

Title            Modeling changes in milled rice (*Oryza sativa* L.) kernel dimensions during soaking by image analysis  
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### **Abstract**

Tests were performed for milled whole kernels of ten Thai rice varieties ranging from low to high amylose content (16–29%) with three initial moisture levels (approximately, 8, 12 and 16% d.b.) for monitoring the dimensional changes in rice kernels during soaking in relation to the varietal differences manifested by the physicochemical properties. It was observed that the two-dimensional shape factor of the milled rice kernel remains constant during whole soaking duration. The change in kernel dimension during soaking could be best expressed by a modified exponential relationship with the  $R^2$  for fitting ranging, respectively, from 0.983–0.999, 0.985–0.999, 0.984–0.999 and 0.985–1.000 for kernel length, width, perimeter and projected area for all rice varieties. The parameters of the fitted relationship for describing changes in kernel dimensions during soaking were found to be the function of initial moisture content and physicochemical properties of rice varieties under study. The dimensional features, namely, length, width, perimeter and projected area of milled rice kernel during soaking could be estimated from its initial moisture content and physicochemical properties such as amylose content, alkali spreading value, and protein content within  $\pm 5\%$  of the experimental value.