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The Screening of Fittest Cereals for Reclaimed Land and Functionality Improvement of *Sorghum bicolor* Cultivated in Reclaimed Land

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[Introduction]

Cereals are import-dependent crops and need to secure and maintain a production base to enhance domestic competitiveness. So we analyzed the adaptability of cereals to the reclaimed land and analyzed the functionality of the cereals produced in reclaimed land.

[Materials and Methods]

The test was conducted at the Saemangeum reclaimed land with a salinity range of 0.09~0.16%. Genetic resources of *Setaria italica* BEAUVOIS, *Sorghum bicolor* and *Panicum miliaceum* were collected and tested adaptability to reclaimed land based on the growth status and yields. The harvested cereal grains were analyzed for polyphenol and flavonoid contents, the ability of removing harmful active oxygen and antidiabetic activity were also measured.

[Results and Discussions]

84 species of *Setaria italica* BEAUVOIS, *Sorghum bicolor* and *Panicum miliaceum* genetic resources were collected in order to select adaptable cereals in Saemangeum reclaimed land. The *Sorghum bicolor*'s applicabilities of reclaimed land were highest among 3 grains. Three species of *Sorghum bicolor*; Satangdajuk, Kkamansusu, Nampungcharl were selected as excellent adaptable genetic resources. The yield of Satandaejuk in reclaimed land was 229.4 kg/10a, and that ratio of reclaimed land/normal field was 89.3%. Kkamansusu's yield was 227.4 kg/10a, which reclaimed land/normal field ratio was 87.8% and yield of Nampungcharl was 239.6 kg/10a, which reclaimed land/normal field ratio was 86.0%. In order to investigate the salt tolerance of selected genetic resources, the port salinity test was conducted. As a matter of fact anti-salinity of *Sorghum bicolor*; Satangdajuk, Kkamansusu, Nampungcharl were excellent than other's and the strongest salt tolerant resource was Satandaejuk. It was confirmed that the functionality of the cultivated product in reclaimed land was improved in all of the functional analysis items compared with the normal field product. Polyphenol, an antioxidant, increased in the range of 2% to 26% when cultivated in reclaimed land and the flavonoid content were also increased from 8.5% to 55.6%. It was also found that DPPH elimination capability as a ability of removing harmful active oxygen was also increased by 16.7%p~47.0%p when it is cultivated in reclaimed land. The anti-diabetic activity, α -glucosidase inhibition activities of selected *Sorghum bicolor*; Satangdajuk, Kkamansusu, Nampungcharl were also increased by 18.4%p~19.9%p in reclaimed land cultivation.

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