IDENTIFICATION OF LOCAL TOMATO VARIETIES (*SOLANUM LYCOPERSICUM*) WITH GENETIC RESISTANCE TO RADIAL CRACKING

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Abstract

The study was conducted in 2023, with the main objective of evaluating the resistance to radial cracking of fruits of 44 tomato landraces from 5 countries. 15 of these landracess come from different geographical regions of Romania, particularly Transylvania. This phenomenon is caused by alternating climatic conditions between drought and heavy rains, and it is quite a common problem for this crop. The landraces were studied in the experimental field of UASVM Cluj-Napoca, and the applied technology was ecological. The evaluation of tomato cracking resistance was performed by determining the frequency of cracked fruits, the intensity of cracking, and the degree of cracking coverage (following the model used in phytopathology). The Kruskal-Wallis test and the Dunn post-hoc test were used for statistical analysis. The Bonferroni correction was applied for the adjustment of multiple comparisons. The results highlighted significant differences between landraces in terms of cracking resistance. Among the 44 landraces, five cherry landraces (520 CDN, 525 CDN, 503 USA, 533 PL, and 509 CDN) did not show any radial cracking on the fruits. Nine normal-sized tomato landraces - 532 DJ, 515 CDN, 516 CDN, 519 CDN, 542 MS, 541 DJ, 526 CDN, 524 CDN, and 527 CDN - exhibited very high resistance to cracking. Conversely, 29 landraces were found to be highly sensitive to this phenomenon, with p-values below 0.0011628, indicating very low genetic resistance. The crack-resistant cultivars can be used directly in organic farming or can serve as the genetic basis for the creation of new tomato varieties, in the context of climate change and the need to optimize the use of fresh water resources.

Key words: tomatoes, radial cracking, genetic resistance, landraces, climate change