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Molecular characterization, epidemiology and integrated management of Papaya Ringspot Virus (PRSV) in Papaya (*Carica papaya* L.)

Papaya cultivation is worldwide ravaged by *Papaya Ringspot Virus* (PRSV) disease. Surveys conducted in Southern Karnataka during 2012-2014 revealed the maximum PRSV incidence in Bangalore Rural (77.53%) followed by Bangalore Urban (68.89%), Kolar (65.00%) and Chikkaballapura (52.78%) districts. Monitoring of the population of different aphid species during August-2013 to July-2014 using yellow sticky traps revealed the occurrence of eight aphid species. Of which, three species *viz.*, *Aphis gossypii* (66.04%), *A. craccivora* (26.80%) and *Myzus persicae* (2.12%) were regularly trapped throughout the year. Transmission studies proved that, *M. persicae* (53.33%) was more efficient vector in transmitting PRSV followed by *A. gossypii* (46.66%) and *A. craccivora* (26.66%). The aphid population was peak when rainfall was below 8.00 mm with temperature range of 17-35°C, relative humidity of 30-90% and with wind speed of 3-5km/hr. Based on the symptoms on differential var. Red lady, the PRSV isolates *viz.*, BRD-1, BRH-1, BUH-1 were considered as severe, while MMD-1 and MML-1 as mild isolates. Partial characterization of isolate BUH-1 by CP gene showed highest homology of 98% with South Indian and 87-92% with Asian isolates. Among the defence inducing molecules Salicylic Acid@ 0.002%, Silicic Acid@ 0.2% and Boric Acid@ 0.2% found effective in reducing the disease under field and glasshouse condition. In PRSV disease management studies, growing papaya as intercrop with African Tall maize (1:1) and Grand Naine banana (2:1) as live barriers found effective recording 60-90% disease control with maximum yield in varieties Arka Surya (15.78 kg and 14.34 kg/plant) and Red lady (33.28 and 30.37 kg/plant) with C-B ratio of 1:9.2 and 1:6.5 in Red lady and with 1:3 and 1:1 in Surya respectively. Growing papaya with silver reflective mulch is recorded as next most profitable treatment with C:B ratio of 1:1.9 and 1:6.2 by controlling 90 and 100% disease in Arka Surya and Red Lady respectively.

Biography

Nagaraju N graduated in University of Agricultural Sciences, Bengaluru and he is an expertise in Plant Virology. He worked as an Extension Pathologist during 1998-2010 and is expertise in diagnosis, identification of plant disease and recommending suitable management practices. He is serving in UAS, Bengaluru since 20 years and worked on different plant viruses *viz.*, Papaya Ring Spot Virus (PRSV), Pepper Veinal Mottle Virus (PVMV), Cucumber Mosaic Virus (CMV), Tomato Leaf Curl Virus (ToLCV), Tomato Spotted Wilt Virus (ToSPO) and other Gemini viruses. He developed integrated management practices for the important viruses for sustainable agriculture and were included in University Package of Practice. He is presently working on use of bio-molecules for inducing defense in crop plant against plant viruses.

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