A Note on the Heavy Metal Status of Coconut Growing Soils of Kerala

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Root (wilt) disease of coconut has been implicated, among others, to the nutrient imbalances, specially of heavy metals *viz*, Zn, Mn and Mo (Kamala Devi *et al.* 1981). Biddappa and Robert Cecil (1984) have demonstrated the presence of high concentration of certain heavy metals in the cabbage and root tissues of diseased palms. In view of this the heavy metal status of the soils of Kerala was investigated for better understanding of the disease in relation to heavy metal composition of the soils.

Soil samples at 0-50 and 50-100 cm were collected from forty locations in the diseased area and twenty locations in healthy area representing laterite (gravelly sandy clay loam), alluvial (sandy clay loam) and sandy soils. The samples were processed and extracted with 0.005M DTPA (pH 7.3) (Lindsay & Norvell 1978) and 0.1 N HNO_3 (Silviera & Sommers 1977) separately. The heavy metal content in the extract was estimated by employing a flameless atomic absorption spectrophotometer.

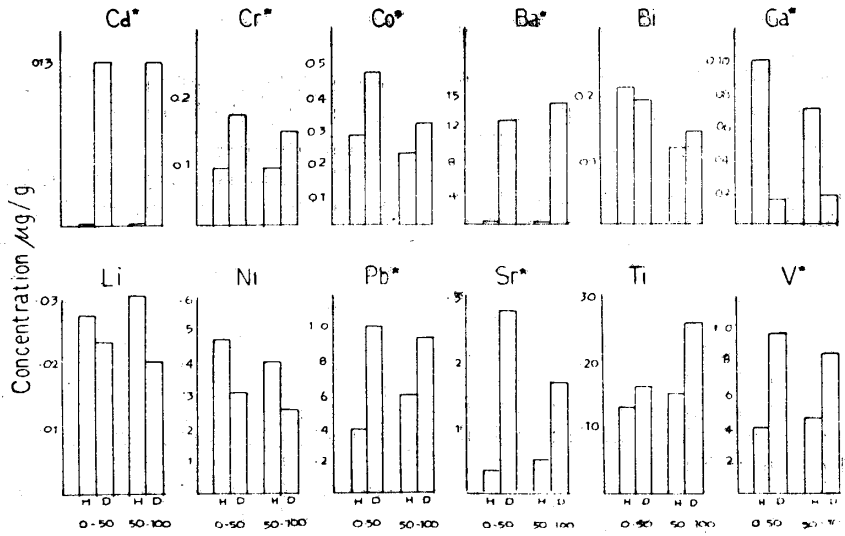

Fig. 1. DTPA extractable heavy metals in coconut growing soil
*Significant difference between diseased (D) and healthy (H) spots

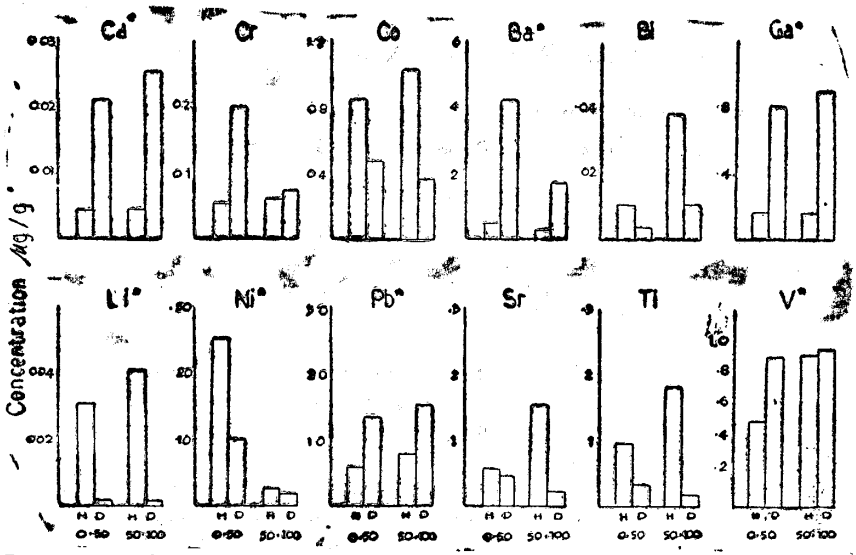

Fig. 2. 0.1N HNO_3 extractable heavy metals in coconut growing soils
*Significant difference between diseased (D) and healthy (H) spots

DTPA extractable Cd, Cr, Co, Ba, Pb, Sr and V were significantly higher in soils under deseased palms, in both the depths irrespective of soil types (Fig. 1). However, Ga, Bi, Li and Ni were higher in soils collected from healthy coconut palm basins.

Figure 2 shows that 0.1 N HNO_3 extractable Cd, Ba, Ga, Pb and V were significantly higher in diseased soils compared to healthy ones. On the other hand, the contents of Co, Li, Bi and Ni were higher in soils in healthy areas. The Cr content was slightly higher in the diseased than in the healthy palm basins.

In general, the higher contents of extractable Ba, Cr, Ga, Pb and Sr in the soils of diseased area than in healthy places might be the likely cause of physiological disorders in coconut on the former soils.

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