

B-167

Historical data in soybean breeding

*Akio Onogi**, PRESTO, JST, Tokyo, Japan

Hiroyoshi Iwata, Department of Agricultural and Environmental Biology, University of Tokyo, Tokyo, Japan

Seishi Ninomiya, Institute of Sustainable Agro-ecosystem Services, University of Tokyo, Tokyo, Japan

Field evaluation of soybean has been conducted worldwide for decades to develop new cultivars. The collected phenotypic data will be enormous; however, it is not usually utilized further once cultivars are established. Although the true value of the historical data is not recognized well, the data possibly accelerates the efficiency of crop breeding and management. To assess the potential of historical data in soybean breeding and management, we have collected and organized the historical data on the field performance tests in Japan. So far, approximately 100,000 phenotypic records taken over 50 years have been organized. These phenotypic records can be linked with weather and soil information. Developmental rate models trained with this historical data was able to predict the timing of flowering with height accuracy, and the accuracy depended on the size of training data. Variable selection techniques identified several weather conditions that affect soybean phenotypes. We are also collecting whole genome information for the lines of which seeds are stored in breeding stations and the Japanese gene bank. The historical data and whole genome information will enable us genomic selection, which is expected to be a key technique to accelerate crop improvement.