

FACULTY OF ENGINEERING & TECHNOLOGY



Principle of Plant Tissue Culture

PTC depends upon the five principles

Totipotency

It is the ability of plant cells to regenerate into a a whole plant.

Plasticity

It is the ability of plants to alter their metabolism, growth and development to best suit their environment.

Ground State

It refers the normal state of cell. Cell may already be competent or incompetent.

Competency

Cells retain ability for differentiation and morphogenesis

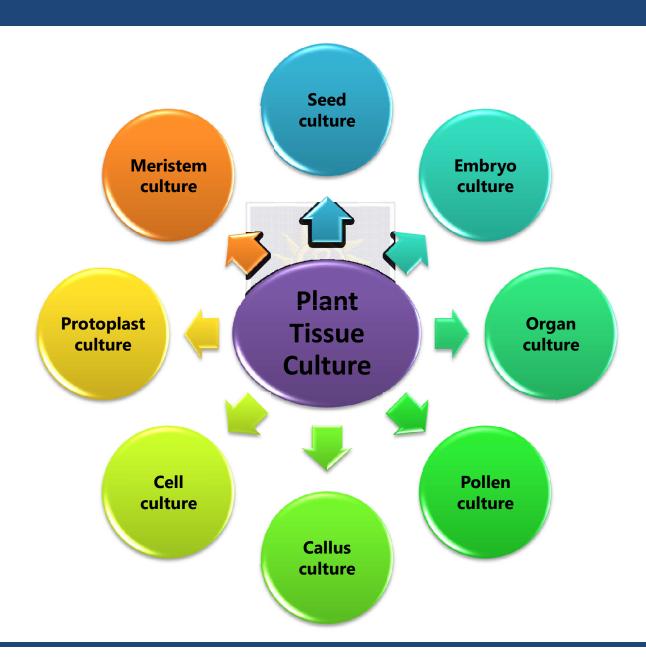
Determinism

Ability of a cell to respond to the stimulus that initiates a developmental process leading to morphogenesis.

The two main aspects of plant tissue culture are:

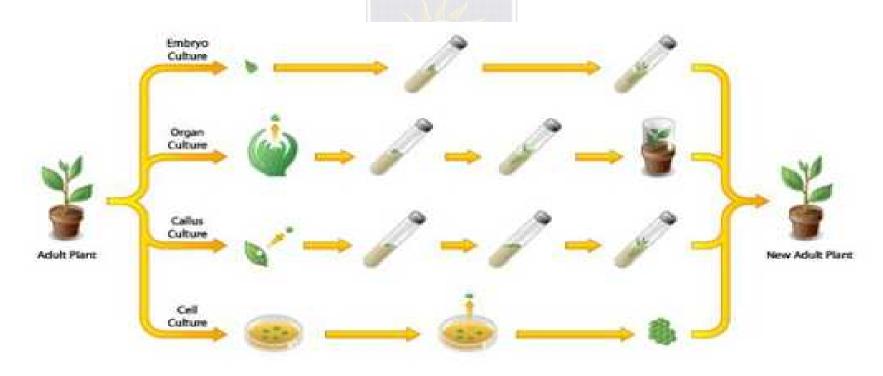
- 1. Multiplication of a single cell in vitro.
- 2. Development of a whole plant from proliferated tissue of this cell.

Types of Plant Tissue Culture

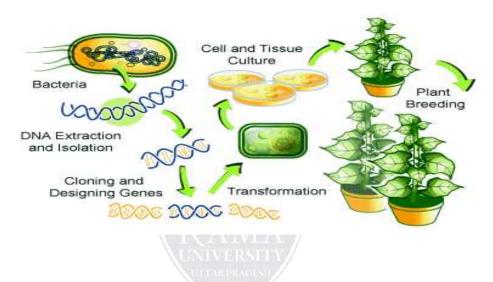


The basic technology can be divided into five classes, depending on the material being used:

Callus, organ, meristem, and protoplast and cell culture. The technique of embryo, ovule, ovary, anther and microspore culture are used and can yield genotypes that cannot easily be produced by conventional methodology



1985: First GM plants in field in the UK.



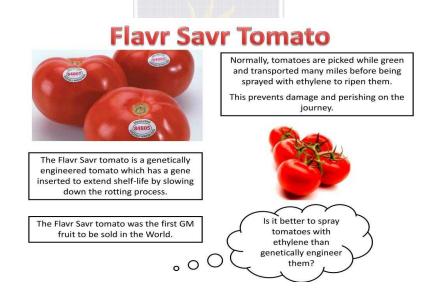
1990: The first field trial of GM cotton.



https://www.stopcorporate/inpurity.org/west-african-country-dumps-manuaritos-gmi-cotton-seeks-compensation/

1992: FDA (Food and Drug Administration) decided GM foods would be regulated as conventional foods.

1994: Flavr Sarv Tomato - the first GM food to be approved for sale in the U.S. It promised a longer shelf life and "that homegrown flavor", even in winter.

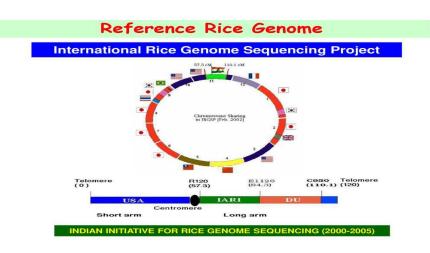


1996: First large-scale cultivation of GM soybean and maize.

2000: Arabidopsis genome sequence completed. The genome contains 25,498 genes encoding proteins from 11,000 families.

2003: The International Rice Genome Sequencing Project, a 10- nation publicly funded effort, had unveiled the most complete draft yet - and it's available to all.





2004: First generation Golden rice field trial. Golden rice was developed as a fortified food to be used in areas where there is a shortage of dietary vitamin A.

