

**REJUVENATION OF HILL BANANA (VIRUPAKSHI; GI-124) FROM  
BANANA BUNCHY TOP VIRUS IN TAMIL NADU**



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**(R. Selvarajan and S. Uma)**

## **Preamble**

Virupakshi, commonly known as Hill banana, is one of the elite clones known for its special flavor, taste and keeping quality and considered as the heritage banana of Tamil Nadu. It is being grown exclusively in the Lower Pulney Hills of Tamil Nadu at an elevation in the range of 4000-5000 ft. MSL. This is a rainfed crop and grown perennially for more than 10-15 years. Since, the fruit pulp is very sweet and has a unique consistency and long keeping quality, it is being used for preparing a divine *prasadam* called *Panchamirtham*, which is offered to main deity, Karthikeya (Murugan), at Palani (Pulney) Temple in Tamil Nadu.

## **Impact of BBTV on Hill banana and rejuvenation**

In 1950s, Hill bananas in Lower Pulney Hills was spread in an area of 18000 ha and was supporting the livelihood security of people of Pulney Hills. The dreaded bunchy top disease caused by bunchy top virus crept in Hill banana and harboured in the perennial banana plantations leading to its slow and steady decline. By 1990s, the area shrunk from 18000 ha to 2000 ha. The variety was brought into the list of endangered banana varieties.

ICAR-NRCB realized the gravity of the situation, organized systematic meetings along with TNAU, State Departments, Farmers Federations and other stakeholders sensitizing the need for destroying virus affected clumps and replanting with disease free tissue culture plants. This effort needed a strong financial support and thus intervention from the State Government was sought. Hill banana Rejuvenation project was implemented involving NRCB, TNAU, Tamil Nadu Hill Banana Growers Federation (TNHBGF) on Public-Private Partnership mode. The virus indexed mother cultures were multiplied by six private tissue culture companies and supplied to growers for replanting. The farmers uprooting the diseases clumps were given incentives.

The high yielding BBTV free mother plants obtained from Lower Pulney Hills have been regularly indexed and maintained at NRCB research farm since 2002. Under an ICAR-NATP project, polyclonal antiserum for BBTV and also a PCR based diagnostics for indexing hill banana suckers were developed and using these technologies, the mother plants were regularly indexed for BBTV. More than 5000 indexed mother plants were supplied to TNHBGF, Pattiveeranpatti, Dindigul District and Horticulture College and Research Institute (TNAU), Coimbatore for mass propagation through tissue culture. Mother plants were also supplied to a DBT recognized Tissue Culture production unit, M/s. Shanthi Biotech, Bengaluru through the TNHBGF and this firm has mass propagated more than 3.5 lakh plants and distributed free of cost to Hill banana growers of Lower Pulney Hills through the Department of Horticulture, Government of Tamil Nadu. Virus free tissue culture hill banana was also distributed by M/s. Jain Irrigation System Limited, Jalgaon, Maharashtra using 200 NRCB indexed hill banana mother plants.



Bunchy top virus affected banana plantation

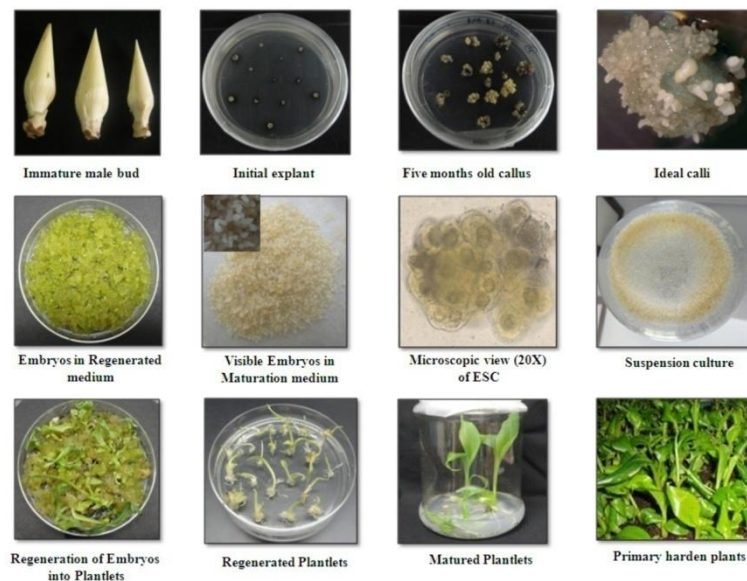


A rejuvenated Hill banana garden in lower Pulney Hills

### **Mass multiplication of Hill banana**

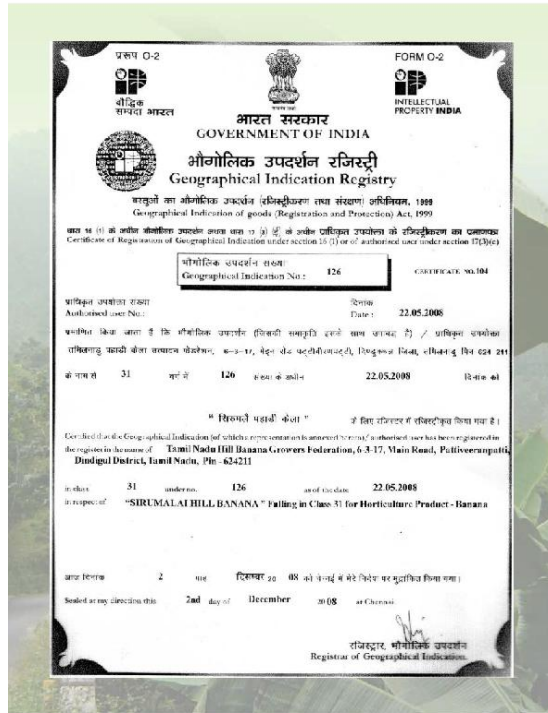
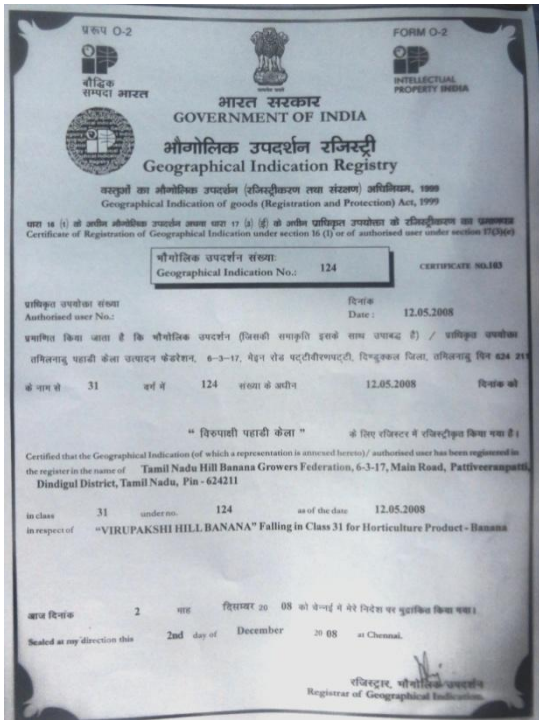
Tissue culture propagation by shoot tip culture method has not yielded sufficient number of plants due to poor multiplication ratio of this elite variety. Hence, most of TC companies have given up the mass propagation of this variety through tissue culture of shoot tips. NRCB has developed a new mass multiplication technique using embryogenic cell suspensions (ECS) developed from immature male flower. With the help of ECS, enormous number of plants can be produced in a short time. From one ml of ECS, more than 10,000 plants can be produced in a six-month period. Using this technology, virus free Virupakshi

plants can be supplied in a larger number for the benefit of resource poor farmers of Lower Pulney Hills. This technology shall be in place for supplying more virus free plants in future.



The process of development of Hill banana plants through ECS

The bunchy top incidence in the Pulney hills during early 1990s was more than 60% and the recent survey showed that the disease incidence was reduced significantly to less than 10% owing to the use of virus free TC banana plants and use of the suckers derived from them and this was made possible with the efforts of ICAR-NRCB. The TNHBGF has been recognized for their efforts of obtaining Geographical Indications (GI) for Virupakshi and Sirumalai and they bagged a prestigious ‘**Plant Genome Savior Community Award 2010-11**’ by PPV & FRA, New Delhi. The contribution of ICAR-NRCB by supplying of bunchy top virus free mother plants of Hill banana paved the way to rejuvenate this elite clone in the region and it has been appreciated by all the stakeholders.



Geographical Indication Certificates for Virupakshi and Sirumalai Hill bananas



Mr. Shaker Nagarajan (third left) , President of TNHBGF with Dr. H. P. Singh (extreme left) former DDG(H), ICAR; Prof. M. S. Swaminathan (centre) and Dr. (Mrs.) S. Uma, Director of NRCB while receiving ‘Genome Saviour Community Award 2010-11’.