ABSTRACT

Twenty-four soil samples collected from growing fields in 6 northeast provinces namely Khon Kaen, Roi Et, Loei, Nong Bua Lam Phu, Udon Thani, and Ubon Ratchathani were potted and planted to tomato for multiplication of root-knot nematode (RKN) females. Initial identification of the nematode species by using perineal pattern morphology of adult females, found that there were two root-knot nematode species, *Meloidogyne javanica* (MJ) and *M. incognita* (MI). In 13 soil samples the two nematode species were present in mixed populations, in which population of MI was predominant. From 11 soil samples containing single species, eight samples were MI and 3 samples were MJ. There were some degrees of variations in perineal pattern morphology of MI populations.

Eleven pure (single) populations of the two species were prepared with single egg-mass inoculations on tomato and identified with perineal patterns. The single populations: 8 populations of MI and 3 populations of MJ, were reproduced on tomato for differential host test and molecular identification. Eight plant varieties, namely tobacco cv. Burley Ky14, cotton cv. Deltapine, pepper cv. KKU and cv. Yellow Star 1500, watermelon cv. Ban Phai 999, peanut cv. KK4 and cv. Tainan 9 and tomato cv. Sida were selected for evaluation of root galling responses to nematode populations, compared with North Carolina differential host standard. The three populations of MJ (KK 101S, Lo 101S and RE 205S) and 3 populations of MI (RE204S, RE302S and KK201S) resulted in similar responds as North Carolina differential host test, whereas 5 populations of MI (NB102S-1, NB102S-2, RE203S-1, RE203S-2 and RE203S-3) differed on pepper responses (negative). The three population of MI with positive responses on pepper were separated into 2 races: population RE302S and KK201S were race 2 and population RE204S was race 4.
Single juveniles (stage 2) and adult females of 8 single populations of MI and 3 single populations of MJ were used for DNA identification. The random amplified polymorphic DNA-PCR (RAPD-PCR) using primer OPA-01 was performed for DNA fingerprint. DNA fingerprints from single juveniles of 3 populations of MJ were identical, and different from those of 8 populations of MI. Those of MI were also separated into 2 subgroups, corresponding to 2 subgroups producing different responses on pepper varieties of differential host test. In this study RAPD-PCR with primer OPA-01 could be used to differentiate root-knot nematode species, but not races.