

Skol Srivanno 2006: Effects of Combined Rates of Cattle Manure and Nitrogen Fertilizer on Soil Properties and Yield of Chinese Kale Grown on Bangkhen Soil Series. Master of Science (Agriculture), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Professor Irb Kheoruenromne, Ph.D. 131 pages. ISBN 974-16-2868-4

The study on effects of combined rates of cattle manure and nitrogen fertilizer on soil properties and yield of Chinese kale on Bangkhen soil series employed Factorial in Completely Randomized Design (CRD) comprising two experiments; 1) Three rates of cattle manure at 0 500 and 1000 kilograms per rai and four rates of urea fertilizer at 0 25 50 and 75 kilograms per rai and, 2) Three rates of cattle manure at 0 500 and 1000 kilograms per rai and four rates of urea fertilizer at 0 100 150 and 175 kilograms per rai.

The results revealed that height, number of leaves, fresh weight and dry weight of Chinese kale and concentration of macronutrient in Chinese kale increase with the increasing urea fertilizer application rates. Cattle manure application increases the height, number of leaves and potassium content in Chinese kale. The combined application of cattle manure and urea fertilizer remarkably increases the height and number of leaves but not fresh weight or dry weight. The effect on accumulation of macronutrient in Chinese kale is not clear. Based on the results of the two experiments the optimum combined rate for Chinese kale yield at 45 days is cattle manure at 1000 kilograms per rai and urea fertilizer at 100 kilograms per rai.

The different urea fertilizer rates at 0 25 50 and 75 kilograms per rai decrease available phosphorous and available potassium but not soil reaction. The soil reaction decreases with urea fertilizer rates of more than 100 kilograms per rai, but the effects on available phosphorous and available potassium are not significant. Electrical conductivity and total nitrogen in soil increase with urea fertilizer rates of more than 100 kilograms per rai. Increasing cattle manure application rates increase soil organic matter, total nitrogen, soil reaction and electrical conductivity, but the effects on soil reaction and electrical conductivity can be found only after two crops of Chinese kale. However, bulk density is not affected significantly at these cattle manure rates of 500 and 1000 kilograms per rai. The combined rates of cattle manure at 1000 kilograms per rai with all rates of urea fertilizer application give higher organic matter and total nitrogen in soil than do the combine rates of cattle manure 500 kilograms per rai with all rates of urea fertilizer application.

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Thesis Advisor's signature

