Factors influencing the occurrence of entomopathogenic nematodes in the Central Rift Valley Region of Kenya

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Abstract

A survey for entomopathogenic nematodes in the central Rift valley region of Kenya was conducted at altitudes between 1800 and 3000 m above sea level and from croplands and noncropland habitats. The sampling depth was 0–30 cm. GPS (global positioning system) was used to measure site positions. One hundred and twelve soil samples were collected and entomopathogenic nematodes trapped through Galleria mellonella. Entomopathogenic nematode presence was demonstrated by G. mellonella mortality and viable ones bulked through the same host. Nematode recoveries from two consecutive extractions were 30% per extraction and 52% for cumulative extractions. Recoveries from agro ecological zones ranged between 18% and 71%. Recovery frequency was higher from disturbed cropland habitats than the stable nonstop habitats. Steinernema species were more frequent than Heterorhabditis (9 : 1). Nematode occurrence clustered at 2– 3% carbon and pH 5.3–6.3 with no specific pattern demonstrated from soil types. Nematode species of the two genera from high altitudes lost their culturing ability within 1 month of isolation. There was a tendency for recovering both nematode genera at the shores of water bodies. This is the first report of Steinernema yirgalemense and S. weiseri in Kenya and of S. karii in the central Rift valley region. The Heterorhabditis species has not been confirmed yet. This has widened the genetic base of entomopathogenic nematodes from Kenya. The entomopathogenic nematodes are available for development as biological control agents of athropod pests.