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Riceberry Grain Standardization Based on Color Distribution and Shape Parameters

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Riceberry is a highly nutritious rice variety with dark purple grain. Previous studies have shown that the darker shade of grain color has a higher nutrient content. In this work, we study the color distribution of the Riceberry rice grains in order to provide a quantitative quality indicator. Here, pictures of the grains were taken using a digital CCD camera. To make the data more understandable, we extracted RGB data from the grain images and converted them to HSV color space. Color distributions and shape parameters of pixels, such as mean, standard deviation, skewness, and kurtosis, were analyzed. Based on the peaks and tails positions of hue distributions, the grains can be classified into 3 categories: (1) the maxima at hue $\approx 0.9 - 1.0$ with left tail corresponding to dark purple grain; (2) the maxima at hue $\approx 0.9 - 1.0$ with right tail corresponding to light brown or red grain; and (3) the hue scattered between $0.9 - 1.0$. These results can be used to standardize the grain color, which is very useful for adding value to the Riceberry rice products.

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