

## Breeding Tomatoes for Tropical Conditions: Advances, Drawbacks and Perspectives

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Brazil is among the top ten largest tomato (*Solanum lycopersicum* L.) producers around the world. This is the major vegetable crop in terms of social and economic impact in the country. Significant yield increase was achieved in the last decades in both processing and fresh-market tomato segments. However, the production costs are very high under tropical and subtropical conditions due to the implementation of control measures necessary to minimize several adverse biotic and abiotic factors. In addition, there is a strong market trend that is demanding for safe tomato fruits, free of chemical residues and produced under sustainable agro-ecological systems with practices capable of minimizing detrimental effects on the environment. The development of cultivars able to withstand these crop management problems is the major challenge for tomato breeding programs in these geographic areas. For this endeavor is necessary to incorporate in elite processing and fresh market tomato germplasm resistance genes to several pests and pathogens of economic importance in the tropics (e.g. begomovirus, tospovirus, *Stemphyllium*, and root-knot nematodes) and also resistance genes that are not yet available in commercial cultivars against attack of *Xanthomonas*, *Ralstonia solanacearum*, new races of *Fusarium* and *Verticillium*, *Tuta absoluta*, and whiteflies (*Bemisia tabaci* complex). The economic sustainability of the fresh-market tomato agrobusiness in Brazil is dependent upon a more vigorous growth in the *per capita* consumption. Therefore, another challenge of tomato breeders is to release of tropical-adapted, multi-tolerant hybrids that also display superior sensorial, nutritional, and nutraceutical attributes. In addition, efforts to develop cultivars adapted to climate change-induced stresses are critical especially for sustainable tomato production in tropical areas in the near future. Here, the advances of the Brazilian tomato breeding programmes will be presented and the drawbacks and perspectives will be discussed.