

ADVANTAGEOUS TRAITS OF HUNGARIAN TOMATO ACCESSIONS FOR FUTURE UTILIZATION

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Due to its production and consumption volume, tomato is one of the most important vegetable of the World. Extensive efforts have been made to overcome genotypic difficulties that decelerated gradual increase of yield. Throughout this improvement, plant genetic resources (PGRs) with unfavorable vegetative and generative characteristics together with possibly valuable traits (e.g. rich flavor, outstanding nutritional content, uncommon fruit size, color, and shape, high adaptation to environmental extremities) have been lost. The side-effects of modern breeding progress, such as loss of flavor, lower nutritional content are measurable now in modern varieties. Tomato PGRs collected by gene banks are available for screening and for re-use of advantageous genes; for this, accession-level testing has to be executed. The hypothesis of the present study was that the selected Hungarian tomato accessions have valuable yield characteristics, which can be utilized in future breeding programs.

In a three year (2012-2014) open field trial, four PGRs with pepper-shaped fruits were grown together with San Marzano variety as a reference point. The PGRs were the followings (place of origin in brackets): RCAT030271 (Kozárd), RCAT031255 (Soltvadkert), RCAT031257 (Gyöngyös), and RCAT060349 (Nagykáta). The location was the certified organic land of SZIE Soroksár Experimental and Educational Station, Hungary. The propagation material was provided by Research Centre for Agrobiodiversity (NöDiK), Tápiószele. Weight of weekly yield was measured; the fruits were separated to three fractions, i.e. intact, cracked, and infected fractions. Coherences with weather parameters were also investigated.

The potential yield (summary of all fractions) of PGRs were comparable with that of San Marzano variety in 2012, however, the cracked fraction of PGRs

were significantly higher. The arid weather of 2013 reduced the ratio of cracked fractions in the case of all PGRs and the variety. The extremely humid season of 2014 was favorable especially for RCAT031257, the intact fraction of which was significantly higher than those of San Marzano. The potential yield of PGRs, with the exception of RCAT060349, was two-fold higher than the value of San Marzano. It was concluded, that scanning Hungarian tomato PGRs for useful traits (e.g. high yield in weather extremities, novel fruit color and shape) is reasonable; these characteristics can possibly be utilized by future breeding efforts.