

**SITE SPECIFIC FERTILIZER  
RECOMMENDATION FOR TEA  
Case study: GLEN ALPIN ESTATE IN SRI  
LANKA**

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## ABSTRACT

Total tea production in 2011 declined marginally by 0.3% amounting to 328.6 million kg over 2010. Fertilizer and its application account for about 8-12% of the total cost of production in tea. One of the main reasons for the low productivity is poor soil nutrient management. However, there is a potential to maximize productivity through Site Specific Fertilizer Recommendation (SSFR). To apply SSFR information on plant nutrient reserves soil within the field is important. This study was conducted to propose a Site Specific Fertilizer Recommendation for No-16 field, Balagalle Division of, Glen Alpin Estate in Badulle. This was achieved by characterizing soil chemical properties in the given field, such as pH, EC, macro-nutrients (P, K, Mg and Ca) and micro-nutrients (Zn, Fe, Mn and Cu). The measured data were used to propose SSFR and also to propose a sampling scheme for future studies for the given site. Thirty soil samples were collected randomly and the following analysis were conducted at the CIC - Laboratory at Pelwehera, Dambulla. Electric conductivity was determined by using EC meter for a soil: water suspension of 1:5, soil pH was determined by using glass electrode method, exchangeable cations (K, Ca, Mg) were determined using Atomic Absorption Spectrophotometer (AAS). Extractable phosphorus was determined using BORAX method. Trace elements (Zn, Cu, Mn, Fe) were determined using DTPA (diethylenetriaminepentaacetic acid) with the AAS. The site specific recommendations of micro-nutrients were as 40.25 kg/ha/yr of  $P_2O_5$ , 244.65 kg/ha/yr of  $K_2O$  and 206.33 kg/ha/yr of Kieserite. The site specific recommendation of Zn was 21.75 kg/ha/yr of  $ZnSO_4$ . According to pH value the lime requirement was estimated as 1000 kg/ha/yr. The number of samples needed to estimate the mean with 95% probability level at  $\pm 5\%$  accuracy level for EC, pH, P, Ca, Mg, K, Fe, Mn, Zn and Cu were estimated as 15, 4, 9, 13, 11, 6, 6, 11, 12 and 9, respectively. SSFR optimizes crop yield and thereby increase profits while reducing the loss of nutrients to the environment.

Key words: macro and micronutrients, liming requirement, Atomic Absorption Spectrophotometer, BORAX method