

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Farming practice procedures play an important role to cadmium uptake to rice plants. The different between drainage technique and flooding technique can be considered as the most concerned issue, which effect to cadmium uptake to rice plants. Table 5.1 summarizes cadmium concentration in rice plant after harvesting (the second period of sample collection).

Table 5.1 Accumulation of cadmium in rice plant after the harvesting

Treatment Procedures	Accumulated cadmium ($\mu\text{g}/\text{kg}$)			
	Drainage Technique		Flooding Technique	
	Leave	Stem	Leave	Stem
Normal practice (T1 & T2)	421	522	90	135
Rice straw adding (T3 & T4)	4,851	3,497	232	579
Lime adding (T5 & T6)	213	846	93	103
Rice straw and lime adding (T7 & T8)	485	1,161	76	107

The results showed that drainage technique caused much higher cadmium uptake by rice plants when compared with flooding technique for all cases. As a result, flooding techniques should be considered for best practice for minimize the uptake of cadmium. However, in order to apply for the real plantation, other factor may need to be concern such as, production yield, familiarity of farmers for real practice, etc.

For the other treatments such as adding rice straw and liming agent, the results show that they are not working for this study. Rice straw even caused more cadmium uptake to rice plants.

For liming agent adding, the results showed that pH was insignificantly different from other techniques. It is possible that to added liming agent at the initial stage was not enough to maintain pH condition in soil system. So, to make the liming agent adding to be more efficiency, lime may have to be applied to the experimental pots before the second period of samples collection.

Unfortunately, these experimental pots did not yield rice grains, so it cannot be concluded which treatment is suitable for best practice since rice grain is the product that we try to reduce or inhibit cadmium to be accumulated. Nevertheless, from the result of the study, it can summarize only that the flooding technique is better than drainage technique in term of minimizing cadmium uptake to rice plants.

Consequently, it has not been clearly that which technique is the best treatment for farming in the study area, because there were many parameters effected cadmium uptake to rice plants. And the experiment was not produced rice grain, so the economical issue had not been analyzed. Nevertheless, based on the experiment result, the best treatment is T2 because T2 is the drainage technique, which effectively reduced cadmium accumulation in rice plants. And T2 does not need special substance adding, such as; rice straw and calcium oxide, which cause the higher cost and possible to cause effect to the crop.

5.2 Recommendations

There are several points that this study cannot explain the clear picture of what happens for some treatments due to the complicated mechanism in soil and relation among metals. To gain better understanding, further studies are needed. The further research should include:

- More detailed study of different organic matters that will be added to contaminated soil.
- Correlation among different metals that existing in contaminated soil.
- Investigation of liming agent loading that is enough for immobilizing cadmium while comparing production yield.
- Expanding the best practice from pot experiment to the real plantation in paddy filed.