



Detection and Identification of Tomato Brown Rugose Fruit Virus In Commercial Tomato Varieties In Palestine, And Assess Their Tolerance Using Next Generation Sequencing Technology (NGS)

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Tomato, a top cash crop, is infected by a number of viruses that cause drastic yield losses. Recently an unusual viral syndrome that resembled somewhat that induced by tobacco mosaic virus has been observed in Northern Palestine. A study aimed at revealing the cause of the disease, identified the presence of an apparently undescribed tobamovirus. The virus genome was entirely sequenced and shown to be composed of 6391 nucleotides. Sequence analysis indicated that this virus was an isolation of tomato brown rugose fruit virus (TBRFV). This is the first time TBRFV was detected in Palestine on tomatoes and the name tomato brown rugose fruit virus-Palestinian isolate (TBRFV-Ps) is suggested. Molecular tools were developed for specific detection of the virus. Moreover, 15 different commercial tomato varieties have been selected which are commonly cultivated by the Tomato farmers to be assessed for their tolerance to TBRFV infection using NGS technology. The cultivated plants were inoculated with TBRFV and the typical viral symptoms had appeared on the different varieties. The plant samples were collected at different times of the growing period to assess and quantify the viral infection. The NGS sequence data was transformed into actual viral load for each individually analyzed sample. The results of the NGS analysis indicated that 8 varieties reflect the case of tolerant plants. Based on our results, NGS technology is considered the most sensitive and new comprehensive approach for diagnosis of plant viruses.

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