Thesis Title	Maintaining Quality of Moist Paddy by Drying and Aeration
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Candidate	Mr. Watunyu Chaiwatpongskorn
Supervisors	Prof.Dr. Somchart Soponronnarit
	Asst.Prof. Adisak Nathakaranakule
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Department	Thermal Technology
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Abstract

This research consisted of two parts. One part was a study on influence of aeration rates through the paddy bulk storage and the other was study on the influence of drying air temperature on paddy quality. Long grain rice variety (Suphanburi I) was used through out the experiments.

Experiment on the influence of aeration rates through paddy bulk storage was done by aerating at 0.65, 0.93 and 1.20 $m^3/min/m^3$ of paddy through 1 m. height paddy beds of 18.5, 20.1 and 20.2%w.b. initial moisture. The experiment terminated when paddy moisture reduced to about 14%. During the experiment, paddy samples were drawn daily for moisture and quality analyses. Fan energy consumption and respiration were calculated. Results of the experiment show that aeration rates at 0.93 and 1.20 $m^3/min/m^3$ of paddy could maintain the paddy quality, while mold growth was observed on top portion of the bulk when aerating at 0.65 $m^3/min/m^3$ of paddy. Slight yellow-kernels, 0.08% was found at the top portion after 912 hours of storage. Fan energy consumption was 0.09, 0.14 and 0.19 MJ/kg of water evaporated for at 0.65, 0.93 and 1.20 $m^3/min/m^3$ of paddy aeration rate respectively. Energy resulted form respiration were 3.59, 3.29 and 3.54 MJ/kg of water evaporated for 0.65, 0.93 and 1.20 $m^3/min/m^3$ of paddy aeration rate, respectively.

Experiments on the influence of drying air temperature on paddy quality were carried out by using a laboratory fluidized bed dryer setting the hot air temperature at 40-150°C and velocity at 2.5 m/s. Samples of paddy conditioned moisture to 24.9%w.b. were dried to about

18±0.5% w.b. moisture in the dryer, followed by 30 minutes tempering in close-adiabatic container, and further dried to about 14% moisture by blowing ambient air at 0.5 m/s. (300 $m^3/min/m^3$ of paddy at bed depth 10 cm). The dried samples were analyzed for head rice yield and whiteness. The experiment results showed that drying paddy with air temperature of 150°C gave the highest head rice yield. The result of whiteness at this drying temperature was the lowest but in acceptable range.

Keywords: maintaining quality / moist paddy / drying / aeration