2<sup>nd</sup> International Conference on

## **Genetic & Protein Engineering**

November 14-16, 2016 Atlanta, Georgia, USA

Single marker analysis in mungbean (*Vigna radiata* (L) Wilczek) for powdery mildew disease resistance and yield attributing traits

D L Savithramma and C K Divya Ramakrishnan University of Agricultural Science, India

Dulse crops have been shown to be an excellent source of dietary protein important for the human diet and play a key role in Crop rotation due to their ability to fix nitrogen. Since all recommended greengram varieties are susceptible to the disease, plant breeders are interested in developing resistant varieties through both conventional and marker-assisted breeding. The genetic nature of a trait, phenotypic data and genotypic data from molecular markers was studied by detecting associations between markers and traits and determined the number and nature of a gene/quantitative trait locus (QTL) controlling a trait. Mung bean germplasm screening was done for powdery mildew disease resistance and yield related traits and genotypes were selected. Hybridization was done between powdery mildew resistant BL 849 (male parent) and Chinamung (female parent) which issusceptible but high yielding. The F1 generation was developed and forwarded to F2. Individuals of F2generation of this cross were screened for powdery mildew disease. The F2 individuals were also classified into three marker classes. The mean disease score of the 94 F2 individuals belonging to each of the marker classes were computed. The significance of differences among the three marker classes for disease score and productivity traits were tested using F test through ANOVA approach. The relationship between molecular markers and phenotypic scores were analysed by single marker analysis to identify SSR markers that had significant association with powdery mildew disease reaction severity scoresin greengram.For the markers DMBSSR 130 and VM 27, chi square ( $\chi^2$ ) was non significant suggesting that the distribution of the genotypic data fit Mendel's segregation ratio of 1:2:1. Single marker analysis for SSR marker DMBSSR 130 and VM 27 showed very high association among the marker classes and the powdery mildew resistant type in F2 mapping population. In the single marker analysis, the markers GBSSRMB 14 and DMBSSR 34 were found to be highly linked with traits viz., number of pods per plant, pod yield per plant and seed yield per plant in F2 segregating population. This indicates that the same gene is controlling the expression of these characters. Moreover, phenotypically these characters have more association with each other. Hence these markers may be useful for marker assisted breeding program. GBSSRMB 14 was also linked with number of pods per plant and number of clusters per plant. MBSSR 42 was associated with seed yield, pod yield and number of clusters per plant. The marker GBSSR MB 87 was found to be associated with number of branches per plant. Molecular markers linked with QTL/major genes for traits of interest are being routinely developed in several crops. However, non-availability of mapping populations and substantial time needed to develop such populations are sometimes major limitations in the identification of molecular markers for specific traits. Another limitation is the absence of tight linkage between marker and traits observed in these studies. Also, it is difficult to eliminate false positives with available methods. Therefore, markers identified during the present study need to be subjected to validation and/or functional analysis of respective traits.

## Biography

D L Savithramma has completed her PhD from University of Agricultural Sciences, Bangalore, India and Post-doctoral studies as a Biotechnology National Associate from Indian Institute Science, Bangalore, India. She is a Professor of Genetics and Plant Breeding at University of Agricultural Sciences, Bangalore, India, one of the premier Agricultural Universities in India. She has published more than 70 papers in reputed journals and has released seven varieties in vegetable cowpea, seed cowpea, peanut and *Chrysanthemum*.

nesarns@gmail.com

Notes: