

Introduction of a New and Efficient Nematicide, Abamectin by Gyah Corporation, Iran, for Root-knot Nematodes Management Planning Programs

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Abstract : Plant-parasitic nematodes cause serious diseases on plants and effectively reduce food production in quality and quantity worldwide, with at least 17 nematode species in the three important and major genera, including Meloidogyne, Heterodera, and Pratylenchus. Root-knot nematodes (RKN), Meloidogyne spp. with the dominant species, Meloidogyne javanica, are considered as the important plant pathogens of agricultural products globally. The hosts range can be vegetables, bedding plants, grasses, shrubs, numerous weeds, and trees, including forests. In this study, chemical management was carried out on RKN, M. javanica, to investigate the efficacy of Iranian Abamectin insecticide product [acaricide Abamectin (Vermectin® 2% EC, Gyah Corp., Iran)] versus imported normal Abamectin available in the Iran markets [acaricide Abamectin (Vermectin® 1.8% EC, Cropstar Chemical Industry Co., Ltd.)] each of which at the rate of 8 L./ha, on Tomatoes, Solanum lycopersicum L., (No. 29-41, Dutch company Siemens) as a test plant, and the controls (infested to RKN and without any chemical pesticides treatments); and (sterile soil without any RKN and chemical pesticides treatments) at the greenhouse in Isfahan, Iran. The trails were repeated thrice. The results indicated a highly significant reduction in RKN population and an increase in biomass parameters at 1% level of significance, respectively. Relatively similar results were obtained in all the three experiments conducted on tomato root-knot nematodes. The treatments of Gyah-Abamectin (51.6%) and external Abamectin (40.4%) had the highest to least effect on reducing the number of larvae in the soil compared to the infected controls, respectively. Gyah-Abamectin by 44.1% and then external one by 31.9% had the highest effect on reducing the number of larvae and eggs in the root and 31.4% and 24.1% reduction in the number of galls compared to the infected controls, respectively. Based on priority, Gyah-Abamectin (47.4 %) and external Abamectin (31.1 %) treatments had the highest effect on reducing the number of egg-masses in the root compared to the infected controls, with no significant difference between Gyah-Abamectin and external Abamectin. The highest reproduction of larvae and egg in the root was observed in the infected controls (75.5%) and the lowest in the healthy controls (0.0%). The highest reduction in the larval and egg reproduction in the roots compared to the infected controls was observed in Gyah-Abamectin and the lowest in the external one. Based on preference, Gyah-Abamectin (37.6%) and external Abamectin (26.9%) had the highest effect on the reduction of the larvae and egg reproduction in the root compared to the infected controls, respectively. Regarding growth parameters factors, the lowest stem length was observed in external Abamectin (51.9 cm), with no significantly different from Gyah-Abamectin and healthy controls. The highest root fresh weight was recorded in the infected controls (19.81 gr.) and the lowest in the healthy ones (9.81 gr.); the highest root length in the healthy controls (22.4 cm), and the lowest in the infected controls and external Abamectin (12.6 and 11.9 cm), respectively. Conclusively, the results of these three tests on tomato plants revealed that Gyah-Abamectin 2% compared to external Abamectin 1.8% is competitive in the chemical management of the root nematodes of these types of products and is a suitable alternative in this regard.

Keywords : solanum lycopersicum, vermectin, biomass, tomato

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