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MOLECULAR DIAGNOSIS OF PHYTOPLASMA IN THE WILD TOMATO SPECIES *SOLANUM HABROCHAITES*

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Phytoplasmas are microorganisms without a cell wall that colonize the phloem of many crops. Diseases of plants caused by phytoplasma lead to decreased yields. In the Republic of Moldova, phytoplasma mainly affects tomato and grapevine. Phytoplasmosis of local tomato is associated with the presence of the pathogen '*Candidatus* Phytoplasma solani'. The infection causes dwarfism of the plants, the sepals are completely joined, the petals are green, the flowers are often sterile, and the fruits, if formed, are small. All this leads to a decrease in agricultural production up to 70-100%.

The aim of the research was to test the presence of '*Ca.* P. solani' in the wild tomato *Solanum habrochaites*. Molecular diagnosis of this pathogen was made during two years, 2019 and 2020. The determination of phytoplasma was carried out on 10 individual plants in both years. In 2019, the analysis of the presence of phytoplasma was made during the entire vegetation season: in July, August and September. In 2020, this research was realized in August and September. DNA was isolated using express method by boiling of thin sections of tomato peduncles in alkaline solution. Nested-PCR analysis was made using specific to '*Ca.* P. solani' chaperonine primers. Molecular diagnosis of plants of the wild tomato species *Solanum habrochaites* did not reveal the presence of the '*Ca.* P. solani' during both growing seasons of the study: neither in 2019 nor in 2020. This result in the lack of '*Ca.* P. solani' in the plants of the wild species in conditions of both years allowed to assume the high resistance of *Solanum habrochaites*. To evidence this, it was necessary, firstly, to confirm the presence of '*Ca.* P. solani' in the tomato field and, secondly, to compare data obtained on the wild species *Solanum habrochaites* with the results of the diagnostics of phytoplasma spread in plants of the species *Solanum lycopersicum*. So, plants of four local varieties of *Solanum lycopersicum* were analyzed at the end of the growing seasons (mid-September) of 2019 and 2020. The scheme of molecular procedures was the same as for the wild species. It was found that the total proportion of plants affected by phytoplasma in the four tomato varieties in 2019 was significant and reached 69.6%. On the contrary, the percentage of infected plants of these four varieties of tomato in 2020 was lower, amounting to only 14.5% at the end of the growing season. Thus, a different level of phytoplasma distribution was registered in *Solanum lycopersicum* plants in 2019 and 2020. Plants of *Solanum habrochaites* were resistant to phytoplasma in both years of the study, manifesting the absence of the infection. Resistance of this wild species to '*Ca.* P. solani' may be due to some morpho-physiological characteristics. First of all, a dense pubescence of stems and leaves of *Solanum habrochaites* is a mechanical barrier for insect vectors. In addition, the eventual production of plant-specific repellents could prevent the infestation through insects. Therefore, *Solanum habrochaites* can be used by breeders for comparative evaluation and creation of tomato varieties and hybrids resistant to phytoplasma.

Keywords: *Solanum habrochaites,* pathogen, Nested-PCR analysis, varieties.