



**RESEARCH ARTICLE :**

## Functional polymorphism for crtRB1 gene loci in tropical maize (*Zea mays* L.) inbred lines

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**SUMMARY :** Maize (*Zea mays* L.) is an important crop known for its carotenoid diversity among cereals which accumulates significant levels of proA (provitamin A) and non-proA carotenoids in its kernels. The proA components of maize endosperm promise to solve the major global problem VAD (Vitamin A deficiency). Among several genes involved in  $\beta$ -carotene biosynthetic pathway, crtRB1 is a very important gene associated with three polymorphisms viz., 5' TE, In Del4 and 3' TE (Transposable Element) responsible for variation in carotenoid levels in maize endosperm. Due to insertion of TE at 3' UTR (Un Translated Region), crtRB1 again exhibits polymorphism with 3 alleles, however, only allele 1 (favourable allele; 543bp amplicon) of this crtRB1-3' TE gene will double the  $\beta$ -carotene concentration in maize endosperm and allele 2 and 3 termed as unfavourable. This study was undertaken to find out the allelic difference for crtRB1 gene loci. Totally 228 tropical maize inbred lines were screened for allele 1 of crtRB1 gene using crtRB1-3' TE gene specific markers. Among 228 inbreds, 226 inbreds showed the presence of allele 2 and the two inbreds VL1016247 and VL1016213 possessed both alleles 1 and 2 which are found to be heterozygous for crtRB1 loci. This study indicated the possible use of (VL1016247 and VL1016213) these two inbreds for developing provitamin A (proA) rich maize hybrids using marker assisted selection (MAS).

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