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Changes in the Gelatinization Properties of Panicle Number Type in Rice by Panicle Position According to the Planting Distance

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[Introduction]

Recently, farmers have discovered low-density planting, which allows them to reduce the number of nursery boxes by planting a smaller number of seedlings per unit area. The difference in yield was not significant for low (50–60 plants/3.3 m²) and standard (80 plants/3.3m²) planting densities. However, in the case of panicle number type, rice quality can be affected by differences in ripeness at different panicle positions because of differences in tillering capacity at different planting densities. The present study aimed to contribute to the research on rice quality with a low planting density by determining starch properties by panicle position at different planting densities.

[Materials and Methods]

The present study was conducted to investigate the starch gelatinization properties of panicle number type by panicle position at different planting densities in 2021. Ilpum was transplanted at densities of 37, 50, 60, and 80 plants per 3.3 m² on June 5, and panicle positions were divided into high and low at 70 cm plant height. Rice was harvested and milled, and using a sample of rice flour sifted through a 100 mesh sieve, starch properties were investigated by analyzing damaged starch, viscosities, gelatinization temperature, and amylopectin chain length.

[Results and Discussion]

In terms of panicle position, the higher the planting density, the higher the damaged starch content at a high panicle position. In terms of gelatinization properties, the overall peak values were higher in a low position than a high position, but differences in peak values gradually decreased when planting density decreased. The analysis of amylopectin chain length showed that the distribution of DP 6-12 chains was generally higher in a high position but decreased when planting density decreased.

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