SSR based parental polymorphism survey for marker assisted backcross breeding in rice (*Oryza sativa* L.)

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ABSTRACT

The brown planthopper (BPH), *Nilaparvata lugens* (Stål), is a destructive and widespread pest in rice-growing regions across Asia and developing resistant varieties is considered to be the most effective solution. Marker assisted backcrossing (MABC) is a widely used approach for introgressing resistant genes using backcross breeding to the highly adapted varieties from donors with the help of molecular markers and the availability of polymorphic markers being a critical factor for its success. The present study was aimed to assess parental polymorphism per centage using SSR markers between the rice varieties BPT5204 and RP2068-18-3-5 (donor for BPH resistant gene). A total of 340 SSR markers covering 12 chromosomes were used for the survey and 96 markers were found to be polymorphic between the parents. The number of polymorphic markers per chromosome ranged from 6 to 11, with the highest number (11) observed on chromosomes 1 and 3. The percentage of polymorphism per chromosome ranged from 16.7% to 36.7%, with chromosome 3 showing the highest percentage. The average polymorphism rate per chromosome was 28.3%. The identified polymorphic markers will be useful for estimating the recurrent parent genome recovery per centage in marker-assisted background selection and for mapping QTLs associated with BPH resistance.

Key words: *Parental survey, Polymorphism, Rice and SSR markers*