

mutant were randomly amplified by PCR method, respectively. The results indicated that there was significant difference among different doses (Fig. 1). Further analysis showed that 726 bands were produced by 38 primers in all, among which 86 DNA bands were polymorphic bands with the value being 11.9%.

Similarly, 29 primers were used to amplify genomic DNA of KFJT-CK and KFJT-1, which KFJT-1 was isolated from irradiated progenies of KFJT-CK (Fig. 2). The results revealed that 152 bands were produced from KFJT-1 and KFJT-CK in all, among which 8 DNA bands were polymorphic bands with the value being 5.3%.

Taken together, RAPD technology is an effective method which be used for the detection of DNA damage and mutations and it can quickly detect a large number of genetic polymorphism in sweet sorghum.

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3 - 52 Leaf Variegation Mutant Induced by Carbon Ion Irradiations in *Arabidopsis thaliana*

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Arabidopsis thaliana is an important model plant species for identifying genes and determining their functions, it was widely used in the study of plant genetics, developmental and molecular biology. As a model plant, *Arabidopsis thaliana* has many advantages for research, such as small size, short generation, large number of offspring and relatively small nuclear genome.

Leaf variegation has been known as a recessive genetic character in higher plants. For screening the mutants of leaf variegation, abundant of dry seeds of *Arabidopsis thaliana* (ecotype: Columbia) were irradiated by carbon ions provided by the Heavy Ion Research Facility in Lanzhou (HIRFL) in 2011. A leaf variegation mutant named 352[#] was isolated from M2 populations. As shown in Fig. 1, the plantlet of this mutant had shorter petioles and compact rosettes comparing with wild type. Not only leaves but also stems of this mutant were all variegated. Moreover, it was interesting that the color of flowers and siliques of mutants 352[#] were variegated.

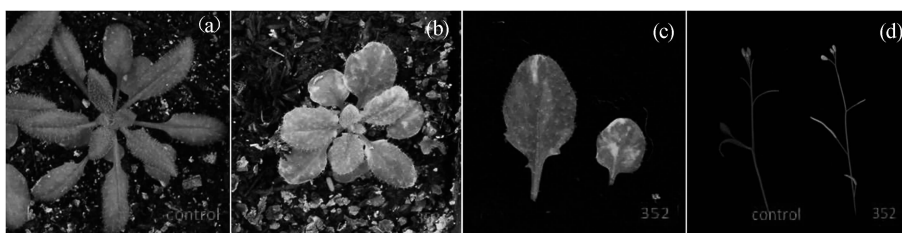


Fig.1 The phenotype of leaf variegation mutant induced by carbon ion irradiation. (a) wild type; (b) mutant 352[#]; (c) leaves of mutant 352[#]; (d) stem and siliques of mutant 352[#].

In order to study the molecular mechanism of leaf variegation induced by carbon ions, the method of Map-based cloning was applied to separate the target gene. F2 populations crossed with the ecotype *Landsberg erecta* and mutants 352[#] were used as the mapping population. The results of rough genetic linkage analysis showed that the target gene was primary located on chromosome II. The fine genetic mapping and the function of target gene determination will be performed in the near future.