

Statistical Treatment on Amylose and Protein Contents in Rice Variety Germplasm Based on the Data Obtained from Analysis of Near-Infrared Reflectance Spectroscopy (NIRS)

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The purpose of this study was to statistically analyze amylose and protein content of rice variety resources collected from China (1,542), Japan (1,409), Korea (413), and India (287). The statistical analysis was conducted using ANOVA and DMRT based on the data obtained from NIRS analysis. The average amylose contents were 18.85% in Japanese, 19.99% in Korean, 20.27% in Chinese, and 25.46% in Indian resources. The average protein contents were 7.23% in Korean, 7.73% in Japanese, 8.01% in Chinese, and 8.17% in Indian resources. The amylose and protein content using ANOVA showed significant differences at the level of 0.01. The F-test for amylose content was 158.34, and for protein content was 53.95 compared to critical value 3.78. The amylose and protein content using DMRT ($p < 0.01$) showed significant difference between countries. The value of statistical treatment was divided into three groups such as China^a, Korea^a, Japan^b, India^c in amylose and China^a, India^a, Japan^b, Korea^c in protein. Japanese resources had the lowest level of amylose contents, whereas, the lowest level of protein content was found in Korean resources compared to other origins. Indian resources showed the highest level of amylose and protein contents. It is recommended that these results could be helpful to future breeding experiments.

Key words: Amylose, ANOVA, DMRT, NIRS, Protein, Rice variety germplasm