

Division-4-04

Leveraging Rice Genetic Diversity: Connecting the Genebank to Mainstream Breeding

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[Abstract]

Rice contains a wealth of genetic diversity, both within *Oryza sativa* and in related A-genome species. Decades of genetic research into this diversity have identified dozens of major genes contributing to a wide variety of important traits, including disease resistance, abiotic stress tolerance (drought, salinity, submergence, heat, cold etc.), grain quality, flowering date and maturity and plant architecture. Yet despite these opportunities, very few of the major genes and QTLs known have been successfully applied through rice breeding programs to produce sustained changes in farmer's fields. This presentation will briefly examine some of the factors limiting application of major genes in the mainstream breeding programs, and steps that have been taken to alleviate those limitations. As a result of these interventions, dozens of major genes that were previously unavailable to breeders are now being used confidently in the variety development process. Case studies will be discussed of genes critical for blast resistance worldwide, rice yellow mottle virus for Africa, and new validated QTLs for salinity tolerance.

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