Suwansa Thonghyu 2015: Effect of Strength on Kernel for Milling Quality of Thai Rice (*Oryza sativa* L.). Master of Science (Agricultural System Technology), Major Field: Agricultural Systems Technology, Department of Farm Mechanics. Thesis Advisor: Mr.Thawansak Phaosang, Ph.D. 99 pages.

This research were study the hardness force of paddy at various of moisture content and study relationship between the hardness force (Newton) and milling quality. Samples for testing were six varieties of Thai rice (long grain varieties) were consisted of in-season are Jek Chuey, RD35 and off-season rice are Phisanulok2, RD31, RD41 and RD47. The study consisted of reducing moisture contents of paddy by sun drying, the moisture content (wet basis) 4 level were 20-22, 17-19, 14-16 and 11-13% indicated by percentage of head rice yield (HRY), testing strength property by Texture Analyzer (Model TA.XT Plus) and stress. The results are shown that all tested rice varieties at moisture content 11-13% (w.b.) gave maximum percentage of HRY. Additionally, moisture content significantly effected to HRY. At moisture content 20-22% (w.b.), the maximum of hardness force of RD35, RD41 and RD31 were 28.40, 26.24 and 30.89 N respectively. All moisture contents levels were significantly effected on the hardness force of rice. The maximum stress value of RD35, RD47, RD31 and Phisanulok2 were 1.96, 1.83, 1.80 and 1.68 N/m^2 respectively. Moreover, the hardness force was significantly effected on HRY. The relationship between the HRY and hardness force shown that JekChuey was indicated by strength properties that effected on milling quality, represented to equation which was y=11.053x-206.88 and R^2 was 0.89. The stress was indicated by milling quality which was y=-12.025x+51.97 and R^2 was 0.87.

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