

Variation of Milling and Grain Physical Quality of Dry Season Pathum Thani 1 in Thailand

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ABSTRACT

Pathum Thani 1 (PTT1) is a photoperiod-insensitive, aromatic Thai rice variety that is grown year-round. The rice from some locations is often priced lower than others due to sub-standard grain quality. This study sought to determine the limiting grain quality characteristic(s) in dry season PTT1 and their distribution across Thailand's irrigated rice regions. To do so, we evaluated the milling and physical quality of milled rice grain of dry season PTT1 from 24 provinces in 5 regions in Thailand. Sixty-seven paddy rice samples were collected and evaluated for head rice yield, chalkiness, whiteness, and translucency. Head rice yield varied by region, with the highest (48.1%) found in samples from the Central region, compared to 34.5-39.7% elsewhere. Head rice chalkiness was the physical quality that varied more widely among the provinces within each region than among regions, with chalkiness at a level that would adversely affect price in more than one-half of the samples. Contrary to the general perception that chalky grain is less resistant in milling, head rice yield actually increased with total chalkiness, expressed as % chalky grain by weight. The total chalkiness correlated negatively with translucency, while the head rice chalkiness correlated positively with whiteness. Grain chalkiness was identified as the grain quality attribute of PTT1 rice that varied with location; this directly affected the price of milled rice grain, as well as indirectly through its relationship with head rice yield and visual appearance of the milled rice grain.

Keywords: Head rice yield, Chalkiness, Location