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AE. TAUSCHII INTROGRESSION INTO DURUM WHEAT

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The D-genome represents an important source of genes for disease resistance and quality traits in wheat. *Ae. tauschii*, the D-genome donor of wheat, has frequently been used in bread wheat improvement. However, very little work has focussed on the use of the D-genome in durum wheat improvement. In an attempt to create a panel of different D-genome introgression segments into a durum wheat back-ground, an accession of *Ae. tauschii* was crossed to the Langdon disomic 5D/5B substitution line (which lacks the *Ph1* locus). In the absence of the *Ph1* locus on the long arm of chromosome 5B, homoeologous recombination can occur, potentially leading to the introgression of D-chromosome segments into the A or B-genome chromosomes. Viable F₁ seeds were crossed and back crossed to the durum wheat genotype "Om Rabiaa 5". Cytogenetic analysis of 80 BC₁F₂ lines via multicolour-genomic *in situ* hybridisation (GISH) allowed the identification of eight lines showing D-genome segments introgressed into the A and B genome chromosomes. Four of these lines are tetraploid (28 chromosomes). The B-D translocations identified are of a Robertsonian type, while the A-D translocations are telomeric. In addition 18 BC₁F₂ lines were found to be monosomic or disomic addition/substitutions for at least one or two D-chromosomes. The introgressions, addition and substitution lines were characterised using a set of 21 D-genome specific SSR markers and multicolour-fluorescent *in situ* hybridisation (mc-FISH). All of the introgressed D genome segments were derived from either 5DL or 5DS with either the A-or the B-genome. The D chromosomes present in the addition and the substitution lines were mainly derived from chromosome 5D. It was also observed that introgression was not restricted to the gametes of the F₁, i.e., introgressions were generated in the BC₁F₁ in the presence of a single copy of the *Ph1* locus. This work is one of several strategies that we have used to transfer D genome segments into durum wheat. Once stable homozygous lines have been generated they will be made available, free of IP, for exploitation in breeding programmes and for research.

ABSTRACT