

TISSUE CULTURE OF FOLIAGE CROPS

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Tissue culture is a scientific extension of the foliage grower's propagation house. Many foliage items can utilize the rapid multiplication of the tissue culture laboratory at an economical and feasible expense.

The expense of tissue culture is very critical in certain types of foliage propagation. Certain items still may be grown cheaper and just as well in mother blocks in the greenhouse. These items then, even though may be technically possible in the lab, may not be economically feasible; i.e., we have found African violets to be cheaper to produce outside the laboratory.

Many of these non-economic, feasible laboratory propagations may be done in the lab for other reasons. One is to have pathogen-free stock to put out in greenhouse mother blocks. Another reason would be a new cultivar to multiply in the lab to gain sufficient numbers to build up a large mother stock block then take cuttings from the greenhouse stock.

We have found that most ferns are economically feasible to reproduce in the lab due to the rapid multiplication. The stock is also available on a year round basis. Sometimes this is impossible from spore sowings.

Availability on a continuing basis is another reason for tissue culture in the lab. Many times during winter months, rooting material in a propagation house may become scarce, but with tissue culture in a controlled environment, production can be maintained on a rather steady schedule.

Another reason for using the tissue culture lab is that certain plants, such as various begonias, are fuller in foliage in a finished pot from tissue culture than from various types of cuttings, particularly leaf cuttings. The reason is that with tissue culture, the plants are started very small — just as a seedling would start with far more breaks — and thus become a fuller plant.

I have not dealt with any specific formulations for the various foliage plants in that there are prepared media available and there is much research needed for the correct formula, even for different cultivars within the same species. Also, sometimes the various hormones are not sufficient to induce adequate multiplication and actual, physical cutting and planting of the small plants in the flasks is required. Each lab has its own

techniques and these are developed over years of trial and error along with help from various universities that are doing continuing research in this area.

Lab space and layout is another important aspect. One point that might be made is that there never seems to be enough space, even though initially the projected layout seems adequate.

CONIFER TISSUE CULTURE

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Abstract. Significant progress has been made during the last five years (1972-1977) in the commercial implementation of plant tissue culture technology; larger commercial nurseries have pioneered the application of this technology. More recently, several forest products industries have shown an interest in plant tissue culture. The current status of these forestry programs in conifer tissue culture, and some recent advances in basic technology, are reviewed.

TECHNOLOGY

Almost three decades have passed since the first experiments in plant tissue culture were reported (15), demonstrating the potential for vegetative propagation of selected plant tissues. This early work has been refined and extended to many plant species; among the most intensively studied has been the carrot and tobacco systems. At the time the original reports of these studies were being published, few in forestry could envision a significant impact in the field of domesticating forest trees. While this domestication is still under debate, many forest products companies have accepted tissue culture as a viable alternative to traditional reforestation practices (10).

The *in vitro* culture of conifer tissues has considerable significance for the forest products industry. Provided an effective tissue culture system is available, the technology can be implemented for mass propagation. *In vitro* vegetative propagation may be used to supplement an existing or planned program such as grafts or rooted cuttings. Similar to horticultural applications, tissue culture may be used as a tool in the forest products industry to eliminate pathogens from mother plants, or to augment an existing breeding program.

Tissue culture laboratories are now in existence at, or being planned by, Weyerhaeuser Company, International Paper Company, Crown Zellerbach, ITT-Rayonier and St. Regis. The first