

Marker Assisted Breeding for Grain Quality Improvement in Durum Wheat

Authors : Özlem Ateş Sönmezoğlu, Begüm Terzi, Ahmet Yıldırım, Leyla Gündüz

Abstract : Durum wheat quality is defined as its suitability for pasta processing, that is pasta making quality. Another factor that determines the quality of durum wheat is the nutritional value of wheat or its final products. Wheat is a basic source of calories, proteins and minerals for humans in many countries of the world. For this reason, improvement of wheat nutritional value is of great importance. In recent years, deficiencies in protein and micronutrients, particularly in iron and zinc, have seriously increased. Therefore, basic foods such as wheat must be improved for micronutrient content. The effects of some major genes for grain quality established. Gpc-B1 locus is one of the genes increased protein and micronutrients content, and used in improvement studies of durum wheat nutritional value. The aim of this study was to increase the protein content and the micronutrient (Fe, Zn ve Mn) contents of an advanced durum wheat line (TMB 1) that was previously improved for its protein quality. For this purpose, TMB1 advanced durum wheat line were used as the recurrent parent and also, UC1113-Gpc-B1 line containing the Gpc-B1 gene was used as the gene source. In all of the generations, backcrossed plants carrying the targeted gene region were selected by marker assisted selection (MAS). BC4F1 plants MAS method was employed in combination with embryo culture and rapid plant growth in a controlled greenhouse conditions in order to shorten the duration of the transition between generations in backcross breeding. The Gpc-B1 gene was selected specific molecular markers. Since Yr-36 gene associated with Gpc-B1 allele, it was also transferred to the Gpc-B1 transferred lines. Thus, the backcrossed plants selected by MAS are resistance to yellow rust disease. This research has been financially supported by TÜBİTAK (112T910).

Keywords : Durum wheat, Gpc-B1, MAS, Triticum durum, Yr-36

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