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Development and commercialization of specialty soybean genotypes in India
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In India, breeding programme for development of specialty soybean was initiated to address the needs of soy food, oil and nutraceutical sector. Kunitz trypsin inhibitor (KTI)-free and off-flavour generating lipoxygenases-free soybean are required to spur the utilization of the bean in food uses, while high oleic genotypes obviate the need of partial hydrogenation to improve the oxidative stability of oil. High isoflavones and high tocopherols soybeans are excellent raw material for nutraceutical applications. KTI, the major component of trypsin inhibitor, needs to be inactivated by boiling for 20 min. SSR markers Satt228 and Satt409 tightly linked with *Ti* locus and gene-specific marker were validated. Using these molecular markers, KTI free 'NRC101' and 'NRC102', were developed with PI542044 (donor for null allele) from USDA. Null allele of KTI was introgressed in varieties for Central Zone (JS97-52, NRC7), Southern Zone (JS9305, MACS450) and North Plain Zone (DS97-12). A new SSR marker Satt656 was identified for lipoxygenase-2 (LOX2) gene, the principal contributor to off-flavour in soy products, and used for development of 'NRC109' using PI596540 (source of null LOX2); subsequently, null allele for *Lox2* was introgressed in 'JS97-52'. KTI and LOX2 free soybean lines developed are being used to pyramid null alleles of LOX2 and KTI. Lipoxygenases (LOX1, 2 &3) free lines are being used to develop double /triple null lipoxygenase soybean. Genotypes with oil content 24% and genotypes with 42% oleic acid were developed. Seggregants with oleic acid > 60%, vegetable soybean having high sucrose (7%) at picking stage and free from KTI have been developed. Non-exclusive license for some of these specialty lines has been transferred to Indian corporate.