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Selection for High Palatability Lines by Amylose Content Adjusted by Heading Date for Rice Breeding

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Abstract:

Rice palatability correlates with amylose content, which correlates with heading date, showing that indirect selection through low amylose content for high palatability usually results in predominantly early heading genotypes. To overcome this problem, a regression equation of milled rice amylose content on heading date was calculated. The residual (observed amylose content value - estimated value from the regression) + average of all observed values were designated as adjusted amylose content value. Tests for three years revealed that adjusted amylose content significantly correlated with palatability (-0.535^{**} , -0.439^{**} and -0.589^{**}), showing that palatability and amylose content correlated even among genotypes with the same heading date. Correlations between adjusted amylose content and the following year's palatability were significant for three years (-0.470^{*} , -0.417^{**} and -0.479^{**}), showing that genotypes selected for low adjusted amylose content had relatively high palatability in the following year. These results show that adjusted amylose content could be used as a criterion for selecting highly palatable genotypes with a wide range of heading dates. Similar results were obtained for brown rice amylose.

Keywords:

Amylose content, Heading date, Palatability, Regression analysis, Rice

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