

Population Dynamics and Infestation Level of Root Knot Nematodes in Rainfed Upland and Irrigated Lowland Rice Cropping Systems in Kenya

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ABSTRACT

Hydrological conditions are among the key factors that influence the population dynamics and infestation level of root knot nematodes (RKN) in rice cropping systems. This study evaluated the effect of water regimes on RKN abundance and damage in irrigated lowland (IR) and upland rainfed (UP) fields in Kenya. Soil and plant samples were collected from rice fields in Ombeyi, Kakola, Nyangati, Kombura, Thiba, Kirogo and Mwambe Sub-locations for determination of galling index (using 1-9 scale) and RKN population densities. Differences in RKN abundance, galling severity, in IR and UP fields were determined using analysis of variance. Pearson correlation coefficient was used to assess the relationship between RKN, climate, and soil properties. There was a significant difference in the galling severity ($P \leq 0.001$), number of RKN juveniles in roots and soil ($P \leq 0.05$), between fields in UP regions and similarly between fields in IR regions. Galling index was greater in rice plants collected from UP fields. RKN showed a negative correlation with sand in both UP and IR regions. Nematode abundance was negatively correlated to rainfall and temperature in IR fields and a positive correlation was recorded in UP fields. This study provides the current status of RKN abundance and their damage level in Kenyan rice ecosystems. This information will be useful in implementation of integrated nematode management programmes in Kenyan rice ecosystems.

Keywords: RKN, *Meloidogyne*, *Oryza sativa*