

Advanced backcross QTL analysis for drought tolerance in DH-line-populations derived from crosses between Iranian and European wheat genotypes

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Abstract

Five Iranian wheat genotypes, chosen for their drought tolerance, were crossed with two European spring wheat varieties in altogether 10 combinations. After two to three backcrosses with both parents, doubled haploid (DH) lines through crosses with maize will be developed. Cross combinations for final evaluation will be selected based on: (1) genetic distance of the parents determined by 400 wheat SSR markers (number of polymorphic SSR loci), (2) their seed storage protein banding patterns (SDS-PAGE and A-PAGE), and (3) a drought tolerance test of the parents carried out under controlled conditions.

Primary aim of the study is to map genes (QTLs) controlling tolerance to drought using DH-line progenies of specific crosses. Special attention will be paid to group 5 and 7 chromosomes, which are known to play a major role in adaptation especially to drought. Furthermore, new genetic variation will be introduced into European and Iranian breeding material for a mutual benefit of breeding for the two geographic areas.