

SCREENING OF SELECTED GENOTYPES OF BRINJAL (*Solanum melongena* L.) AGAINST ROOT-KNOT NEMATODES (*Meloidogyne* spp.)

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ABSTRACT

Root-knot nematodes (*Meloidogyne* spp.) (RKN) are a significant threat to brinjal (*Solanum melongena* L.) production, causing severe damage to root systems and impairing the plant growth. As RKN is a sedentary endoparasite with polyphagous nature, management of this pest is very difficult without systemic nematicides which are dangerous to the ecosystem. Resistant hosts, which provide a more sustainable solution compared to other means of control. Therefore, current investigation aimed to evaluate the response of four selected brinjal genotypes *Eekkuvellai*, F1Hybrid704, Thinnevelipurple, and *Mattuvimutti* to RKN infestation in terms of gall formation and impact on plant growth parameters under artificially inoculated pot condition. A total of 48 plants in nematode inoculated soil along with the 3 plants in nematode-free soil as a control for each variety (3 replicates x 4 varieties= 12 plants) were arranged in complete randomized design. Plants were inoculated with RKN, and growth parameters and gall formation were assessed at from 4-12 weeks of post-inoculation. Obtained data were analyzed using one-way ANOVA with Turkey post hoc test at the 95% confidence interval. The results indicated that all tested genotypes were susceptible to RKN, with *Eekkuvellai* (1482 galls per plant) and F1Hybrid704 (1270 galls per plant) showing significantly higher gall densities compared to Thinnevelipurple and *Mattuvimutti* (689 and 369, respectively galls per plant). *Eekkuvellai* had the highest gall count per root system (1432 galls) and per rootlet (10.87 galls per rootlet), suggesting increased susceptibility. Growth parameters such as plant height (79.1cm, root length (39cm), and shoot biomass (78g) were negatively affected by nematode infestation. *Eekkuvellai* and F1Hybrid704 exhibited greater root and shoot growth compared to Thinnevelipurple and *Mattuvimutti*, despite higher gall densities. However, *Mattuvimutti* consistently showed the lowest gall formation (369 galls per plant) and the smallest gall diameters (4.158mm), indicating moderate resistance to the nematodes. The study concludes that while none of the brinjal genotypes demonstrated complete resistance to *Meloidogyne* spp., *Mattuvimutti* exhibited the highest potential for nematode resistance, making it a candidate for breeding programs focused on developing nematode-resistant Brinjal genotypes. These findings highlight the importance of selecting resistant cultivars to mitigate the effects of root-knot nematode infestation and improve brinjal productivity.

Keywords: *Solanum melongena*, Yield, Root-knot nematode, *Meloidogyne*, Galls, Pot trail, Brinjal genotypes

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