

Suchanya Jaroenseng 2010: The Accuracy of Chemical Fertilizer Recommendation Following Soil Analysis on Yield of Sugar Cane and Relationship Between SPAD–reading with Nitrogen Contents in Sugar Cane Leaf in Kamphaeng Phet Soil Series. Master of Science (Soil Science), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Suphachai Amkha, Ph.D. 74 pages

The study on the accuracy of chemical fertilizer management following soil analysis on yield of sugar cane and relationship between SPAD – reading with nitrogen contents in sugar cane leaf plant in Kamphaeng Phet (Kp: Oxyaquic (Ultic) Haplustalfs) soil series. Sugar cane LK 92-11 variety was cultivated in dry season (December 2007 - December 2008). Whereas K 99-72 variety was cultivated in rainy season (May 2008 - April 2009) in rain-fed area at Koaleaw district in Nakhon Sawan Province. The experiment in completely randomized block design (RCBD) had 5 treatments as followed by Control (no fertilizer), Chemical fertilizers application based on soil analysis as recommended by Department of Agriculture (DOA) and Chemical fertilizer based on quantities of applied nitrogen and estimated uptake of 100, 50, 25% (1N, 2N and 4N) respectively with 4 replications. The results showed that the all chemical fertilizers management were significantly affected on millable cane yield both in dry season and rainy season plots compare with control. Millable cane yield in treatments that apply fertilizer more than target yield (25 ton/rai) in dry season plot. In addition, 1N treatment was maximum yield (26.80 ton/rai). Millable cane yield was increased from treatments of control about 23.67 % and 4N treatments has the most accuracy was similar to with target yield (102.68 percent). The deviation of yield compare with target yield and that range was plus between 2.68-7.2 %. In plot of rainy season 2N treatments was maximum yield (19.47.80 ton/rai). Millable cane yield was increased from treatments of control about 9.94 % and has the most accuracy been similar to with target yield (77.68 %). The deviation of yield compare with target yield and that range was subtracted between 22.12-29.16 %. Millable cane yield in 5 treatments were lower than target yield in wet season. However, no significant of cane quality especially commercial cane sugar (CCS) in both fertilizer and control and also decreased when increased of nitrogen rate. We found relationship between SPAD reading and nitrogen content in sugarcane leaf. correlation of leaf nitrogen content was linearly correlated with SPAD values with highly significant. The correlation equation was as $y = -11026 + 0.0768x$, $r^2 = 0.91$ and chlorophyll meter readings above 34 SPAD unit for sugarcane leaf were considered sufficient nitrogen concentration.

Student's signature

Thesis Advisor's signature