

CHAPTER 7

CONCLUSIONS

7.1. Conclusions

Based on field survey and field experiment results, the following conclusions could be made:

1. Peanut plays an important role in cropping systems in the hilly zone of Thua Thien Hue province in terms of soil fertility improvement and household income. However, it is still considered as minor crop, and they are only grown in the marginal land with low inputs. One of the most important characteristics of peanut production in the region was low and unstable productivity. Because intensification level and advanced technology applied to peanut is still limited. Field survey results shown that the current rates of phosphorous and lime used in the region were lower than requirement for high yield of crops. Moreover, adverse soil condition such as low pH, deficiency of phosphorous and lack of recommendation for fertilizer management were other major factors limiting growth, development and yield of peanut crop. The average yield of peanut in the region was 1.31 ton ha⁻¹ while those numbers are 1.51 and 1.96 ton ha⁻¹ in Red River Delta and Mekong River Delta, respectively.
2. Phosphorous and lime application affects positively on growth and development of peanut. However, phosphorous and lime applied together gave higher crop yield than separately application. The maximum yield of peanut was obtained at 120 kg of P₂O₅ applied together with 900 kg of lime ha⁻¹ which was 2,189 kg ha⁻¹ increasing 101% as compared with the control treatment.

3. Phosphorous and lime application proved to be possible soil improving measures for increasing productivity of peanut in the soil conditions of the region. They were improved soil pH and available phosphorous as well as other nutrients in the soil such as organic matter, total nitrogen, phosphorous and potassium. The maximum value of soil pH, available phosphorous and organic matter were 5.9, 10.06 mg/100g soil and 1.82% which was observed at treatment applying 120 kg of P_2O_5 together with 900 kg of lime ha^{-1} . Besides, the most effective rate of phosphorous and lime was 120 kg of P_2O_5 and 900 kg of lime ha^{-1} which gave 43.9%, 99.2% and 91.6% increased in soil pH, available phosphorous and organic matter, respectively as compared with control treatment. In addition, a large amount of residue crop which was organic matter will be supplied in to the soil for crop after peanut.

4. In terms of economic consideration, applying phosphorous and lime also increased gross margin following the rates of application. The highest gross margin when phosphorous and lime applied alone were 3.7 million VND and 4.6 million VND with respect to 700 kg of lime ha^{-1} and 120 kg of P_2O_5 ha^{-1} application. The combination of phosphorous and lime application gave greater gross margin value than phosphorous and lime application separately. The best combination was obtained at rate of 90 kg of P_2O_5 applied together with 700 kg of lime ha^{-1} . Because gross margin was the highest at this rate of application which was 7,13 million VND increasing 203% as compared with the treatment where there is no phosphorous fertilizer and lime application. However, gross margin decreased as phosphorous fertilizer and lime application at the highest rates (120 kg of P_2O_5 ha^{-1} together with 900 kg of lime ha^{-1}) which was 7,00 million VND.

5. Combination results of field survey and field experiment shown that the optimum yield in this region was 2,154 kg ha⁻¹ that was obtained at 90 kg of P₂O₅ ha⁻¹ applied together with 700 kg of lime ha⁻¹. Because at this treatment, there was highest gross margin and high VCR.

7.2. Recommendations

1. The study indicated that treatment applied 90 kg of P₂O₅ and 700 kg of lime ha⁻¹ which performed the best in terms of yield and economic return should be recommended to farmers in order to maximize profit per unit of area from peanut production and overcome the yield gap of peanut in the region.

2. Peanut cropping systems should be introduced to the region and peanut should be considered as a major crop following rice. Besides, farmers should also consider peanut crop as green manure or crop residue in case of lack of manure for production. Extension of peanut area is seemed to be the best way to enhance green manure source which can increase organic matter and to against soil erosion for the hilly zone.

3. Farmers should apply lower amount of fertilizer i.e. nitrogen and phosphorous for the crops in cropping systems involving peanut than in cropping systems without peanut crop because of nitrogen fixation of peanut and residue of phosphorous in the next season.

4. Agronomist and extensions officers should pay attention to introduce suitable fertilizer management to the region. Besides, government and local authorities should provide credits (or phosphorous fertilizer) to farmers to improve inputs for peanut production.