RAPD ANALYSIS IN MUNGBEAN [VIGNA RADIATA (L.) WILCZEK]

Anamika Nath, S.R. Maloo and B.L. Meena*

Department of Plant Breeding & Genetics,
Maharana Pratap University of Agriculture and Technology Udaipur (Rajasthan) -313001

Received-16.03.2017, Revised-06.04.2017

Abstract: Molecular characterization is helpful in understanding the phylogenetic relationship among various germplasm to reveal the genetic diversity within a given taxonomic group. Evaluation of genetic diversity would promote the efficient use of genetic variations (Paterson *et al.*, 1991), effective conservation and purity of the genotype to be determined as well as utilization of germplasm in crop improvement .RAPD marker analysis was performed to detect relatedness and diversity among eight parental genotypes. Twenty five RAPD primers having 60% or more GC content were used for the present investigation. Out of 25 primers only 17 were amplified and produce total 391 amplified fragments (amplicon) ranged between 100 bp to 2500 bp. Out of 104 scorable bands, 91 were polymorphic that showed 88 per cent polymorphism. The average number of bands per primer was found to be 6.12 and average numbers of polymorphic bands per primer were 5.35. OPP-10 proved to be best primer in our investigation with total 52 fragments and eight highest scorable bands as well as 100 per cent polymorphism.

Keywords: Mungbean, RAPD Markers, Yield, Yield components

REFERENCES

Datta, S., Gangwar, S., Kumar, S., Gupta, S., Rai, R., Kaashyap, M., Singh, P., Chaturvedi, S.K., Singh, B.B. and Nadarajan, N. (2012). Genetic Diversity in Selected Indian Mungbean [Vigna radiata (L.) Wilczek] Cultivars Using RAPD Markers, American Journal of Plant Sciences, 3: 1085-1091.

Gherardi, M., Mangin, B., Goffinet, B., Bonnet, D. and Huguet, T. (1998). A method to measure genetic distance between allogamous populations of alfalfa (*Medicago sativa*) using RAPD molecular markers. *Theory Application Geneticia*, **96:** 406-412.

Khamassi, K., Khoufi, S., Chaabane, R., Da Silva, J. A. T. and Naceur, M. B. (2011). Optimization of conditions for assessment of genetic diversity in chickpea (*C. arietinum* L.) using SSR markers. *International Journal of Plant Breeding*, 12: 141-145.

Lakshanpaul, S., Chadha, S. and Bhat, K. V. (2006). Random amplified polymorphic DNA (RAPD) analysis in Indian mung bean (*Vigna radiata* (L.) Wilczek) cultivars. *Springer*, **109**: 227-234.

Lavanya, G.R., Srivastava, J. and Ranade, S.A. (2008). Molecular assessment of genetic diversity in mungbean germplasm. *Journal of Genetics*, **87**: 65–74

Paterson, A. H., Damon, S., Hewitt, J. D., Zamir, S., Rabinowitch, H. D., Lincoin, S. E., Lander, S. E. and Tanksley, S. D. (1991). Mendelian factors underlying quantitative traits in tomato: comparison across species, generations, and environments. *Genetics*, 127: 181-197.

Rohlf, F.J. (1993). NTSYS-PC. Numerical taxonomy and multivariate analysis system. Exeter Software, New York.

Saini, M., Singh, S. Hussain, Z. and Sikka, V.K. (2010). RAPD analysis in mungbean [Vigna radiata (L.) Wilczek.] II: A comparison of efficiency parameters of RAPD primers. Indian Journal of Biotechnology, **09**: 276-282.

Sheikh, W., Acharya, S., Patel, J.B., Kalaskar, S.R. and Shinde, A.S. (2011). RAPD-based polymorphism between cytoplasmic generic male sterile and restorer lines of pigeonpea. *Journal of Food Legumes*, **24**: 288-291.

Sony, S. K., Habib, M. A. and Islam, M. N. (2012). Genetic diversity analysis of thirteen mungbean (*V. radiata* L.) cultivars using RAPD markers. *Bangladesh Journal of Botany*, **41:** 169-175.

Souframanien, J. and Gopalakrishna, T. (2004). A comparative analysis of genetic diversity in black gram genotypes using RAPD and ISSR markers. *Theoretical and Applied Genetics*, 109: 1687-1693.

Undal, V. S., Thakare, P. V., Chaudhari, U. S., Deshmukh, V. P. and Gawande, P. A. (2011). Estimation of Genetic Diversity among wild *Vigna* species revealed by RAPD Markers. *Annals of Biological Research*, **2:** 348-354.

Yee, E., Kidwell, K., Sills, G. R. and Lumpkin, T. A. (1999). Diversity among selected *Vigna angularis* (Azuki) accessions on the basis of RAPD and AFLP markers. *Crop Sciences*, 29: 268-275.

Yoon, M. S., Doi, K., Kaga, A., Tomooka, N. and Vanghan, D. A. (2000). Analysis of genetic diversity in the *Vigna minima* complex and related species in east Asia. *Journal of Plant Research*, 113: 375-386.

*Corresponding Author