Wutthikrai Pothiwan 2011: An Economic Analysis of Fertilizer Recommendation Based on Soil Analysis on Production of Sugarcane in Dry and Rainy Seasons in Kamphaeng Phet Soil Series. Master of Science (Soil Science), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Mr. Suphachai Amkha, Ph.D. 115 pages.

The effect of fertilizer recommendation based on soil chemical analysis on yield, quality, cost and benefit of sugarcane production were studied. To measure the efficiency of different factors including labors, fertilizers and machines that affect sugarcane production, Cobb-Douglas equation was used. Sugarcane LK 92-11variety was cultivated in dry season, While K 99-72 variety was cultivated in rainy season at Koaleaw district in Nakhon Sawan Province. Sugarcane was planted in Kamphaeng Phet soil series (Kp: Oxyaquic(Ultic) Haplustalfs). The target yield was set up at 25 ton per rai. The Randomized complete block design with four treatments of fertilizer applications were investigated; T1 = control (planted without fertilizer application), T2 = fertilizer was applied follow recommendation of the Department of Agriculture, T3, T4 and T5 = fertilizer application based on soil chemical analysis assuming efficiency of nitrogen fertilizer equal to 100, 50 and 25 % respectively.

The results showed that all chemical fertilizers management were significantly affected on millable cane yield both in dry season and rainy season compare with control. However, commercial cane sugar (CCS) of both seasons was decreased when increased of nitrogen rate. Considering the investment costs such as total cost, variable costs and market costs were significantly different between cultivations with and without fertilizer application of plant cane and ratoon cane. While, the return costs of sugarcane such as total income, net income and net profit were not significantly different for plant cane but were significantly different for ratoon cane. Treatment 4 (2N) provided the highest return of ratoon cane in dry season and rainy season. The return depended on price, yield and cane quality. Analysis result of Cobb-Douglas production function revealed that factor significantly affecting the sugarcane production in dry season and rainy season were labor, expense on fertilizer and expense on machine. For efficient use of inputs, farmer should decrease expenses on labor and fertilizer while increasing the use of machine in both season.

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