Doubled Haploid Production in Wheat Using Imperata cylindrica Mediated Chromosome Elimination Technique

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Abstract : Doubled haploid breeding serves as a useful technique in wheat improvement by providing instant and complete homozygosity. Of the various techniques employed for haploid production chromosome elimination has a large scale practical application in wheat improvement. Barclay (1975) initiated the technique in wheat by crossing wheat variety Chinese spring with Hordeum bulbosum, but due to presence of the dominant crossability inhibitor genes Kr7 and Kr2 in many wheat varieties, the technique was however genotypic specific. The discovery of wheat X maize system of haploid production being genotype non-specific is quite successful but still maize needs to be grown in greenhouse to coincide flowering with wheat crop. Recently, wheat X Imperate cylindrica has been identified as a new chromosome mediated DH approach for efficient haploid induction. An experiment to use this technique in wheat was set up by crossing six F1s and two three way F1s with Imperata cylindrica. The data was recorded for the three component traits of haploid induction viz., seed formation, embryo formation and regeneration frequency. Variation among wheat F1s was observed and higher frequency for all the traits were recorded in cross HD 2997/2*FL-8/DONSK-POLL and KLE/BER/2*FL-8/DONSK-POLL.

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Keywords : wheat, haploid, imperata cylindrica, chromosome elimination technique

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