Nematodes asbioindicators of soil pollution with heavy metals

H. Karimipour-Fard

Assistant Professor, Plant Protection Research Department, Kohgiluyeh and Boyerahmad Agricultural and Natural Resources Research, Education, and Extension Organization (AREEO), Yasouj, Iran. karimipourfard@yahoo.com

Received: July 2017, and Accepted: January 2018

Abstract

The abundance of nematodes in different ecosystems makes them a most desirable agent for monitoring environmental pollution. They are, indeed, considered as the most promising candidates for bioindication of soil disturbances such as heavy metals pollution in the soil. Studies of the effects of such heavy metals as lead, cadmium, chromium, copper, nickel, zinc, and selenium on different nematode genera in different trophic groups using diversity analysis and nematode assemblage indices have shown considerable changes in the populations of certain genera of nematodes with increasing concentration of each specific metal. Despite the unique characteristics of nematodes in monitoring soil pollution, it is difficult to generalize the effects of toxic metal pollutants on nematode assemblages in soil as the outcome of such analyses largely vary with ecosystem, spatial scale, and such local characteristics as pH, vegetative cover, and the composition of indigenous nematode fauna present in the soil. In the evaluation of nematode community indices, it is, therefore, preferable to remove the genera that lead to ambiguity in predictions and to restrict the indices only to those belonging to known genera with already established sensitivity or response to specific types of disturbance. Thus, population index analyses will not only yield better predictions but will also be more cost-effective. Examples of practical and commercial applications of nematode assemblage analysis in other countries for monitoring chemical pollution in aquatic habitats are available that can be usefully exploited toward applied research to overcome the present limitations in using nematodes for monitoring soil heavy metal pollution in Iran.

Keywords: Nematode assemblage, Environment, Biomonitoring, Heavy metals.

1 - Corresponding author: Research Department, Kohgiluyeh and Boyerahmad Agricultural and Natural Resources Research, Education, and Extension Organization (AREEO), Yasouj, Iran.