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High-throughput phenotyping of rice using RGB imaging

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Considerable progress has been made in plant genotyping with the establishment of next generation sequencing methods. However phenotyping is a limiting factor in crop development, which makes it difficult to develop accurate and large-scale genetics and breeding. Recently, plant phenomics has emerged as a new research area through high-throughput analysis of plant traits such as plant structure, water contents, physiological status, etc., using image analysis. RDA has been setting a high-throughput crop phenotyping (HTCP) facility with RGB, IR and NIR image analysis instruments. In addition, robotic XYZ phenotyping systems with RGB, 3D-Laser and fluorescence cameras are being installed. The crop plant phenotyping facility consists of an environmental control greenhouse, image acquisition devices, conveyor, watering system, DB and data management programs. As the first trial to utilize the HTCP system in real study, we are analyzing key characteristics of rice plants such as height, leaf area and leaf color, etc., using RGB images. This facility shall continue to be utilized for analysis of various target traits of rice plants such as abiotic stress tolerances and yield components in the future.

Biography

Kyung-Hwan Kim is the Head of Plant Phenomics Laboratory at the National Institute of Agricultural Sciences, RDA. Currently, the National Institute of Agricultural Sciences has been setting a high-throughput crop phenotyping (HTCP) facility with RGB, IR, and NIR image analysis instruments for phenotyping analysis. His interest is high throughput screening the traits of crops such as rice and soybean to analyze the function of genes.

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