

Breeding and Selection of Tomato F₁ Hybrids for Yield and Fruit Quality Characters

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Tomato (*Lycopersicon esculentum* Miller) of the family Solanaceae is one of the most important vegetable crops grown in Sri Lanka. To understand the actual consumer requirements, especially in terms of fruit quality characters, an extensive survey was carried out. Results revealed that for home consumption, a majority preferred acidic, round to flat-shaped, medium-sized fruits, red in colour for curries, salads and sandwiches. The Government of Sri Lanka has also identified the production of local vegetable hybrids as a matter of high priority.

With this information, a half diallel genetic crossing design was carried out to produce 36 F₁ hybrids using nine local and foreign varieties at the Agricultural Biotechnology Centre, University of Peradeniya. These were evaluated in the Meewatura farm of the Faculty of Agriculture, University of Peradeniya.

Yield and fruit quality characters including brix, acidity and fruit shape and colour were evaluated. General combining ability (GCA) and specific combining ability (SCA) were significant indicating the importance of both additive and dominance gene action. Out of the 36 F₁ tomato genotypes; T068 was selected as the best hybrid for the tourist industry as it showed heterobeltiosis for yield (48%) and low acidity, while T025 was selected as the best hybrid for local consumption as it too showed heterobeltiosis for yield (76%) with high acidity. Both hybrids showed that yield potentials were much higher than the currently used varieties.

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