PA-80

Study on the Collection of Symptom Images necessary for the Diagnosis of Soybean Diseases to be used in Artificial intelligence

Yun Woo Jang[1]*, Young Nam Yoon[1], Hwi Jong Yi[1], Mi Hye Jeong[1]

[1]National Institute of Crop Science, RDA, Miryang, 50424, Republic of Korea

[Introduction]
Disease diagnosis is an important for accurate management of diseases occurring in soybean. For rapid diagnosis of soybean disease, disease symptom images analysis study is necessary. In this study, disease symptom images were collected using artificial inoculation methods and naturally occurring symptom of diseases.

[Materials and Methods]
This study was conducted in greenhouse and the field of National Institute of Crop Science, Miryang, Korea. In artificial inoculation, symptoms were created by spraying a suspension of pathogen spores on soybean leaves. And then, RGB images of symptoms appearing on soybean leaves were collected. In addition, RGB images of symptoms naturally occurring in the soybean fields were also collected. To identify diseases, pathogens were isolated from disease symptoms of soybeans. Then diseases diagnosis was done by comparing images with disease symptoms and identified pathogens. Normal images of soybeans were also collected as a check.

[Results and Discussion]
In the artificial inoculation method, RGB images were collected for two bacterial (Bacterial pustule, and Wildfire) and two fungal diseases (Anthracnose, and Pod and stem blight), respectively. In two artificially inoculated bacterial pathogens, plants showed markedly different symptoms from each other. In the leaves inoculated with Anthracnose, browning symptoms appeared in the leaf veins. In soybean fields, RGB images of naturally occurring disease symptoms were collected for one bacterial (Bacterial blight) and one fungal disease (Downy mildew), respectively. In the symptom of Downy mildew, small irregular lesions were formed on the mesophyll tissue of the leaves, and a mass of pathogens was formed on the back surface of the leaves. In further research, we will plan to collect more symptoms of various diseases.

[Acknowledgement]
This study was supported by agenda project(project no. PJ01568601), Rural Development Administration.

*Corresponding author: E-mail. ywj2012@korea.kr Tel. +82-55-350-1257