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Patrón Espacio-Temporal del Amarillamiento Letal en Cocotero (Cocos nucifera L.) en
Yucatán, México

Abstract

A study on temporal-space pattern of coconut lethal yellowing (LY) was carried out in Sisal, Yucatan, Mexico, with the objective to provide basis for eradication of diseased palms. A block of 400 palms (20 x 20) from a plantation of Cocos nucifera was selected for monthly inspection of disease incidence and severity of LY from July 1999 through June 2000. In addition, data collected in 1992 from 35 plots (10 x 10 palms each) along a transect of 147 km from Santa Clara to Celestun in the Yucatan Coast was analyzed. Disease severity was measured by visual symptoms according to McCoys scale, while the spatial pattern was analyzed monthly by geostatistical maps and aggregation index (Morisitas and Lloyds). Optimal quadrat size was determined by the Greig-Smiths method. The presence of LY phytoplasma and the planthopper vector (Myndus crudus) was confirmed by polimerase chain reaction (PCR) and trapping, respectively. Geostatistical maps showed random spatial pattern of diseaded palms when disease incidence was below 35%, but an aggregated pattern was revealed when LY was > 35.9%. However agregation index revealed a random spatial pattern regardless of the percentage of disease incidence. Disease progress was exponential with an increment of 22% through the year. The apparent infection rate was 0.077 log units month-1 (r2 = 0.93). In the coastal transect, the spatial pattern of diseased palms varied; eleven plots had palms in aggregated pattern, 21 with a uniform pattern, and only 3 with a random pattern. These results suggest eradication of individual diseased palms when detection is carried out at the beginning of the epidemic, and when there is not an indication of clustering.