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The response of earthworms towards a flood event in the home garden agroecosystems of an industrial region in Kerala, India

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Abstract

The response of earthworm community towards a flash flood event in the tropical home garden agroecosystems of an industrial area was assessed in this study. Soil samples and earthworms were collected from twenty-five home gardens from three zones of an industrial region Eloor, Kerala, India during summer, post flood and monsoon seasons of 2018. The juvenile and adult earthworm abundance were assessed to determine the population structure and the population reestablishment after floods. The soil properties and nutrients were also assessed. Earthworm abundance showed higher values in North-East monsoon than summer and was very low immediately after flood. The lower abundance of earthworms in Zone 1 than Zone 2 and Zone 3 points to the reduced soil quality of soils near industrial areas, that can be seen from the soil nutrient results. The earthworm population which was low immediately following flash flood showed an increase after three months following flood with higher juvenile adult ratio which was a positive sign of population reestablishment. Eventhough no significant correlation among the soil nutrients and earthworm abundance was noted, the study points out to the negative effect of a natural flood event on soil invertebrate fauna and its immediate resilience ability following the disaster. It also points out to the varied resilience of various zones of an industrial area based on the soil properties and proximity towards the industrial area. In short the study points out to the role that can be played by earthworm population in disaster management related to industrial soil ecosystems.

Keywords: Abundance, agroecosystems, earthworms, flood, home gardens