

# Genetic diversity within *Lablab purpureus* and the application of gene-specific markers from a range of legume species

S. C. Venkatesha<sup>1</sup>, M. Byre Gowda<sup>1</sup>, P. Mahadevu<sup>1</sup>, A. Mohan Rao, D.-J. Kim<sup>2</sup>, T. H. N. Ellis<sup>3</sup> and M. R. Knox<sup>3\*</sup>

<sup>1</sup>University of Agricultural Sciences, GKVK Campus, Bangalore 560065 Karnataka, India, <sup>2</sup>International Institute of Tropical Agriculture (IITA), C/O Biosciences Eastern and Central Africa (BECA), PO Box 30709, Nairobi, Kenya and <sup>3</sup>John Innes Centre, Colney Lane, Norwich, NR4 7UH, UK

Received 15 August 2006; Accepted 20 October 2006

## Abstract

Molecular markers have been used to study genetic diversity within a set of *Lablab purpureus* accessions collected from the southern states of India. Amplified fragment length polymorphism (AFLP) molecular marker studies using a total of 78 *L. purpureus* accessions with nine primer combinations showed there was very little genetic diversity within the *L. purpureus* accessions from the southern Indian germplasm collection as compared to a set of 15 accessions from other international germplasm collections that included African accessions.

The set of 15 were selected from a random amplified length polymorphism (RAPD) marker study and chosen on the basis of widest genetic distance. Further molecular analysis with polymerase chain reaction (PCR) markers from 97 expressed sequence tag (EST) and gene-specific primer pairs, designed from a range of legume sequences, concurred with the AFLP analyses. Both of these approaches provide a wealth of markers for diversity and mapping studies. The 97 sequence-specific primer pairs tested in *L. purpureus* resulted in 70% amplification success, with 44% of primer pairs amplifying single bands and 10% double bands. Markers generated from these EST and genomic sequences provide useful cross-reference to comparative legume genomics that will potentially have long-term benefit to legume plant breeding.

**Keywords:** AFLP; gene-specific markers; genetic diversity; *Lablab purpureus*; legumes; *Medicago truncatula*