

Tissue culture reproduction shows promise

Improved plants, duplicated vegetatively by tissue culture (rather than sexually by seed) are identical to the parent, can be obtained more rapidly than by seed, and can be disease-free.

Texas Agricultural Experiment Station (TAES) scientists have found plant tissue culture techniques to be a valuable tool for studies of plant development, viral elimination from infected stocks, rapid clonal multiplication, pharmaceutical production, genetics, and crop improvement.

Plant parts can be grown in isolation and in environments of controlled nutrition, light, temperature and humidity.

Culture media have been developed that permit growth of cells and tissues of many plants in test tubes. Plant cells or tissues placed on appropriate media can be grown as

a dividing mass of cells that can then be induced to form shoots or roots and complete plants.

According to Drs. Roberta H. Smith and H. James Price, plant physiologists and geneticists with TAES, plant cell cultures and the ability to manipulate them in test tubes have brought about much interest in the potential application of somatic cell (body cells other than germ cells) genetics for crop improvement.

Cell cultures may be employed in screening for disease resistance among cells. In one case, mutant plants have shown a greater resistance to infection than the variety from which they were derived.

Selection from other traits, such as insecticide and herbicide resistance, nematode resistance, improved nutritional quality, heat or cold tolerance, and salinity toler-

ance is a potential of cell cultures.

The biochemical constitution of plant tissues can be selected through screening of mutants at the cell level.

Previous research indicated that there is a potential to raise the level of specific amino acids and hence the nutritional quality of the plants.

Tissue culture techniques have been very effective in studying basic physiological growth and propagation of herbaceous angiosperms (flowering plants) and should be used to obtain similar information on woody plants.

The problem in the past has been due to the difficulty in culturing tissue from woody plants in test tubes.

Research indicates that there is a tremendous potential for tissue propagation of desirable pecan root-sticks in large numbers. □



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