

Kamalapa Wattanaprapat 2006: Effects of Legume Green Manures on Soil Chemical and Biological Properties and Yield of Sweet Corn in Pak Chong Soil Series. Master of Science (Agriculture), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Assistant Professor Chairerk Suwannarat, Dr.agr. 114 pages.
ISBN 974-16-2480-8

Study on the effects of legume green manures on soil chemical and biological properties and yield of sweet corn in Pak Chong soil series at Nakhon Ratchasima Province. The Randomized completed block design was used with 5 treatments and 4 replications, consisted of no application of nitrogen fertilizer, application of urea fertilizer (10 kgN/rai), incorporation of *Vigna unguiculata* (8 kg/rai of seed rate), incorporation of *Canavalia ensiformis* (10 kg/rai of seed rate) and incorporation of *Crotalaria juncea* (5 kg/rai of seed rate). The results showed that *Vigna unguiculata*, *Canavalia ensiformis* and *Crotalaria juncea* has the amount of nitrogen 11.67, 13.78 and 10.09 kilogram per rai and C/N ratio 21, 16 and 25 respectively. Sweet corn yield increased due to incorporation of legume green manure different from no application of nitrogen fertilizer. Incorporation of *Vigna unguiculata* as green manure reached the maximum yield and increased at 44.69 percent, and *Canavalia ensiformis* increased at 44.27 percent, while *Crotalaria juncea* and urea fertilizer application had closely yield at 39.23 percent and 33.98 percent, respectively. The incorporation of legume green manure tended to increase in soil organic matter and plant nutrition but decrease in soil bulk density. Inorganic nitrogen content, soil microorganism population and carbondioxide content reached the maximum during 7 to 14 days after incorporation of legume green manure. The incorporation of *Canavalia ensiformis* as green manure increased to the maximum net N mineralization during 90 days for 305.63 milligram per kilogram, while incorporation of *Crotalaria juncea*, *Canavalia ensiformis* incorporation, urea fertilizer application and no nitrogen fertilizer application were 289.68, 236.82, 191.63 and 168.70 milligram per kilogram, respectively. The estimation of soil microorganism population was in range of 7.21×10^7 - 1.11×10^8 colonies per 1 gram of soil.

Student's signature

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