Effect of micro-nutrients and common salt on the performance of rapid decline affected coconut (*Cocos nucifera* L.) palms

D M D I Wijebandara* and C S Ranasinghe
Coconut Research Institute, Lunuwila, 61150

Coconut rapid decline (CRD) is a serious disorder of coconut palms (*Cocos nucifera* L.) in Sri Lanka. A substantial loss of crop is well evident due to this disorder. This study aims to determine the effect of micro-nutrients and common salt on the performance of CRD-affected palms. Fifteen-years-old, CRD affected palms in Markadura Seed Garden (MSG) of Coconut Research Institute were used for the study. Affected palms were treated with the micro-nutrients (0.35% $CuSO_4.5H_2O$ and 0.72% $ZnSO_4.H_2O$ solution/palm, root feeding at bi-monthly intervals) or common salt (1 kg/palm/year, surface application in the manure circle). Untreated affected palms were used as the control. Leaf nutrient levels before and one year after treatment application were analyzed. Vegetative parameters were measured one year after treatment application.

Pre-treated analysis of leaves revealed that N (1.9-2.1%) and P (0.11 - 0.13%) contents of CRD-affected palms were within the sufficiency range. Mg (< 0.25 - 0.35%), Ca (<0.35 - 0.5 %), Na (< 0.4% -), Cu (< 5 ppm-) and Zn (< 30 ppm-) contents of those palms were below the sufficiency range. The macro and micro-nutrient contents (except Mg) of apparently healthy palms, adjacent to CRD-affected palms were within the sufficiency range for coconut. Therefore it is suggested that the CRD affected palms suffer from deficiency of Ca, Na, Cu and Zn. There was a significant difference in Fe content among three severity stages of CRD affected palms before initial treatment application. Fe concentration increased with increasing severity.

One year after treatment application, P and Ca contents significantly increased in treated palms compared to before treatment application and compared to control. However, N, K, Mg, Na, Fe, Mn, Cu and Zn contents were not increased. Whilst there was an increase in leaf Zn concentration of Cu / Zn treated palms after one year, the Cu content was not increased. However, the percentage of drooping fronds, size of the spadix, number of female flowers, number and size of coconuts and circumference of the trunk were not improved in treated palms compared to control, one year after initial treatment application. It can be concluded that there was a micro-nutrient deficiency in CRD-affected palms. One year after Cu, Zn and NaCl application, significant improvement in disorder condition was not observed. The experiment is in progress to observe the recovery symptoms.

* rescri@sri.lanka.net Tel: 031 2255300