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Advancing Tomato Hybrid Development: Yield Evaluation of Winter-Grown Hybrids in Bangladesh

AKM QUAMRUZZAMAN*, L. AKTER, MR ISLAM, S. AKTER and MH ISLAM

Olericulture Division, Horticulture Research Centre, Bangladesh Agricultural Research Institute, Gazipur-1701, Bangladesh
*Corresponding Email: akmqzs@gmail.com

Abstract

A field trial was conducted at the Olericulture Division of HRC, BARI, Gazipur during the 2023-24 winter season to evaluate eight tomato hybrids for yield performance, pest and disease resistance, and quality parameters. The study revealed significant variation in key traits including fruits per plant (36.0-155.0), individual fruit weight (14.5-90.0g), yield (up to 111.38 t/ha), fruit dimensions, TSS content, and resistance to TYLCV and leaf-sucking pests. The hybrids demonstrated maturity periods of 99-104 days to first harvest. Three hybrids showed exceptional performance: F_1 4601 (111.38 t/ha), F_1 1501 (103.85 t/ha), and F_1 1903 (100.22 t/ha) under Gazipur conditions. Based on comprehensive evaluation of yield attributes and resistance characteristics, F_1 4601 and F_1 1501 emerged as the most promising candidates for commercial release as new hybrid varieties. This study highlights the critical role of hybrid tomato development in Bangladesh's agricultural sector, where improved varieties can address key challenges of productivity constraints and pest pressures. The selected hybrids demonstrate the potential to significantly enhance tomato production efficiency, offering farmers higher yields with reduced input requirements. Their development aligns with national priorities to boost horticultural productivity through advanced breeding techniques, contributing to food security and economic growth in Bangladesh's rapidly evolving agricultural landscape. The successful performance of these hybrids underscores the importance of continued investment in hybrid vegetable breeding programs to meet the country's growing demand for high-quality, disease-resistant tomato varieties.