

ABSTRACT

Epidemic of Cashew Fusarium wilt disease (CFWD) has been a continuous focal challenge in the cashew farming, in Tanzania. Limited to edaphic conditions as a major factor in its epidemic, the current study aimed to assess the habitat-disease relationship. Purposive surveys involving assessment of disease prevalence and habitat compositions were conducted across four landscapes of southeastern zone from 2019 to 2023. Findings revealed a widespread of CFWD across diversified landscapes possessing varying habitat characteristics, mainly cultivated land with mature cashew, brownish sand loamy soils, grassland or shrub vegetation, seasonal river streamlines and natural water wells. The highest disease incidence and severity were noted at Nachingwea/Masasi plain (99.28:88.34%) followed by Liwale inland plain (98.64:89.3%), Coastal zone (72.72:59.83%) and Tunduru dissected plain (62.13:54.54%). The habitat characteristics were strongly similar within the landscape (0.86-Jaccard index) except between villages of the coastal zone (0.71-Jaccard index). Across landscapes, Nachingwea/Masasi plains and the Coastal zone were strongly similar to Tunduru dissected plain (0.63—1.0-Jaccard index), but strongly dissimilar with the Liwale inland plain (0.67—0.70- Jaccard distance). Furthermore, the presence of greater than 0.5 suitability indices across landscapes were revealed, with Liwale inland plain having strongest suitability index of 0.743 followed by Coastal zone (0.681), Tunduru dissected plain (0.617) and Nachingwea/Masasi plain. Significantly, the habitats had an increase of 0.1 suitability index, and positively correlated with disease prevalence by triggering disease incidence of 13.9% and severity of 31.4%. The study for the first time revealed the presence of an association between disease prevalence and landscape habitat characteristics of southeastern, Tanzania; paving the way to inclusive thinking of habitat as one of the drivers in the prevalence of fusarium wilt disease of cashews. Further research on the genetic coevolution of *Fusarium oxysporum* across landscapes to strengthen disease risk management in the cashew industry is recommended.