EFFECT OF *MI* GENE AND NEMATODE RESISTANCE ON TOMATO GENOTYPES USING MOLECULAR AND SCREENING ASSAY

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The Mi gene is known to involve in the resistance response to some Root knot nematodes, Meloidogyne spp. in tomato plants Lycopersicon esculentum. Root knot nematodes cause significant damages to almost all crops in the world. Among Meloidogyne species, Meloidogyne incognita is one of the most damages species causing a vast amount of crop loss including tomato plants. The resistance gene may be found in some tomato genotypes or cultivars. Determining the resistance gene, Mi, in tomato cultivars is very important to control root knot nematodes. For this purpose, this study was conducted in 99 tomato genotypes that were screened for resistance against Meloidogyne incognita in molecular and screening assays. Results revealed that Mi gene was only determined in one genotype (Tom113). The result of the screening assay indicated that one of the genotypes (Tom113) showed an immune reaction against the nematode; two genotypes (Tom146, Tom141) were found intermediate; 17 genotypes moderately susceptible, 43 genotypes susceptible and 36 genotypes found highly susceptible. Results of the screening assay confirmed the presence of Mi gene in a tomato genotype, which accompanied with a decreased ability for the nematode in causing the infection. Immune and some promising genotypes are thought as important genetic tools for breeding studies for future works.

Key words: *Mi* gene, tomato genotype, *Meloidogyne incognita*.

ВИВЧЕННЯ ВПЛИВУ ГЕНУ *MI* ТА СТІЙКОСТІ ДО НЕМАТОД НА ГЕНОТИПИ ПОМІДОРІВ ЗА ДОПОМОГОЮ МОЛЕКУЛЯРНИХ ТА СКРИНІНГОВИХ ДОСЛІДЖЕНЬ

Відомо, що ген *Mi* бере участь у захисній реакції до деяких нематод кореневої гнилі, *Meloidogyne* spp. у рослин помідорів *Lycopersicon esculentum*. Нематоди кореневої гнилі спричиняють значну шкоду майже всім рослинам світу. Серед виду *Meloidogyne*, *Meloidogyne incognita* є одним з найбільше вражених видів, що викликає великі втрати рослин, включаючи рослини помідорів. Ген стійкості можна знайти в деяких генотипах або сортах помідорів. Визначення гену стійкості, *Mi*, у сортах помідорів є дуже важливим для контролю нематод кореневої гнилі. З цією метою проводили дослідження 99 генотипів помідорів, які за допомогою молекулярного та скринінгового дослідження перевірили на стійкість до *Meloidogyne incognita*. Результати продемонстрували, що ген *Mi* був визначений лише в одному генотипі (Tom113). Результат скринінгового дослідження вказав на те, що один з генотипів (Tom113) продемонстрував імунну реакцію до нематоди; два генотипи (Tom146, Tom141) були визначені як проміжні; 17 генотипів – дещо чутливі, 43 генотипи – чутливі і 36 генотипів були визначені як високочутливі. Результати скринінгового дослідження підтвердили присутність гену *Mi* у генотипі помідорів, яка супроводжувалась зниженою здатністю нематоди спричиняти інфікування. Вважається, що нечутливі та інші перспективні генотипи є важливими генетичними інструментами для селекційних досліджень у майбутніх роботах.

Ключові слова: *Mi* ген, генотип помідора, *Meloidogyne incognita*.

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