

NEMATODE ECOLOGY AND SOIL HEALTH. Ferris, H. Department of Entomology and Nematology, University of California, Davis, CA 95616, USA. A healthy soil provides desired ecosystem services. It has interacting physical, chemical and biological components. The productivity of systems often has been developed through focus management of chemical and physical components with minimal consideration of the biological component, which has resulted in unhealthy soils. Once conditions are such that a desired function is not performed by any of the contributing species, the soil is no longer healthy relative to that function. Biodiversity increases the amplitude of each function and consequently the health of the soil. Nematodes are both direct contributors and indicators of the contributions of other organisms to soil health. Nematode assemblages indicate three attributes of the biological component of the soil: the nature of ecosystem services available (faunal analysis); the magnitude of the services (metabolic footprints); and the complementarity of services across microhabitats (functional diversity). Functional guilds are comprised of species that contribute similarly to an ecosystem service. For example, nematodes in decomposition food web channels can be assigned to functional guilds based on the nature of their prey (bacteria or fungi) and life course characteristics. Their species diversity can be partitioned into the diversity of guilds and within-guild diversity. Diversity of guilds provides a measure of continuity of ecological services as conditions change; within-guild species diversity ensures that the service is provided across differences in the physical and chemical nature of the habitat. Current and anticipated advances in molecular techniques for determination of nematode abundance, diversity and function will facilitate application of bioindicator-based measures of soil health.

Journal of Nematology 46:162.