Pak.J.Bot., 29(2): 359-361, 1997.

DETECTION OF *ALTERNARIA PADWICKII* (GANGULY) M.B. ELLIS, THE CAUSE OF STACKBURN DISEASES OF RICE

S.A. JAMIL KHAN, M. JALALUDDIN* AND A. GHAFFAR*

Crop Diseases Research Institute,
Pakistan Agricultural Research Council,
Karachi University Campus, Karachi-75270, Pakistan.

Alternaria padwickii (Ganguly) M.B. Ellis (Syn., *Trichoconis padwickii* Ganguly) is an important seed-borne fungus which causes stackburn disease of rice (Noble & Richardson, 1968). The fungus occurs widely in the rice-growing countries of the world (Ou, 1985; Khair *et al.*, 1988; Rodriguez *et al.*, 1988; Shetty & Shetty, 1992). *A. padwickii* has also been found widely distributed as a common seed-borne fungus in different rice cultivars in Pakistan (Kamal & Moghal, 1968; Khan *et al.*, 1974). Using blotter and agar plate methods, it has been usually difficult to detect and isolate *T. padwickii* in pure culture due to the growth of other seedborne fungi such as *Pyricularia oryzae, Drechslera oryzae* and species of *Curvularia, Drechslera* and *Fusarium* on rice seeds (*Neergaard*, 1977; Khan *et al.*, 1988). A comparative study of various methods was therefore, carried out to find more suitable method by which *A. padwickii* could be detected and isolated in pure culture from rice seeds.

Seeds of 10 rice varieties collected from different parts of rice growing areas of Sindh and Punjab were examined using blotter, agar plate and deep freezing methods as recommended by ISTA (Anon., 1976). Seeds were disinfected with 1% solution of NaOCl for 5 minutes for the removal of surface fungi. Untreated seeds were kept as control. After incubation for 4 to 8 days each seed was examined under the stereoscopic microscope for the characteristic pinkish coloured colonies of *T. padwickii*. The frequency of occurrence of *T. padwickii* in 10 rice varieties is given in Fig.1. Factorial analysis of variance (FANOVA) showed that all the three isolation methods used viz., deep freezing, agar plate and blotter method differed significantly (p 0.001) in the isolation of *A. padwickii* from different rice cultivars both in surface disinfected and untreated seeds. Interaction of isolation methods, surface disinfection of seeds and rice cultivars were found significant (p.0.001). The frequency of isolation of *A. padwickii* was 1.0-6.7% in agar plate method, 1.0-9.5% in blotter and 1.0-14.5% in deep freezing method. In agar plates the colonies of *A. padwickii* started appearing from the 5th day upto 8th day. *A. padwickii* could be identified on Petri plates with pinkish colour of colony because the conidial formation was poor or scanty. In blotter method, the colonies of *A. padwickii* became evident on 4th day on seed coats and conidial formation was observed after 6th day. In deep freezing method, however, *A. padwickii* produced characteristic pinkish colour around the diseased seeds and conidia were produced abundantly on the blotters earlier than in agar plate method. It could therefore be

*Department of Botany, University of Karachi, Karachi-75270, Pakistan.

suggested that the deep freezing method was more suitable than the agar plate or blotter method for the isolation of *A. padwickii* from the seeds of various rice varieties and it should be preferred for the detection of *T. padwickii* in seed health testing laboratory.

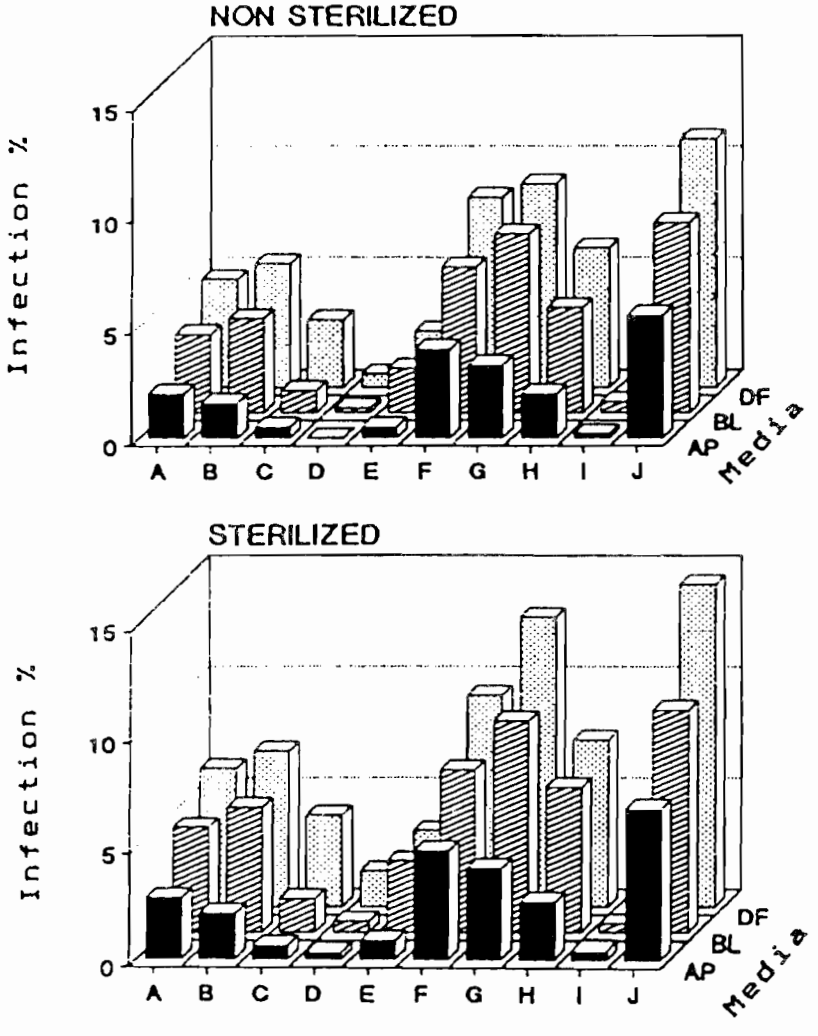

Fig.1. Frequency of occurrence of *Trichoconis padwickii* in 10 rice cultivars using blotter (BL), agar plate (AP) and deep frezing methods (DF) of isolation.

A = DR-82, B = DR-83, C = IRRI-6, D = IRRI = 2053, E = IRRI-72, F = Jajai-77, G = Kangni-27, H = KS-282, I = B-385, J = Son. Sugdasi.

$LSD_{0.05}$ (Isolation methods) = 0.28

$LSD_{0.05}$ (Sterilized condition) = 0.23

$LSD_{0.05}$ (Cultivars) = 0.52.

References

Anonymous. 1976. International Seed Testing Association. International rules for seed testing. *Proc. Int. Seed Test. Assoc., Norway*, 4: 3-49.

Kamal, M. and S.M. Moghal. 1968. *Studies on plant diseases of South-West Pakistan*. Agric. College Tandojam, Pakistan, 207 pp.

Khair, A., S.A. Shetty, H.S. Shetty and K.M. Safeeullah. 1988. The incidence and distribution of *Trichoconiella padwickii* in Karnataka in relation to environmental factors. *Int. J. Tropical Plant Diseases*, 6: 107-113.

Khan, S.A.J., A.K. Khanzada and Nasreen Sultana. 1988. Evaluation of seed health techniques for the assessment of seedborne mycoflora of rice. *Pak. J. Agric. Res.*, 29: 502-505.

Khan, S.A.J., S.B. Mathur and P. Neergaard. 1974. Survey of new seed-borne organisms of Pakistan. *Seed Sci. & Technol.*, 2: 477-479.

Neergaard, P. 1977. *Seed Pathology*, Vol.I & II. The Macmillan Press Ltd., London, U.K., 839 pp.

Noble, M. and M.J. Richardson. 1968. *An annotated list of seed-borne diseases*. Proc. Int. Seed Test. Assoc. Wageningen, Netherlands 2nd Ed. 191 pp.

Ou, S.H. 1985. *Rice Diseases*. 2nd Ed. C.A.B., Kew, Surrey, England. 380 pp.

Rodriguez, H.A., H. Nass and L. Aleman. 1988. Incidence and control of rice grain discolouration. *Fitopathologia venezolana*, I: 5-7.

Shetty, S.A. and H.S. Shetty. 1992. *Trichoconiella padwickii*, the present state of art. *Int. J. Tropical Plant Diseases*, 10: 99-20.

(Received for publication 16 June, 1997)