

## Genetic engineering in banana and plantain

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Bananas are one among the world's leading food crops, after rice, wheat and maize. Almost ninety percent of production is consumed in the production areas, especially in the poorest countries in Africa, Latin America and Asia. In certain regions, pureed banana is the first solid food given to infants. Bananas contribute to reducing food insecurity in producer country populations. Their composition, which includes high carbohydrates and minerals, makes them a staple calorie resource for over 500 million inhabitants of tropical countries. Considering the nutrition aspect, it is the world's leading fruit crop, and in terms of economical value it is ranked as fifth economically important agricultural crop in world trade. In the global production of banana India contributes 29.19% as leading country.

Bananas face numerous environmental challenges, particularly with fungal, bacterial as well as the major threatening disease like banana bunchy top virus. The problem is further aggravated by the limited diversity of banana cultivars around the world. Conventional breeding methods have limited success due to low female fertility, sterility, ploidy levels and poor seed set, besides the process is time consuming. These problems point to the necessity of developing alternate strategies for banana improvement through advancement of biotechnology tools like tissue culture and transgenic technology to improve the bananas. In this regard, I will be discussing the current status of Banana improvement using biotechnology and future prospects.

### Biography

Sivalingam Elayabalan completed his Ph.D. in Biotechnology during the year 2006-2010 and master's in Biotechnology during 2004-2006 and B.Sc. in Agriculture during 2000-2004 in Tamil Nadu Agricultural University (TNAU) situated in Coimbatore, India. It is one of the greatest agricultural universities in India. It is mainly devoted to best research and teaching. Currently, he is working as Research Associate in Center for Plant Molecular Biology (CPMB) TNAU. Here he is taking this immense opportunity to deliver something about his attitude and experience towards the research works and teaching which he carried out so far. Throughout his master and Ph.D. program, he learnt and became well versed in most of the plant tissue culture and molecular techniques like nucleic acid isolation and purification (RNA, DNA and Plasmids), molecular cloning techniques (transformation vector construction and RNAi construct) and screening techniques (western blot, southern blot), ELISA assays and biochemical analyses such as carbohydrate, protein (Bradford and Lowry's method) and fat estimation through calorimetric instruments. His hands on experience in cell & tissue culture and plant transformation is quite good to work at any crop good in both somatic embryogenesis and direct organogenesis and in Embryogenic cell suspension (ECS) culture, Long term maintenance of Embryogenic calli and ECS works and construction of Plant transformation vectors and screening of transgenic crops. While doing Doctorate he visited East Africa, Kenya, Tanzania, Malaysia and China to attend the International Banana Conference and presented a part of his research work. In December 2010, he received National Award for the Best Dissertation Award in Banana and Plantain work on Management of banana bunchy top virus in hill banana through RNAi technology and developed the embryogenic cell regulation protocol. He has published only on banana related work, 3 full-length original research papers, 4 book chapters and 7 international abstracts and participated in 10 conference related to banana at both national and international level. He is also a member of International Society for Horticultural Science (ISHS) and Association for Improvement in Production and Utilization in Banana (AIPUB).

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