

신진-05

Applicability of QTL-based and OCT (Optical Coherence Tomography) Technology to the Field of BLB Traits of Rice (*Oryza sativa* L.)

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[Introduction]

The rapid population growth, accelerated urbanization, human demand for biofuels, climate change, and the occurrence of pests and diseases have greatly challenged global food security. Traditional breeding has been difficult to meet the three major cereal crops (rice, corn, and wheat) Demand for increased production. Now traditional breeding has been transformed into molecular-assisted breeding, which has improved the efficiency and level of plant breeding through various omics.

[Materials and Methods]

In this study, we used optical coherence tomography (OCT) technique to check the leaf morphology and by comparing the data of physiological structure changes before and after inoculation of leaf surface to determine the pathological features in the interior of the rice leaf. And use QTL program to directly identify the target gene region for lesion site by genetic map.

[Results and Discussion]

In the QTL results, we have confirmed 23 target intervals on CNDH's genetic map of new QTLs related to BLB resistance, which have not been fully evaluated. Traditional low-throughput field trait surveys usually need to investigate the traits of individual plants one by one, and the survey results are easily affected by investigators, measurement tools and environmental conditions. With high-throughput, non-destructive real-time imaging technology, spectroscopy technology, image analysis system are gradually mature, we can even scan and capture the traits of crop cells in real time. So as to better provide more accurate trait data for molecular breeding.

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