

Marker-assisted selection for development of kunitz trypsin inhibitor-free soybean varieties: I. Parental polymorphism survey using SSR markers

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Soybean is regarded as "miracle bean" due to its numerous uses as food, feed and health supplement. However, acceptance of soy foods has been restricted by the presence of kunitz trypsin inhibitor (KTI) in soybean seeds. Kunitz trypsin inhibitor also known as SBTI-A2 which constitutes 80% of the total trypsin inhibitor activity, has been shown to be responsible for growth inhibition, pancreatic hypertrophy and hyperplasia in experimental animals [1-3]. Though KTI is heat labile, however, heat treatment is not only cost ineffective but also results in approximately 20% decline in protein solubility [4]. Similarly, boiling of beans prior to grinding with wheat (1:9) is essential while preparing soy-supplemented *chapatti* flour. Therefore, development of KTI-free soybean varieties which are not just available in India is expected to boost utilization

linked with *ti* locus at a distance of 4.5, 0-3.7 and 5.1 cM, respectively [10]. Soybean genotype (PI542044) which is free from KTI can effectively be utilized to transfer *ti* allele to elite soybean varieties through marker-assisted backcross selection (MABS). Hence, five elite soybean varieties viz., NRC7, JS97-52, MACS450, DS93-05 and DS9712 were crossed with PI542044 to introgress the *ti* allele through marker-assisted selection (MAS). This necessitates selection of the target plants with homozygous null allele of KTI (foreground selection) with maximum recovery of recurrent parent genome (background selection). Therefore, the objective of the present study was to assess the level of polymorphism at SSR loci between the donor and the five recurrent parents.