Thesis Title	Isozyme Differentiation and Yield Performance of Local Upland Rice
Author	Miss Panita Chantaraprayoon
M.S.	Agriculture (Agronomy)

Examining Committee	Lecturer Pherk Gypmantasiri	Chairman
	Assoc. Prof. Dr. Prasartporn Smitaman	Member
	Assist. Prof. Dr Pimchai Apavatjrut	Member
	Assoc. Prof. Suthat Julsrigival	Member

Abstract

The highland farmers have made used of the genetic diversity of rice to select varieties adapted to low input production system in various ecological zones. The selection has resulted in specific adaptation of population This research aimed to differentiate genetic diversity of upland rice through analysis of isozyme pattern and to evaluate grain yield under different fertility regimes.

The study consisted of two parts The first part was to classify 68 upland rice samples and 2 recommend varieties : RD 6 (UR68) and Kao Dawk Mali 105 (UR69) by electrophoresis technique. The analysis was done on the extract from young shoot of 7 days old seedlings, running on polyacrylamide gel prepared by modified Hames and Richwood (1981) and staining by modified Vallejos (1983).

The second part was to evaluate yield of upland rice in three fertilizer treatments 0, 25 and 50 kg./rai of ammophos (16-20-0). The single rice plant was

hill-planted with spacing 25 x 25 cm. Each experimental unit consisted of 2 m^2 with two replications. The experiment was conducted at the Multiple Cropping Center.

Zymogram study of 70 rice accessions was stained by 6 enzymes. It was found that only 5 enzymes : esterase (EST), malate dehydrogenase (MDH), leucine aminopeptidase (LAP), glutamate oxaloacetate transaminase (GOT) and malic enzyme (ME) were present in plant extract and could be used to classify rice accessions into 43 groups. The enzyme alcohol dehydrogenase (ADH) did not show the staining with plant extract.

The yields of upland rice ranged from 300 to 500 kg./rai. The analysis of variance showed the significant interaction between rice accessions and fertilizer levels. Using regression analysis, it was found that the interaction could be explained by three response functions with average yield more than 400 kg./rai. The local selection Kae Noi variety (UR44) was found to be stable across three fertilizer treatments.