Nematodes asbioindicators of soil pollutionwith heavy metals

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Abstract

The abundance ofnematodes in different ecosystems makes thema most desirable agentfor monitoringenvironmental pollution. They are,indeed, considered as the most promising candidates for bioindication of soil disturbances such as heavy metals pollution in the soil. Studies ofthe effects of such heavy metals as lead, cadmium, chromium, copper, nickel, zinc, and selenium on different nematode generain different trophic groups usingdiversityanalysis and nematode assemblage indices have shownconsiderable changes in the populations of certain genera of nematodeswith increasing concentration of each specificmetal. Despite theunique characteristics of nematodesinmonitoring soil pollution, it is difficult to generalize the effects of toxic metal pollutants on nematode assemblages in soil asthe outcome of such analyseslargely vary with ecosystem, spatial scale,andsuchlocal 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 toremove the genera that lead to ambiguity in predictions and to restrictthe indices only to those belonging to known genera with already establishedsensitivity 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 ofnematode assemblage analysis in other countries formonitoring chemical pollution in aquatic habitats are available that can be usefully exploited toward applied researchto overcome the present limitations in using nematodes formonitoring soil heavy metal pollution in Iran.

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

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