURURAJ, R.B.S., 2001. Sclerotium rolfsii – A new threat to chilli in Rajasthan. **J. Mycol. Pl. Pathol**, 31 : 261.

MAURHOFER, M., KEEL,C., HAAS, D., AND DEFAGO, G., 1995. Influence of plant species on disease suppression by *Pseudomonas fluorescens* strain CHAO with enhanced production. **Plant Pathol**, 44: 40-50.

McKENZIE., BENZI, D., DELLAVALLE, D. & GULLINO, L., 1991. Survival on the phylloplane of strains of *Trichoderma* spp. antagonistic to *Botrytis cinerea*. **Petria,** 1 :133-134

MEENA, B., MARIMUTHU, T., VIDYASEKHARAN, P., VELEZHAHAN, R., 2001. Biological control of root rot of groundnut with antagonistisc *Pseudomonas fluorescens* strains. **J. Plant Dis. Protect**, 108 : 369-381.

MEW, T.W. AND ROSALES, A.M., 1986. Bacterization of rice plants for control of sheath blight caused by *Rhizoctonia solani*. **Phytopathology**, 76 : 1260-1264.

MIGHELI, Q., HERRERA-ESTRELLA, A., AVATANEO, M. & GULLINO, M.L., 1994. Fate of transformed *Trichoderma harzianum* in the phylloplane of tomato plants. **Molecular Ecology,** 3 : 153-159.

MIRUTA, H., 1956. On the relation between yield and inoculation times of sheath blight, *Corticium sasakii* in the earlier planted paddy rice. **Assoc. Plant Prot. Kyushu**,2 :100-102.

NAGARAJ KUMAR, M., BHASKARAN, R. AND VELA ZHAHAN, R. 2004. Involvement of secondary metabolites and extracellular lytic enzymes produced by *Pseudomonas fluorescens* in inhibition of *Rhizoctonia solani*, the rice sheath blight pathogen. **Microbiological Research**, 159: 73-81.

NAGDI, W.M.A., ABD.EL., KHAIR.H., 2008. Biological control of *Meloidogyne incognita* and *Rhizoctonia solani* in egg plant. **Nematologia – Mediterrania**, 36:85 – 92.

NAGDI AND KHAIR. H. 2008. Biological control of *Meloidogyne incognita* and *Rhizoctonia solani* in egg plant. **Nematologia- Mediterrnea**, 36:85-92

NAIKI, T., and Ui, T., 1978. Ecological and morphological characteristics of sclerotia of *Rhizoctonia solani*. **Plant Dis. Rep**, 61: 713-717.

NANDAKUMAR, R., BABU, S., VISWANATHAN, R., SHEELA, J., RAGUCHANDER, T., SAMIYAPPAN, R., 2001. A new bio-formulation containing plant growth promoting rhizobacterial mixture for the management of sheath blight and enhanced grain yield in rice. **BioControl**, 46: 493-510.

NEERAJA, C.N., SHENOY, V.V., REDDY, C.S. AND SHARMA, N.P., 2002. Isozyme polymorphism and virulence of Indian isolates of the rice sheath blight fungus. **Mycopathologia**, 156: 101-108.

NEERAJA, C.N., VIJAYABHANU, N., SHENOY, V.V., REDDY, C.S., SHARMA, N.P., 2002. RAPD analysis of Indian isolates of rice sheath blight fungus *Rhizoctonia solani*. **Journal of Plant Biochemistry and Biotechnology**, 11: 43-48.

NIZA, T-J-R., SAIFUNNEESA, T-K., MTHEW, W-SK., KOSHY ABRAHAM., GOPAL, K-S., 2005-2007. Potential of rhizhobacteria in the management of soil borne pathogen *Rhizoctonia solani* kuhn. **Recent trends in Horticultural – biotechnology,** 2 : 865 – 869.

NUSRET OZBAY AND STEVEN NEWMAN, E., 2004. Biological control with *Trichoderma* spp. with emphasis on *T.harzianum*. **Pakistan Journal of Biological Sciences**, 7: 478-484.

OGOSHI, A. AND UI, T., 1983. Diversity of clones within an anastomosis group of *Rhizoctonia solani* Kuhn in a field. **Ann. Phytopathol. Soc. Jpn**, 49: 239-245.

OGOSHI, A., 1987. Ecology and pathogenicity of anastomosis and intraspecific groups of *Rhizoctonia solani*. **Ann. Rev. Phytopathol**, 85: 125-143.

OGOSHI., 1995. Ecology and pathogenicity of anastomosis intra specific group of *R.solani* Kuhn. Indian Journal of Mycology and plant pathology. **Ann. Rev.Phytopath,** 25 : 125-143.

OSULLIVAN,D.J,AND O GARA, F., 1992.Traits of fluorescent pseudomonas spp. involved in suppression of plant root pathogens, **Microbiol.Rev**, 56:662-676.

Ou, SH., 1972. 'Rice diseases.' **Commonweath Mycological Institute: Kew, Surrey, England.** 256

OU, S.H., 1985. Rice diseases. **2nd ed. Commonwealth Mycological Institute, Kew, Surrey, England**, pp. 379.

PADHI, B. and GANGOPADHYAY, G. Ch., 1998. Diseases of rice and their management. Diseases of field crops and their management. **Ed. T.S.Thind., National Agricultural Technology Information Centre, Ludhiana.**

PARACER, C.S. AND CHAHAL, D.S., 1963, **Curr.Sci**, 32: 328-329.

PARKS, J.L., RAND, R. E., JOY, A.E. AND KING, E.B., 1991. Biological control of *Pythium* damping off and *Aphanomyces* root rot of peas by application of *Pseudomonas cepacia* or *P. fluorescens* to seed. **Plant. Dis**, 75: 987-992.

PAN, X.B., RUSH, M.C., SHA, X.Y., XIE, Q.J., LINSCOMBE, S.D., STETINA, S.R. AND GARD, J.H., 1999. Major gene, nonallelic sheath blight resistance from the rice cultivars Jasmin 85 and Tequing. **Crop.Sci**, 39: 338-346.

PAUL DIBY., KANAMPARAMBIL., AUGUSTHY SAJU., AUNDY KUMAR., MUTHUSWAMY ANANDARAJ., 2005. Mycolytic enzymes produced by *Pseudomonas fluorescens* and *Trichoderma* spp against *Phytophthora capsici*, the foot rot pathogen of black pepper (Piper nigrum L. ). **Annals of Microbiology**, 55: 129-133.

PETERSON, R.G., 1985. Design and Analysis of Experiments, Marcel Dekker. Inc. New York and Bassel, pp: 429.

PIKOVSKAYA, R.I., 1948. Mobilization of phosphorous in soil in connection with vital activity of some microbial species. **Microbiologiya**, 17: 362-370.

RABINDRAN. R and VIDHYA SEKHARAN. P., 1996. Development for formulation of *Pseudomonas fluorescens* Pf ALR 2 for management of rice sheath blight. **crop Protection,** 15: 715-721.

RADJA COMMARE., NANDA KUMAR, R., KANDAN, A., SURESH, S., BHARATHI, M., RAGHCHANDER, T. and SAMIAPPAN, R., 2002. *Pseudomonas fluorescens* based bio formulation for the management of sheath blight disease and leaffolder insect in rice. **Crop protection**, 21 : 671-677.

RAJ., SHEO., DUTT, B.L. AND SAHAI, D., 1974. Cultural variation in potato isolates of *Rhizoctonia solani* Kuhn. **Acta Phytopath. Acad. Sci. Hung**, 9: 71-79.

RAJAN, C.P.D., 1987. Estimation of yield loss due to sheath blight of rice. **Indian Phyotpath**, 40: 174-177.

RAJBIR SINGH., SINHA, A.P., 2005. Influence of time of application of *Pseudomonas fluorescens* in suppressing sheath blight of rice. **Indian Phytopathology**, 58: 30-34.

RAVIKANT DANTRE., RATHI, Y.P.S., 2008. Enhancement of biological control by combination of fluorescent Pseudomonad strains and resistance inducers against sheath blight of rice. **Journal of Interacademicia**, 12: 39-48

RAO, K.M., 1995. Sheath blight disease of rice. **Daya Publ. House, New Delhi**, pp. 101.

RAO, K.M., 1990. Contribution to blast and sheath blight diseases of rice in India. **D.Sc. Thesis**. University of Madras, Madras, pp. 126.

RAO, K.M., MANIAN, S. AND ZUBER, M., 1979. Sheath blight disease of rice in East Asia. **J.Plant Dis. and Prot**, 86: 499-509.

RIFAI, M. A., 1969. A revision of the genus *Trichoderma*. Mycological papers, No. 116. **Commonwealth Mycological Institute, Association of Applied Biologists, Kew, Surrey, England.**

ROY, A.K., 1973. Natural occurrence of *Corticium sasakii* on some weeds. **Curr. Sci,** 42: 842-843.

ROY, A. K. 1993. Sheath blight of rice. **Indian Phytopathol**, 46:197-205.

RUNHUA., LIANG CHENGYE., ZHU XIRU., ZHOU ERXUN., YI-RH.,LIANG.CY., ZHU.YR., ZHOU. LX., 2002. Genetic diversity and virulence variation of rice sheath blight strains (*Rhizoctonia solani* AG-1 IA) from Gandong province. **Journal of tropical and sub tropical Botany**, 10 : 161-170.

SCHAAD, N.W., 2001. Laboratory Guide for identification of Plant Pathogenic **Bacteria (2nd ED.) APS. St. Paul. Minnesota, USA.** pp: 164.

SHABIR, U., RHEMAN., LAWRENCE RUBIANA., 2010. Biological control of damping off disease of cabbage caused by *Rhizoctonia solani* Kuhn. **Applied Biological Research**, 12:,Issue :1

SHALINI, S. AND KOTASTHANE. A.S. 2007. Parasitism of *Rhizoctonia solani* by strains of *Trichoderma spp.* **Electronic Journal of Environmental, Agricultural and food chemistry**. 1579-4377.

SHARMA, N.R., TENG, P.S. AND OLIVARES, F.M., 1990. Comparison of assessment methods for rice sheath blight disease. Phillip. **Phytopathol**, 26: 20-24.

SHARMA, M., GUPTA, S.K., SHARMA, T.R., 2005. Characterization of variability in *Rhizoctonia solani* by using morphological and molecular markers. **J. Phytopathol,** 153: 449-456.

SHERWOOD, R.T., 1969. Morphology and pathology of four anastomosis groups of *Thanatephorus cucumeris*. **Phytopathology,** 59: 1924-1929.

SHEW, H.D., 1985. *Rhizoctonia* leaf spot of flue-cured tobacco in North Carolina. **Plant Dis,** 69: 901-903.

SINGH, N.I., DEVI, R.K.T. AND SINGH, K.U., 1988. Occurrence of rice sheath blight (ShB) *Rhizoctonia solani* Kuhn on rice panicles in India. **Int. Rice. Res. Newsl**, **13**: 29.

SINGH, N.I., DEVI, R.K.T. AND SINGH, K.U., 1989. *Rhizoctonia solani* : An agent of rice boot blight. **Int. Rice. Res. Newsl**, 14: 22.

SINGH, S.K., SATYANARAYANA, K. AND REDDY, A.P.K., 1990. Studies on morphology, growth habit, hyphal anastomosis and virulence pattern of five isolates of sheath blight pathogen of rice. **Indian Phytopath**, 43: 368-371.

SINGH, V., SINGH, M., SINGH, US., SINGH, KP., 2003. Finger printing the rice isolates of *Rhizoctonia solani* khun using RAPD markers. **International Rice Research,** 28 : 28-30.

SITANSU-PAN., SOMESHWAR-BHAGAT., 2008. Characterization of antagonistic potential of *Trichoderma* spp. against some soil borne plant pathogens. **Journal of biological control,** 22 : 43-49.

SIVAN, A., UCKO, O. AND CHET, I., 1987. Biological control of *Fusarium* crown rot of tomato by *Trichoderma harzianum* under field condition. **Plant Dis,** 71: 587-595.

SNEH, B., BURPEE, L. AND OGOSHI, A., 1991. Identification of *Rhizoctonia* Species. The American Phytopathology Society, St. Paul, MN.

SPURR, H.W. AND WELTY, R.E., 1975. Characterization of endophytic fungi in healthy leaves of Nicotiana spp. **Phytopathology,** 65: 417-422.

SRIDHAR, R., RANGA REDDY, P. AND ANJANEYULU, A., 1975. Physiology of rice tungro virus disease: changes in chlorophyll, carbohydrates, amino acids and phenol contents. **J. Phytopathol**, 86: 136-143.

SRIRAM, S., RAGUCHANDER, T., BALU, S., NANDAKUMAR., SHANMUGAM, V., VIDHYASEKARAN, P., BALASUBRAMANIAN, P. AND SAMIYAPPAN, R., 2000. Inactivation of phytotoxin produced by the rice sheath blight pathogen *Rhizoctonia solani*. **Can. J. Microbiol**, 46: 520-524.

THARA, K.V., 1994. Biological control of rice sheath blight by bacterial antagonists. Mechanism of disease suppression. **Ph.D. Thesis**, University of Madras, pp. 108.

THARA, K.V. AND GNANAMANICKAM, S.S., 1994. Biological control of rice sheath blight in India: lack of correlation between chitinase production by bacterial antagonists and sheath blight suppression. ***Plant and Soil,*** 160: 277-280.

THIND – T.S., ROHIT – AGARWAL., 2008. characterization and pathogenic relationships of *R. solani* isolates in a potato – rice system and their sensitivity to fungicides. **Journal of phytopathology**, 156 : 615 - 621

TODA, T., HYAKUMACHI, M. AND ARORA, D. K., 1999. Genetic relatedness among and within different *Rhizoctonia solani* anastomosis groups as assessed by RAPD, ERIC and REP-PCR. ***Microbiological Research***, 154: 247-258.

TU, J.C., 1967. Strain of *Pellicularia sasakii* isolated from rice in Taiwan. **Plant Disease Reporter,** 51: 682-684.

VALASUBRAMANIAN, R., 1994. Biological control of rice blast with *Pseudomonas fluorescens* Migula: Role of antifungal antibiotic in disease suppression. **Ph.D. Thesis,** University of Madras, pp. 111.

VANLOON, L.C., BAKKER, P.A.H.M., PIETERSE, C.M.J., 1998. Systemic resistance induced by rhizosphere bacteria. **Annu. Rev. Phytopathol**, 36: 453 – 483.

VASANTHADEVI., MALARVIZHI, R., SAKTHIVEL, N. AND GNANAMANICKAM, S.S., 1989. Biological control of sheath blight of rice in India with antagonistic bacteria. **Plant and Soil,** 119: 325-330.

VIDHYASEKARAN, P. AND MUTHAMILAN, M., 1999. Evaluation of a powder formulation of *Pseudomonas fluorescens* Pf1 for control of rice sheath blight. **Biocontrol. Sci. and Tech**, 9: 67-74.

VELAZHAHAN,R., SAMIAPPAN, R., VIDYASEKHARAN, P., 1999. Relationship between antagonistic activities of *Pseudomonas Fluorescens* strains against *Rhizoctonia solani* and their production of lytic enzymes. **J.Plant. Dis. Protect,** 106:510-516.

VIDYASEKARAN, P., RABINDRAN, R., MUTHUMILAN, M., NAYER, K., RAJAPPAN, K., SUBRAMANIAM N., VASUMATHI, K., 1997. Development of powder formulation of *Pseudomonas fluorescens* for control of rice blast. **Plant Pathol,** 46: 291-297.

VIJAYAN, M. AND NAIR, C.M., 1985. Anastomosis grouping of isolates of *Rhizoctonia solani* Kuhn (*Thanatephorus cucumeris* (Frank) Donk) causing sheath blight of rice. **Curr. Sci**, 54: 289-291.

VILGAYLS, R. AND GONZALEZ, D., 1990. Ribosomal DNA restriction length polymorphisms in *Rhizoctonia solani*. **Phyotpathology,** 80: 151-158.

VINEETA SINGH., SINGH.US., SINGH, KP., MAJOR SINGH., ANIL KUMAR., SINGH,V., SINGH, M., KUMAR, A., 2002. Genetic diversity of *Rhizoctonia solani* isolates from rice: differentiation by morphological characters, pathogenecity, anastomosis behaviour and RAPD finger printing. **Journal of Mycology and Plant pathology,** 32 : 332-344.

WEI, G., KOEPPER, J.W., and TUZUN, S., 1991. Induction of systemic resistance of cucumber to *Colletotrichum arbiculare* by selected strains of plant growth promoting rhizobacteria. **Phytopathology**, 81: 1508-1512.

WILLIAMS, J .G .K., UBELICK, A .R. I., LIVAK, J., RAFALSKI, J.A. AND TINR-Y, S .V., 1990. DNA polymorphisms amplified by arbitrary primers are useful as genetic markers. **Nuc Acid Res**, 18: 6531-6535.

WILSON, H., EPTON, H.A.S. AND SIGEE, D.C., 1992. Biological control of fire blight of Hawthorn with fluorescent *Pseudomonas* spp. under protected conditions. **J. Phytopathol**, **136**: 16-26.

XIANGMIN., LAN BO., HUANG RUIKONG., TU YUNQIN., XU ZHIGANG., MEW, T.W., 2007. Population dynamics of antagonistic bacterial strains Pf7-14 and P13, a compatible combination, in rice plants. **Acta-Agriculturae-Universitatis-Jiangxiensis**, 29: 917-921.

XIE, Q.J., LINSCOMBE, S.D., RUSH, M.C. AND JODARI-KARIMI, F., 1992. Registration of LSBR-33 and LSBR-5 sheath blight-resistant germplasms lines of rice. ***Crop Sci***, 32: 507.

XIE, Q.J., RUSH, M.C. AND CAO, J., 1990. Somaclonal variation for disease resistance in rice (*Oryza sativa* L.) **In: Pest management in rice, Elsvier Applied Science**, New York, pp. 491-509.

YANG, H. A., SIVASITHAMPARAM, K., BARTON, J. E. AND O' BRIEN, P. A., 1995. Characterization of cereal bare patch isolates of *Rhizoctonia solani* by random amplified polymorphic DNA analysis. **Plant Pathology,** 44: 811-818.

YAO- YANBO., WANG- YALING., LU- YALING., LU- GUOZHONG., 2007. Effects of *Trichoderma harzianum* in controlling turfgrass diseases. **Paracultural science**, 24: 96-98.

YESHI, A., WAMISHE., JIA YULIN., PRATIBHA SINGH AND RICHARD D. CARTWRIGHT., 2007. Identification of field isolates of *Rhizoctonia solani* to detect quantitative resistance in rice under greenhouse conditions. **Front. Agric. China,** 1: 361–367

ZUBERER, D.A., 1994. Recovery and enumeration of viable bacteria. In *Methods of Soil Anasis: Microbiological and Biochemica1 Properties* (Eds R.W. Weaver, S. Angle, P. Bottomley, D. Bezdicek, S. Smith, A. Tabatabai and A. Wollum), **Soil Science Society of America**, Wisconsin, pp. 119-143.

ZUBER, M. AND MANIBHUSHANRAO, K., 1982 Studies on comparative gel electrophoretic patterns of proteins and enzymes from isolates of *Rhizoctonia solani* causing sheath blight disease in rice. **Can. J. Microbiol**, 28: 762-771.