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PRODUCTION OF CISGENIC DURUM WHEAT LINES FOR DURABLE RESISTANCE TO FUNGAL PATHOGENS.

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The aim of this work was to obtain durum wheat (*Triticum durum* Desf.) lines with resistance to multiple fungal pathogens through the cisgenic insertion of the Lr67 gene, cloned in bread wheat (*Triticum aestivum* L.). This gene codes for a hexose transporter and confers partial resistance to all three wheat rust pathogen species (*Puccinia* spp.) and powdery mildew (*Blumeria graminis* f. sp. *tritici*). The resistance form (LR67res) differs from the susceptible one of the same protein (LR67sus) for only two amino acids, that are responsible for the resistant phenotype. In the present work a minimal gene cassette consisting of the linear DNA fragment excised from the source plasmid has been used for transformation ("clean gene" method), using biolistic system. Two approaches have been considered. In the first one calli derived from immature embryos of the durum wheat cultivar Svevo were bombarded, without any selection, and all plants obtained have been screened for the presence of the resistant allele. The second transformation experiment has been carried out using as a positive selective marker the *Escherichia coli* Phosphomannose Isomerase (PMI) gene, whose product catalyzes the reversible interconversion of mannose-6-phospahte and fructose-6-phospate, allowing plant cells to utilize mannose as a carbon source. To date, a total of 8 and 4 putative cisgenic plants have been obtained by the two methods, respectively. The transformed plants will be advanced through generations in order to select homozigous lines which will be tested for the resistance phenotype. This work is part of the WH-ITALY project (BIOTECH program).