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Early Growth Development and Heading Characteristics of Rice for Extremely Early Rice Cultivation in the Yeongnam Plain

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[Introduction]

In the southern region, the temperature is high and the rice cultivation period is long, so various cropping systems linked with rice are being implemented, such as double-cropping of rice and wheat. In particular, early cultivation to produce rice before Chuseok increases in the year when Chuseok comes early. In general, since there are no connected crops after early cultivation, most of them fall into fallow. Therefore, rice should be planted earlier than normal early cultivation for planting crops that can be continuously linked after rice. Therefore, this study was conducted to find out the heading characteristics of rice varieties suitable for the establishment of a double-cropping system in which other crops are grown in late August after cultivating rice.

[Materials and Methods]

This study was conducted from 2020 to 2021 in the rice paddies of the Department of Southern Area Crop Science of the National Institute of Crop Science. For the experimental varieties, 14 varieties of early maturing cultivar such as Baekilmi, Jinok and Junamjoseang were grown for 30 days in an unheated greenhouse. Transplantation was carred out on April 7th, 14th, 21st and 28th, and the planting distnace was 30x12cm, and number of planted hills was 5. The amount of fertilization was 9, 4.5 and 5.7 kg per 10a, respectively, as components of nitrogen, phosphate and potassium, and other cultivation management followed standard cultivation method of the Rural Development Administration. The yield and quality of rice were investigated in accordance with Agricultural Science and Technology Survey Standards of the Rural Development Administration.

[Results and Discussion]

35 days after transplanting, the dry weight of rice hill was very low in those transplanted on April 7th and 14th compared to these transplanted on April 21st and 28th. The daily Crop Growth Rate(CGR) for 35 days after transplanting was 8 times, 4 times, and 2 times higher in the case of transplanting on April 28th compared to the transplanting on April 7th, 14th and 21st, respectively, and the same trend was observed among dry weight. However, as the growth progressed thereafter, there was little difference in the distinct trends among dry weight according to the transplanting period at the heading stage. The heading stage period of the experimental varieties ranged from June 30 to July 19, and there was a large difference according to the varieties and transplanting period. In general, the earlier transplanting period, the faster heading stage. When trasnplanting on April 7th, 14th, 21st and 28th, the average heading stage date was July 8th, 9th, 11st and 14th, respectively. Compared to the transplant on April 28th, when transplanting April 7th, 14th and 21st, the heading was faster by 6, 5 and 3 days, respecively. However, ther were some varieties whose heading was delayed when the transplanting date was early, which is thought to be due to the delay in growth because of damage from low temperatures in the early growth stage. In order to double-cropping system after harvesting rice, the crops after rice must be sown in the last August, so it is necessary to be able to harvest rice before August 20th. In this study, if Beakilmi, Junamjoseang, Jungmo1032 and Jinok are transplanted in mid-late April to avoid low-temperature damage, it is possible to take heading before July 10th and harvest before August 20. Therefore, those varieties will be advantageous for crop connectivity with other crops planted in late August after rice cultivation.

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