Virus-vector Composition Analysis in Rice Tungro Virus Epidemics in Telangana Region of Andhra Pradesh, India

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Abstract

Tungro virus disease is one of the most devastating and wide spread diseases of rice. The occurrence of the disease is sporadic in nature and it can appear at any time from seedling stage to reproductive phase. An outbreak of rice tungro disease was noticed during kharif 2007 in Telangana region of Andhra Pradesh, India. Over 19,000 acres in Karimnagar and Medak districts were severely affected by the disease. The popular varieties viz, Erramallelu, IR 64, and MTU 1010 were the worst affected. In the following two years (2008 and 2009), tungro incidence was found to be reduced to a negligible level. Virus transmission in glass house was tested in all field samples collected using susceptible TN1 seedlings and viruliferous green leafhopper vectors. The causal agent of the epidemic was confirmed as tungro virus in these vector transmission tests as these TN1 seedlings showed infection and profuse symptoms of tungro. In electron microscopy, an abundance of Rice Tungro Spherical Virus was detected. Rarely, Rice tungro bacillus virus (RTBV) particle was spotted. The species composition of vectors present in the tungro damaged area consisted of green leafhopper species Nephrotettix virescens and N. nigropictus and zig-zag leafhopper species Recelia dorsalis in that order of abundance. N. virescens in the population showed distinct colour and morphological variations. Cyperus and Echinocloa species were the dominant weeds. The extent of damage was also investigated.

Key words: rice tungro virus disease, epidemics, green leafhoppers, electron microscopy