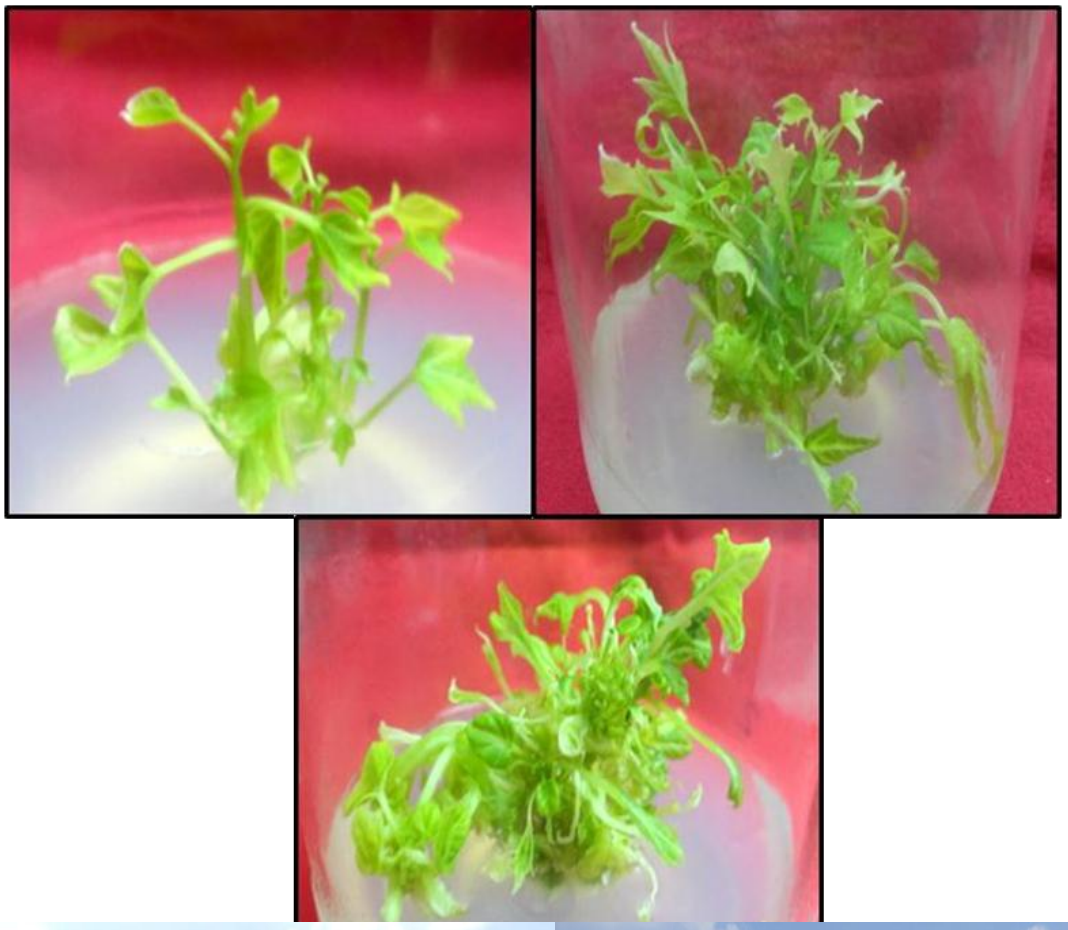
Name of the project	**Micro-propagation of stable hermaphrodite papaya and promotion among the western U.P.**
Funding agency	**Council of Science and Technology, Lucknow, U.P.**
Year of start	**2017-18**
Year of completion	**2020-21**
Name of PI and Co-PI	**Dr. R.S. Sengar**
Total budget	**11.71 Lakhs**

Significant achievements

- Twenty-five papaya genotypes were used for genetic diversity analysis using twenty SSR primers. The primers used produced amplicons in all the genotypes.
- Intense population of different cultivars was tested for linkage of W11 marker to sex type. The reaction profile of this SCAR marker assay was optimized by modifying the earlier mentioned protocol (Deputy et al., 2002) through a change of the concentrations of PCR ingredients, such as a decrease in $Mgcl_2$ concentration, an increase in the concentration of dNTPs, primers, DNA and Taq polymerase. Amplified fragment of 700 were obtained in hermaphrodite and male papaya plants only, but not in female plants. This amplification pattern was confirmed by initial screening and validated in true male, female and hermaphrodite plants of both dioecious and gynodioecious cultivars.
- If the sex of papaya is identified at the time of seedling, then the Papaya grower's may be benefitted at the time of installation. When bisexual plants are used for horticulture in the fields in their early stages, good yields are obtained.
- After evaluation of field grown hermaphrodite papaya plants were distributed among the western U.P. farmers for the promotion of papaya farming.
- Two papaya varieties namely Pusa Delicious and Tywan-786 were tested for micro-propagation through axillary buds as explants. Axillary buds excised from field grown plants were used for establishment of disease-free quality planting materials in papaya under in-vitro conditions out of different media combination. Basal dose of MS + BAP 1.0 mg/L + NAA 0.5 mg/L gave the best result.
- Thiamine and Riboflavin content in both the analysed parts was found very less and the most abundant vitamin in pulp of these varieties is Beta-carotene. Vitamin C content in both the analysed parts was recorded in sufficient quantity.



Distribution of tissue cultured papaya plants by Hob'ble Vice-chancellor PROF. R.K. MITTAL, SVPUA&T, to the Western Uttar Pradesh

DG UPKAR Dr. Bijendar Singh Visiting in tissue culture Lab

Hon'ble Agriculture Minister Shri Surya Pratap Shahi Ji and Hon'ble Vice-Chancellor Prof. R.K.Mittal witnessing tissue cultured papaya plant

Recommendations:

- Two varieties viz., Red Lady-786 and Pusa Delicious were found superior on the basis of all the parameters tested with their largest fruit size and highest specific gravity.
- Based on physio-biochemical and fruit quality parameters, papaya verities namely Pusa Delicious, Pusa Nanha and Red Lady-786 were found to be superior.
- Hermaphrodite Papaya farming will be helpful in increasing farmer's income.