PB-48

Construction of an Analysis System Using Digital Breeding Technology for the Selection of *Capsicum annuum*

Donghyun Jeon[1], Sehyun Choi[2], Yuna Kang[3], Changsoo Kim[4]*

[1]Department of Science in Smart Agriculture System, Chungnam National University
[2]Department of Crop Science, Chungnam National University
[3]Institute of Agricultural Science, Chungnam National University
[4]Department of Science in Smart Agriculture System & Crop Science, Chungnam National University

[Abstract]

As the world's population grows and food needs diversify, the demand for horticultural crops for beneficial traits is increasing. In order to meet this demand, it is necessary to develop suitable cultivars and breeding methods accordingly. Breeding methods have changed over time. With the recent development of sequencing technology, the concept of genomic selection (GS) has emerged as large-scale genome information can be used. GS shows good predictive ability even for quantitative traits by using various markers, breaking away from the limitations of Marker Assisted Selection (MAS). Moreover, GS using machine learning (ML) and deep learning (DL) has been studied recently. In this study, we aim to build a system that selects phenotype-related markers using the genomic information of the pepper population and trains a genomic selection model to select individuals from the validation population. We plan to establish an optimal genome wide association analysis model by comparing and analyzing five models. Validation of molecular markers by applying linkage markers discovered through genome wide association analysis to breeding populations. Finally, we plan to establish an optimal genome selection model by comparing and analyzing 12 genome selection models. Then We will use the genome selection model of the learning group in the breeding group to verify the prediction accuracy and discover a prediction model.

*Corresponding author: E-mail. changsookim@cnu.ac.kr Tel. +82-42-821-7822