

Title: Next-Generation Sequencing Technology Towards Gene Discovery of a Philippine Rice Germplasm

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Abstract

Rice importance is paramount to survival of almost half of the world population. Climate change affect this basic commodity in life-threatening magnitude and we need all the help we can get-fast. Genebank remains a depository of novel traits and genes over the past decades. Latest problems needs these 'reserve germplasm' to be explored and forward to breeding programs. Next generation sequencing (NGS) technology could hold the key to maximize the discovery of traits and genes coupled with bioinformatics. Thus, this study aimed to use NGS technology to elucidate some of the genes present in one of the most commonly used rice germplasm Collection 12808 or commonly "Malay 2". A total of 4480 gene-specific single nucleotide polymorphism (SNPs) were discovered in Malay 2. One thousand three hundred fifty-four SNPs for abiotic stress-tolerance/resistance and 3126 SNPs for biotic stress resistance. Blast resistance genes topped the number of gene-specific SNPs with 2888 while the least was with salinity tolerance with six SNPs. On one hand, locus Os02g0162200 dominates the number of SNPs for cold tolerance while loci Os12g0617000 and OsNippo12g248350 dominates the drought tolerance SNPs, while Os03g0332400 dominates the salinity tolerance genes. On the other hand, OsNippo05g098200 dominated the gene-specific SNPs for bacterial blight resistance, OsNippo08g069150 for blast resistance, and LOC_Os05g16200 and OsNippo07g216600 for RTSV resistance. NGS coupled with a working database would lead to a genome-wide elucidation of the genes that a promising rice genebank germplasm could possess. The results could provide insights the usefulness of rice germplasm in breeding programs.

Biography

Wahiba Falek is from National Superior School of Biotechnology, Constantine 3 University, Algeria her research interests are Wild olive, Diversity, Genetics, microsatellites, Structures and also participated in many international conferences around the world.