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Non-chemical control of phytonematodes, root knot nematodes by soil organic amendments in pomegranate orchards

Root-knot nematodes (RKNs), *Meloidogyne* spp. are well-known plant parasitic nematodes in the globe, with a very broad host ranges including pomegranate, ⁋ *Punica granatum* L. In this research, the suppressing potential and growth and productivity parameters effects of organic fertilizers, including undecomposed poultry (UDP) and farm manures (cow manure) (UFM), at the rate of 20 and 40 t/ha; compost 40 and 60 t/ha; a bio-fertilizer, marigold 300g/m2 and a nematicide, Rugby (Cadusafos) 15 g/m2 was investigated on pomegranate trees in the naturally infected orchards to *Meloidogyne* spp. (*M. javanica* and *M. incognita* R2). To determine the effect of implicated manures on nematode parameters including infection rates of the soil to second-stage juveniles (J2) and the roots to eggs and second-stage juveniles (ESJ2), number of egg masses (EMs) and galls (Gs) were compared before and after the soil application of the treatments. The growth and productivity parameters effects of the various treatments were analyzed on the shoot fresh and dry weight, stem length, leaf number, weight of total number of fruits and five pomegranate fruits. The results revealed, UDF 40 t/ha decreased the number of J2 in the soil by 95.2%, followed by Marigold 95.9%, Rugby 90.3%, UDP 40, and 20 t/ha by 82.3% and 81.4%. Whereas, in the root, UDP 40 ton/ha reduced the number of ESJ2 by 95.2%, Marigold 94.2%, Rugby 89.6% and UDP 40 and 20 t/ha by 77.8% and 72.6%. In the case of gall index, UDP 40 t/ha had the highest reduction 85.32%, followed by Rugby 76.2% and UDP 20 t/ha 74.2%. In the EM index, the highest reduction was in Marigold 91.0%, followed by compost 60 and 40 t/ha with 65.2% and 51.5. The growth and productivity parameters of the treated pomegranate trees were also affected increasingly in comparison to untreated controls accordingly. It can be concluded that replacing chemical nematicides with organic fertilizers may be considered as a successful RKNs management in pomegranate orchards.

Biography

Mehdi Nasr-Esfahani, Bsc, Msc and phd. Molecular Plant Pathology and Biotechnology; Associate Professor, He has published more than 50 papers in reputed journals and has been serving as Deputy Director of Iranian Phytopathology Society (IPS) and Executive Board (Foreign affair), and also as an International Phytopathology Society(ISPP)Councilor.

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