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RISOTILL: A GENETIC RESOURCE FOR THE IMPROVEMENT OF ITALIAN RICE GERMPLASM

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TILLING (Targeting Induced Local Lesion IN Genomes) is a reverse-genetics approach combining chemical mutagenesis with a sensitive DNA screening-technique to identify point mutations in target genes.

In the framework of the VALORYZA project, a TILLING rice population (denominated RISOTILL) derived from Ethyl Methan Sulphonate (EMS) treatment of the variety Volano was created. The Volano italian rice variety was chosen as being representative of the traditional rice quality and of relevance for ongoing breeding programs in Italy. This genetic resource was created from a starting population of 20.000 EMS-mutagenized seeds and is constituted of 1860 M_1 fertile lines. Molecular screening for mutations at 5 agronomically important genes based on the analysis of 8- to 12-fold DNA pools produced from M_2 DNA samples is underway at the PTP Genomics Platform using the validated FLUOTILL protocol.

As a complementary approach, the natural variation of the 5 candidate genes will also be assessed in a panel of 96 rice accessions representing the existing genetic diversity in the Italian germplasm by ECOTILLING technique.

The RISOTILL mutagenized population, although developed for reverse-genetics purposes, is also suitable for forward-genetics analyses and will be tested to identify variants in plant height, resistance to blast, flowering time, amylose content, panicle size, number of spikelets and other yield components.

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