

**PHOSPHORUS BEHAVIOR IN BORALU SERIES
SOIL OF RUBBER (*Hevea brasiliensis*)
PLANTATIONS**

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture
Uva Wellassa University

In partial fulfillment of the requirements for the award of
Bachelor of Science in Palm & Latex Technology and Value Addition

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2019**

ABSTRACT

Monoculture cropping system adopted for more than hundred years in rubber [*Hevea brasiliensis* (A. Juss.) Muell. Arg.] plantation with same agro-management practices has resulted in nutrient imbalance due to either depletion or accumulation of nutrients in soils. Phosphorus (P) is an essential macro nutrient for rubber plantations. This study was carried out to investigate the behavior of P in rubber plantations with respect to Boralu series soil of Sri Lanka. In most rubber growing soils P availability is very low and added P fertilizers become unavailable for the rubber plants due to strong fixation into Fe and Al oxide minerals prevalent in these soils. The study was carried out on Boralu series soils in Geekiyana kanda, Eladuwa, Raigama and Dartonfield estate in Kalutara district. Variation found in the fields was further confirmed by the chemical and physical analyses conducted in the laboratory. Thus, some important chemical analyses, for example, pH, CEC, organic carbon, available P and some important physical analyses such as moisture content and bulk density of soils were carried out. The 48 soil samples representing boralu series soil was evaluated and data were derived via descriptive analysis and a regression analysis.

According to results, a significant ($P < 0.05$) difference was observed between the inside and outside of manure circle for pH buffering capacity and organic carbon content whereas no significant ($P > 0.05$) difference between the inside and outside of manure circle could be observed for the moisture content, available P, bulk density and cation exchange capacity. There was a positive correlation between organic carbon and available phosphorus with $R^2 = 0.27$ by action of phosphorus solubilizing microbes. There was a negative correlation between the available P and bulk density with $R^2 = 0.25$. Results shows that available P content increase with soil organic matter.

Keywords: Available phosphorus, Boralu series soil, Bulk density, Organic carbon, pH