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Identification of United States of America Cultivars as a Major Breeding Resource to Accelerating the Improvement Rice Cultivars in Korea

Jae-Ryoung Park¹, Chang-Min Lee¹, Man-Kee Baek¹, Jeonghwan Seo¹, Ha-Cheol Hong¹, O-Yeong Jeong¹, Hyun-Su Park^{1*}

¹Crop Breeding Division, National Institute of Crop Science, Rural Development Administration, Wanju, 55365, Republic of Korea

[Introduction]

Rice is one of the oldest and most important crops in the world, and cultivated into various species. *Oryza sativa* L., is an Asian cultivated species are recently been subdivided into five ecological species: *indica*, *aus*, temperate *japonica*, tropical *japonica*, and aromatic. In Korea, temperate *japonica* is mainly cultivated and used as a breeding material. In order to investigate useful breeding material to diversify the grain shape characteristics of Korean temperate *japonica* rice cultivars, we analyzed of U.S. cultivars with various grain shape characteristics.

[Materials and Methods]

Korea cultivar Boramchan and the 13 U.S. cultivated rice cultivars were used in this study. The cultivars were transplanted into the field (35°50'26.8''N 127°02'42.8''E) of the National Institute of Crop Science, and the major agricultural traits, grain shape, pasting properties, and texture traits were investigated. Also, structural analysis and correlation between Boramchan and U.S. cultivars were analyzed by applying principal component analysis and K-means cluster analysis using R programme.

[Results and Discussion]

Under the Korea environmental, U.S. cultivars has a early heading date than Boramchan, and has a long culm length and panicle length, low number of tiller. Also, all U.S. cultivars were more than medium-short, and had half spindle-shaped and long spindle-shaped characteristics that Korea rice cultivars did not have. U.S. cultivars has a higher pasting properties and texture traits than Boramchan. Grain shape characteristics are also related to pasting properties and texture traits. Therefore, the U.S. rice cultivars are expected to be effectively used as a breeding materials to diversify the characteristics of domestic rice cultivars with narrow grain shape characteristics in Korea.

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*Corresponding author: E-mail, mayoe@korea.kr Tel. +82-63-238-5214