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Unravelling nature of gene action for fruit biochemical, Morpho-Physiological and yield traits governing shelf life in tomato (*Solanum Lycopersicum L.*)

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Tomato fruit is highly perishable and experiences more postharvest losses because of its natural perishability, precarious transportation and inadequate packaging. The postharvest losses of fruits and vegetables in the developing countries and in India account for almost 50 and 40 per cent of produce respectively (Mutschler et al.,1992). Several postharvest packaging methods and advanced technique of antisense RNA technology is an efficient in extending shelf life, but these technologies are laborious, unfeasible in a farmer's field and need social acceptance (Yogendra and Gowda, 2013). Therefore, genetic enhancement of major fruit quality characteristics seems to be best option and one of the safest ways to improve shelf life. Shelf life and yield traits are complex with low inheritance. Awareness of gene action of traits is critical in plant breeding. Generation mean analysis is one of the biometrical techniques that involve estimation of the magnitude of various genetic effects (additive, dominance and epistatic effects), which can help the plant breeders to decide the breeding procedures better suit for the improvement of traits There is a saying that "A ton of fruits and vegetables saved is equivalent to two tons produced" with this justified focus the present study aimed to know the nature of gene action through generation mean analysis for fruit biochemical, morpho-physiological and yield attributing traits related to extended shelf life in the F 1 Arka Vikas × Red ball. The results revealed inadequacy of additive-dominance model in explaining inheritance of fruit biochemical, morpho-physiological and yield attributing traits indicates significance of the joint-scaling test and presence of epistasis. Selection for shelf life may not be effective in improving genetic gain as dominance and dominance × dominance gene effects are non-fixable. One or two cycles of bi-parental mating followed by intensive selection in advanced segregating generations by evaluating many families are advisable.

Biography

Gangaprasad Sreekantappa is a Professor at University of Agricultural and Horticultural Sciences, Shivaivamogga, India. Specialized in Genetics and Plant Breeding. He is actively involved in teaching Genetics, Plant Breeding, Biotechnology and Intellectual Property Rights courses for Undergraduate and Post graduates' students. His major area of research is Crop improvement in Pulses, Millets, okra and tomato and particularly markers assisted selection for yellow mosaic virus resistance in pulses. He has completed several national and International projects in genetic diversity, genetic resource conservation and utilization. He is also specialized in Intellectual property issues related to agriculture with special reference to Plant Breeders' and farmers' rights. He has authored more than 45 publications in peer reviewed national and international Journals. He has guided several students for master's and Doctoral degree program.

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