## SCREENING COTTON GENOTYPES AGAINST *BEMISIA TABACI* IN SOUTH WESTERN PUNJAB

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**Abstract:** Field evaluation of 47 genotypes was carried out for screening against whitefly (*Bemisia tabaci*) in South-western region of Punjab. The population of whitefly was recorded on each genotype after 60, 90, 120 days of sowing during 2015 and 2016. Damage index was calculated and these genotypes were categorized into 6 categories - most resistant, resistant, moderately resistant, susceptible, moderately susceptible and highly susceptible. The genotypes with highest damage index were categorized highly susceptible whereas the genotypes with lowest damage index were categorized as most resistant. During the present study, some of the genotypes were found resistant. In relation to climate, population of whitefly was reported highest during the month of August-September.

Keywords: Cotton, Genotypes, Whitefly, Bemisia tabaci, Damage index

## REFERENCES

Acharya, V.S., Singh, A.P. (2007). Screening of cotton genotypes against whitefly, *Bemisia tabaci. Journal of Cotton Research and Development*. 21(1): 111-114.

Ahmad, M. (1993). Relative resistance in different clones of *Populus deltoides* to poplar defoliator *Clostera cuperata* (Lepidoptera: Notodontidae). *Ann. For* : 1: 1-12.

Ali, A., Aheer, G.M. (2007). Varietal resistance against sucking insect-pests of cotton under Bahawalpur ecological conditions. *Journal of Agricultural Research*, 45: 1-5.

Ali, A., Aheer, G.M., Saeed, M. (1999). Physicomorphic factors influencing resistance against sucking insect pests of cotton. *Pakistan Entomologist*. 21(1-2): 53-55.

Amjad, M., Bashir, M.H., Afzal, M., (2009). Comparative resistance of some cotton cultivars against sucking insect pests. *Pak. J. Life Soc. Sci.*, 7: 144-147.

Anitha, K.R., Nandihalli, B.S. (2008). Seasonal incidence of sucking pests in okra ecosystem. *Karnatka Journal of Agriculture Science*, 21: 137-138.

Arif, M.J., Abbas, G., Saeed S. (2007). Cotton in danger, p:4 Dawn, *The Internet Edition*, March 24<sup>th</sup> 2007.

Babar, T.K., Karar, H., Hasnain, M., Shahazad, M.F., Muhammad Saleem, M., Ali, A. (2013). Performance of some transgenic cotton cultivars against sucking insect pests. *Pak. J. Agri.Sci.*, 50(3): 367-372.

**Bashir, M.H., Afzal, M., Sabri, Raza, A.M.** (2001). Relationship between sucking pests and physicomorphic plant characters towards resistance/susceptibility in some new genotypes of cotton. *Pakistan Entomologist*, 22(1-2): 75-78. **Butter, N.S., Vir, B,K.** (1989). Morphological basis of resistance in cotton to the whitefly *Bemisia tabaci*. *Phytoparasitica* 17(4); 251-261.

**Butter, N.S., Vir, B.K.** (1990). Sampling of whitefly *Bemisia tabaci* Genn. in cotton. *Journal of Research*, PAU, 27(4): 615-619.

Byrne, D.N., Bellows, Jr. T.S. (1991). Whitefly biology. *Annual Review of Entomology*, 36: 341-357.

Farooq, J, Anwar, M., Riaz, M., Mahmood, A., Farooq, A., Iqbal, M. S., Iqbal, M. S. (2013). Association and path analysis of earliness, yield and fibre related traits under cotton leaf curl virus(CLCuV) intensive conditions in G. *hirsutum* L. *Plant Knowledge Journal*. 2(1): 43-50.

Hegde, M.M., Srinivas, M., Biradar, D.P., Udikeri, S.S., Khadi, B.M. (2004). Seasonal incidence of sucking pests and their natural enemies on cotton at Siruguppa. Paper presented. *Int. Symp. Strat. Sust. Cotton Prodn.- A Global vision*, Karnatka, India, pp. 23-25.

**Idris, A.M.** (1990). Cotton leaf curl virus disease in the Sudan. *Mededehngen van de Faculteit LtndboHwwetenschappen Riijksuniversiteit Genetics* 55: 263-267.

**Ioannu, N.** (1994). Diseases of tomato caused by whitefly transmitted *gemini* viruses. *Horticultural Abstracts*, 64: 54-73.

**Ismail, I.D., Raie, S.U., Akil, A.K.** (2004). A survey of Sweet Potato Virus Diseases in Syrian coastal region (Lattakia) using Tissue Blot Immunobinding Assay. Tishreen University Journal For Studies and Scientific Research-*Agriculture Science Series*, 26: 125-132.

Javaid, M., Arif, M.J., Gogi, M.D., Shahid, M.R., Iqbal, M.S., Bibi, R., Shehzad, M.A. (2012). Relative resistance in different cultivars of Pakistani cotton against cotton whitefly, *Bemisia tabaci*. *Academic Journal of Entomology* 5(3): 143-146.

Karar, H, Shahid, M., Ahamad, S. (2016). Evaluation of innovative cotton genotypes against

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insect pest prevalence, fibre trait, economic yield and virus incidence in Pakistan. *Cercetari Agronomice* in Moldova. Vol. XLIX, No. 1(165): 29-39.

Karar, H., Abbas, G., Hameed, A., Shahzad, M.F., Ahmad, G., Ali, A. Saleem, M. (2013). Relative susceptibility of onion(*Allium cepa*) genotypes of Pakistan to onion thrips (*Thrips tabaci*) (Thysanoptera: Thripidae). *Pak. J. Agri. Sci.*, Vol. 50(3): 351-357.

Karar, H., Arif, M.J., Arshad M., Ali, A., Abbas, Q. (2015). Resistance/ susceptibility of different mango cultivars against mango mealybug(*Drosicha magiferae* G.). *Pak. J. Agri. Sci.*, 52(2): 367-377.

**Khan, S.M.** (2011). Varietal performance and chemical control used as tactics against sucking pests of cotton. *Sarhad J. Agric.* 27(2): 255-261.

Kranthi, K.R., Kranthi, S., Ramesh, K., Nagrare, V.S., Barik, S. (2005). Advances in cotton IPM (Technical Bulletin). *Central Institute for Cotton Research* Post Bag No., Shankar Nagar, PO, Nagpur (MS), India.

Makkouk, K. M., Shebab, S., Madjalini, S. E. (1979). Tomato yellow leaf curl: incidence, yield losses and trasmission in Lebanon. *Phytopathology*, 96: 263-267.

**Manjunath, T.M.** (2004). Bt cotton in India. In: the technology wins as the controversy wanes. Available at

www.monsanto.co.uk/newsukshowlib.html?wid+847 8.

Mumtaz, M.K., Pervaz, A., Ahmad, A., Arshad, A., Ali, A. (1997). Abiotic factors affecting the population fluctuation of leaf curl virus incidence in different genotypes of cotton. *Journal of Animal and Plant Science*, 7(3-4): 119-121.

Nath, P., Chaudhary, Sharma, P.D., Kaushik, H.D. (2000). Studies on the incidence of important insect pests of cotton with special reference to desi cotton. *Indian J. Entom.* 62(4): 391-395.

**Oliveira, M.R.V., Henneberry, T.J., Anderson, P.** (2001). History, current and collaborative research projects for *Bemisia tabaci. Crop Protection*, 20: 709-723.

**Panse, V.G., Sukhtame, P.V.** (1989). In Sukhtame PV, Amble VN (eds) *Statistical methods for agricultural workers*. Indian Council for Agricultural Research publication, New Delhi, pp. 100-109.

**Pedigo, I.P.** (1989). *Entomology and Pest Management*. Prentice Hall of India (Pvt.) Ltd. New Delhi-110001, 413 p.

**Pedigo, L.P.** (1996). Plant resistance to insects. *In: Entomology and Pest Management*. Prentice hall of India Private Limited, New Delhi, pp. 413-424.

Raza, A.M., Afzal, M. (2000). Physio-morphic plant characters in relation to resistance against sucking

insect-pests in some new genotypes. *Pakistan Entomologist*, 22(1-2): 73-78.

Riaz, M., Naveed, M., Farooq, J., Farooq, A., Mahmood, A., Rafiq, Ch. M., Nadeem M., Sadiq A. (2013). AMMI analysis for stability, adaptability and GE interaction studies in cotton (Gossypium hirsutum L.). J. Anim. Plant Sci.,23(3): 865-871.

Robert, L., Meagher, Jr., Wayne C. Smith, Wendy, J., Smith (1997). Preference of Gossypium genotypes to *Bemisia argentifolii* (Homoptera: Aleyrodidae). *Journal of Economic Entomology*. 90(4): 1046-1052.

Seo, Y.S., Zhou, Y.C., Turini, T.A., Cook, C.G., Gilbertson, R.L., Natwick, E.T. (2006). Evaluation of cotton germplasm for resistance to the whitefly and Cotton Leaf Crumple (CLCr) Disease and etiology of CLCr in California's Imperial valley. *Plant Disease*. 90(7): 877-884.

Shad, S.A., Waseem, A., Rizwan, A. (2001). Relative response of different cultivars of cotton to sucking insect pests at Faisalabad. *Pak. Entomol.* 23(1/2): 79-81.

Shahid, M.R., Farooq,J., Mahmood, A., Iqbal, M.S., Mahmood, K., Abbas, H.G. (2015). Economic yield, Fibre trait and sucking insect pest incidence on advanced genotypes of cotton genotypes of cotton in Pakistan. *Cercetari Agronomice* in Moldova, Vol. XLVIII, No. 1(161), Iasi, Romania.

**Sharma, P.** (2002). Molecular approaches for detection and diagnosis of cotton leaf curl *gemini* virus and its mode of dissemination in the fields. *PhD Thesis, Deptt. Plant Pathology*, CCS HAU, Hissar, 150 pp.

**Sharma, P. Rishi, N.** (2004a). Influence of weather variables on the incidence of Cotton leaf curl virus disease. *Indian Journal of Plant Protection* 32: 174-175.

Shivanna, B. K., Nagaraja, D.N., Manjunatha, M., Naik, M.I. (2009). Seasonal incidence of sucking pests on transgenic Bt cotton and correlation with weather factors. *Karnatka J. Agric. Sci.* 22 (3-spl. Issue): 666-667.

Sukhija, H.S., Butter, N.S., Singh, J. (1986). Determination of economic threshold of whitefly *Bemisia tabaci* on *American* cotton in Punjab. Tropical Pest Management 32(2): 134-136.

**Tuteja, O.P.** (2014). Studies on heterosis for yield and fibre quality traits in GMS hybrids of upland cotton (*Gossypium hirsutum* L.). *J.cotton Res. Dev.*<u>28(1)</u>:1-6.

Vikas, J., Arora, R., Kumar, R. (2007). Screening of cotton genotypes for resistance to sucking pests. *Annals of Plant Protection Sciences*. 15(1): 26-29.