PREFACE

International experts are once again asking "Who will feed India in the next 20 – 30 years?" MS Swaminathan replied, 'Indian farm families,' provided we take immediate steps to improve and conserve our natural resources.

-The Hindu, Survey of Indian Agriculture, 2000

India is still witnessing population explosion at an alarming rate and nearly one third of it is confined to rural areas, struggling to meet the basic needs of quality life. Green revolution has achieved success in the production of cereals and the nation is now in the state of self sufficiency. At the same time, it is unfortunate that the cultivation and improvement of crops such as pulses have not been given due attention. This has lead to protein malnutrition among rural population for whom the only cheaper source of edible protein is non other than pulses. In recent years, the agriculture sector has been experiencing severe pest problems like cotton pest Heliothis, leading to suicidal death of farmers. Hence, our research objective is focused on both improvement in yield and combating plant diseases. In this context, India should pin its hopes on 'gene revolution' to produce 'super cultivars' which will be high yielding and at the same time disease resistant. Genetic engineering has resulted in the production of transgenic plants in Brassica and in some solanaceous species but the legumes have gained impetus and attention only in the latter part of the 1980’s. Vigna species continue to be the prime sources of protein for a majority of Indian population and deserve improvement. Although species of Vigna are not easily transformable, consistent reports in other related pulses indicate the possibility of developing an efficient transformation system. The present work provides a repeatable, reliable and efficient regeneration and transformation protocol through direct regeneration and somatic embryogenesis in Vigna unguiculata. The success of this study would facilitate transfer of genes for biotic stress resistance to Vigna which will have tremendous applications in overall pulse improvement.

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