The effect of applying high quality organic fertilizer, bio-fertilizer LDD 12 and chemical fertilizer to improve soil for Chinese kale cultivation

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Abstract

The study aims to examine the effect of applying high quality organic fertilizer, bio-fertilizer LDD 12 and chemical fertilizer to improve soil for Chinese kale cultivation in Pranburi soil series (Pr), at Khoa Noi Sub-district, Pranburi District, Prachuab Khiri Khan Province within year 2010. The experimental design was completely randomized in the first experiment with 3 replications and 7 treatments as controlled, high quality organic fertilizer 100 and 200 kilogram/rai with bio-fertilizer LDD 12 in the rates 300 500 and 700 kilogram/rai and chemical fertilizer (15-15-15) 25 kilogram/rai. In the second experiment was completely randomized design with 3 replications and 10 treatments consisted of chemical fertilizer (15-15-15) 25 kilogram/rai, high quality organic fertilizer 100 and 200 kilogram/rai with and without bio-fertilizer LDD 12 in the rates 300 and 500 kilogram/rai and chemical fertilizer (15-15-15) 25 kilogram/rai and high quality organic fertilizer 100 kilogram/rai with bio-fertilizer LDD 12 in the rates 300 kilogram/rai and chemical fertilizer (15-15-15) 25 kilogram/rai. The result showed that in the first experiment, biomass of chinese kale harvested was significant different. The highest yield was the treatment that mixed among highly organic fertilizer 200 kilogram/rai, bio-fertilizer LDD 12 in the rate 700 kilogram/rai and chemical fertilizer (15-15-15) 25 kilogram/rai, which was 3,652 kilogram/rai and gave the highest net profit, 38,611.60 baht//rai. However, the used of high quality organic fertilizer 100 kilogram/rai with bio-fertilizer LDD 12 in the rate 500 kilogram/rai and chemical fertilizer (15-15-15) 25 kilogram/rai got the lowest cost/kilogram. The second experiment, the result showed that biomass of chinese kale harvested was significant different. The used of high quality organic fertilizer 100 kilogram/rai with bio-fertilizer LDD 12 in the rate 500 kilogram/rai and chemical fertilizer (15-15-15) 25 kilogram/rai gave the highest yield, 492 kilogram/rai and the lowest was the treatment of high quality organic fertilizer 100 kg/rai, which was 196 kilogram/rai. Considering soil properties changing in each treatment, there were not different between before and after Chinese kale planting. In contrast, the numbers of bacteria in soil that is beneficial to plant were increased significantly different in treatments with bio-fertilizer LDD 12. Assessment of economic return, the result showed that the high quality organic fertilizer 100 kilogram/rai mixed with bio-fertilizer LDD 12 in the rate 500 kilogram/rai and chemical fertilizer (15-15-15) 25 kilogram/rai gave the highest return when compared to treatment of chemical fertilizer (15-15-15) 25 kilogram/rai, which was increased 398.9 percentage.

Keywords ; high quality organic fertilizer, bio-fertilizer LDD 12, Chinese kale