



Research Highlight

POTASSIUM SILICATE: A BETTER APPROACH TO FIGHT ROOT-KNOT NEMATODE (*MELOIDOGYNE INCOGNITA*)

Sabeen Saher

Department of Chemistry,
University of Agriculture, Faisalabad, Pakistan

Root-knot nematodes (*Meloidogyne* spp.) are considered as one of the most extensive and devastating agricultural pests all around the globe causing an estimated US \$100 billion loss/year worldwide¹.

Root-knot nematodes are widely distributed in the cultivated regions of Egypt, which causes significant loss and reduces the yield of crop. During the last 2 decades, nematode control was dependant mostly on the application of nematicides, but the use of nematicides deteriorates the quality of the crop as it leaves toxic residues on the crop plant. Use of chemicals is not eco-friendly because it causes hazardous effects on human health and the environment.

Therefore, the effective and eco-friendly management strategies to control this pathogen are sorely needed. In this regard, potassium silicate is a good option. It is a source of highly soluble potassium and silicon and employed in agricultural production systems, chiefly as a silica adjustment and has the added advantage of supplying little amounts of potassium. Moreover, it lessens the levels of *Tylenchulus semipenetrans* in soil².

Potassium silicate can be used as an alternative tool for pesticides because of their eco-friendly nature and no carcinogenicity,

mutagenicity or developmental toxicity data are reported for potassium silicate³.

Therefore, scientists conducted a new research in order to investigate the effect of potassium silicate application in comparison with oxamyl on *M. incognita* infecting cucumber under greenhouse conditions.

This study revealed that all tested methods and times of adding potassium silicate obviously improved plant growth parameters and reduced nematode criteria as well. Among tested applications, foliar spraying of potassium silicate once on the cucumber plant infected with *M. incognita* after 7 days of its inoculation overwhelmed other methods and times of application in the increment values of plant length, total plant fresh weight, shoot dry weight and number of leaves/plant, respectively. Other applications in suppressing nematode parameters were studied since its values were amounted to 0.2 for rate of reproduction, final population density, number of galls as well as egg masses even that of oxamyl values comparing to the check.

Conclusively, potassium silicate plays a key role in the management of plant parasitic nematode *M. incognita* and also improves the growth parameters of crop plant as compared to nematicide oxamyl.

Key words:

Root-knot nematodes Meloidogyne species

oxamyl values Tylenchulus semipenetrans

inoculation environment pollution

potassium silicate

REFERENCES

1. Oka, Y., S. Nacar, E. Putievsky, U. Ravid, Z. Yaniv and Y. Spiegel, 2000. Nematicidal activity of essential oils and their components against the root-knot nematode. *Phytopathology*, 90: 710-715
2. Walker, G.E. and B.G. Morey, 1999. Effects of chemicals and microbial antagonists on nematodes and fungal pathogens of citrus roots. *Anim. Prod. Sci.*, 39: 629-637
3. El-Sherif, A.G., S.B. Gad and S.M. Sadoon, 2016. Impact of potassium silicate application on *Meloidogyne incognita* infecting cucumber plant under greenhouse conditions. *Asian J. Nematol.*, 5: 1-7