B-76: An assessment of discriminative fertilizer application to mature rubber in relation to yield in Avissawella region

Lalani Samarappuli[1], E A J Rupasinghe[2]
(*[1]Rubber Research Institute (RRI) [2]Faculty of Agriculture, Univ. of Peradeniaya*)

Since 1980's foliar analysis, in conjunction with soil and other agronomic parameters, has been used extensively by the rubber industry in Sri Lanka as the basis for formulation of discriminatory fertilizer recommendations for

mature rubber. Yet, a field assessment has not been done to evaluate the impact of soil and foliar survey based discriminative fertilizer recommendations on the performance of rubber in relation to latex yield.

This study investigates the long-term impact of soil and foliar survey technique on productivity in relation to clone type management practices, physiographic and climatic conditions of Avissawella region.

Avissawella region is one of the main rubber growing areas in Sri Lanka, which accounts for 21% (34,000 ha) of the total extent and are located in the lowland wet zone of South West Sri Lanka. Four rubber estates from Avissawella region were selected for this study on the basis of the divisions having 3 or more data sets (survey records). Similarly the fields (within each selected division) were also selected on the same basis.

Soil and leaf nutrient data available at the Soils and Plant Nutrition Department, RRI, since 1973 were used for this study. Field visits were made to collect information i.e. yield, slope, rockiness etc, with respect to individual fields. Additional information on leaf and soil nutrients, soil pH, organic C content, soil depth etc, from the selected fields as well as from a nearby forest area was also collected.

Leaf N and Mg contents for the last 15 years showed a negative trend with time. It was also observed that these trends were different for different clones *viz*. PB 86, RRIC 100 and RRIC 102. Leaf P and K contents of the last 15 years showed an increasing trend with time. These trends also were different for different clones. Lands with $<50\%$ and $>50\%$ slopes showed positive and negative gradients respectively, for leaf P content. Different slopes and land qualities showed different positive gradients for leaf K content.

Soil N, P, K and Mg contents of 4 different locations were in the ranges of 0.11 - 0.63%, 4-33 ppm, 4-109 ppm and 1-43 ppm, respectively. Slope class $<50\%$ showed higher soil N, P, K and Mg contents compared to slope class $>50\%$. Soil P and Mg were higher in $<25\%$ rockiness compared to $>25\%$. Soil N and P contents were greater in soils under rubber compared to a nearest forest soil. However, soil K, Mg, Ca and organic C were greater in forest soils compared to soils under rubber.

Yield data for the last 15 years showed an increase with time. Clone RRIC 102 showed a higher positive gradient of 27.91 compared to PB 86 which showed a positive gradient of 15.25.

Yield data of the last 15 years collected from the 4 locations in Avissawella region showed an increasing trend with time. This shows the appropriateness of the soil and foliar based fertilizer recommendations for mature rubber.

It is clear, that the soil and foliar survey based fertilizer recommendations could be further improved to give site specific recommendations according to the soil in the locality, clone, slope of the land, land quality and number of replanting cycles.