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These techniques behind can be used as tools for plant micropropagation , rapid spread of clones , removal of viruses and diseases, production of haploids , protoplast isolation and utilization, embryo culture, production of phytochemicals , genetic engineering , mutation and cell selection, production of synthetic seeds and basic studies of anatomy, development, physiology and plant nutrition.

Tissue culture starts with the microscopic dissection of the plant under strictly hygienic in order to transfer an actively growing tissue (meristematic tissue) with safety and cleanliness in a sterile container without introducing micro pollutants. The cells and tissues grow and develop from the original explant depends on the goals of tissue culture. In some cases the cells will form a seemingly disorganized mass, known as corn , others will be present other recognizable structures such as stems , roots , bulbs or other organs. These tissues cultured in vitro are a microcosm within a sterile glass or plastic, protected from the external environment is not sterile. It is essential to maintain the sterility of the confined environment in the container, because any organism that is gained the entrance to it opportunistically grow at a rate much faster than the plant tissues and eventually colonize and kill tissue. In order to maintain the vigor of the plant tissues and allow them to grow, multiply and develop, this is "growing tissues," must be provided in addition to certain external requirements. The tissues may need to support them or be placed on or inside the surface of an aqueous gel solidified with agar or placed in a liquid medium. The fabrics also need a supply of nutritious mineral elements essential for plant growth, possibly also some vitamins , sugars as an energy source and a mixture of plant hormones known to control growth and development of these particular tissues. For proper growth and development of tissue culture is usually necessary to supply light to extremely low, much lower than that of sunlight. The accumulation in plants of energy from carbohydrates come from sugars added to the culture medium, rather than fromphotosynthesis , so that unnecessary high levels of light.

The plant tissue culture is used as a key tool in a number of areas and techniques of research and plant production, all related to what is now known as plant biotechnology . Here are some of the most important:

? Basic studies of anatomy, development and plant nutrition.

? Somaclonal variation and selection gametoclonal via phone.

? Isolation of protoplasts. Used for cell fusion (somatic hybridization) and genetic engineering .

? Production of haploid plants through anther or pollen culture.

? Rescue of fertilized eggs and embryos of interspecific and intergeneric crosses

? Genetic Engineering: includes all techniques that use living organisms or their components to produce or modify its products. The variety of applications including the areas of energy, environmental management and agricultural and pharmaceutical products.

? Micropropagation plants. Clonal spread or spread in vitro and vegetative propagation.

? Somatic embryogenesis .

? Meristem culture for elimination of viruses and diseases in plants.

? Production of phytochemicals or production of substances of secondary metabolism .

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