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Effects on Soil Nutrients from Intercropping of Immature Oil Palm (*Elaeis guineensis*) with Banana, Ginger and Turmeric in the Galle District, Sri Lanka

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Abstract

Oil palm (*Elaeis guineensis*) is identified as the world's leading edible oil producing plant and is well established as a perennial plantation crop in tropical countries. Oil palm has spread over 10,000 hectares in the wet zone of the Island. This crop is one of the most important economic and forth major plantation crops in Sri Lanka. Oil Palm is vertically growing perennial crop attains a height of about 20 to 30 meters with economic life of 35 years. It is planted on wider space and under good management it takes three years to utilize entire inter space. Since it is vertically growing perennial crop, there is ample scope for raising intercrops in oil palm plantations during the initial 3-4 years. In immature plantations, land productivity can be sustainably increased with some selected intercrops. Oil Palm is very much sensitive for chemical fertilizer and therefore it is essential periodic application of recommended dose. During intercrop, fertilizer need to be given to those intercrops also as per the recommendation of Department of Agriculture, Sri Lanka. A field experiment is being conducted at Thalgaswella estate (6° 24' 60" N, 80° 27' 44" E. 48 m above sea level, WL2a) in Galle district to investigate the suitability of different intercrops during the immature phase of oil palm. Banana, Ginger and Turmeric were selected as intercrops. The experiment was designed with Randomized Complete Block Design (RCBD) with four treatments, including three replicates and a control. Statistical package used is SAS software. Soil chemical parameters were measured annually for pH, Organic Carbon (OC), Phosphorus (P) and Potassium (K) by using page, A.L., 1982 method. There was a positive variance in soil K in the intercrop plots against the monocrop plots in the first year of this experiment. Intercropped Turmeric, Ginger and Banana has shown soil K 92 ppm, 85 ppm and 82 ppm respectively. Soil P has shown positive trend in intercrop plots against monocrop plots. Intercropped Turmeric, Ginger and Banana have shown soil P as 39 ppm, 35 ppm, 35 ppm respectively. Initial P values of Banana, Ginger and Turmeric intercropped plots were 28 ppm, 28 ppm and 35 ppm respectively. Initial K values of Banana, Ginger and Turmeric intercropped plots were 82 ppm, 83 ppm and 93 ppm respectively Soil pH and O.C are not showing any significant variances between pre-treatment and after one-year period of trial.

Keywords: Inter-cropping, Oil Palm, Policies, Mono-crop, Land productivity