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Tissue Culture Panel Write-up for Microplant Nurseries

Jonathan Jasinski

Microplant Nurseries, Inc., PO Box 237, Gervais, Oregon, 97026 U.S.A.

jonathan@microplantnurseries.com

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Summary

The history of the development of Microplant Nurseries, Inc., is discussed from the beginning with two employees to the present day with 60 employees. Microplant Nurseries, Inc., goals are discussed. Their focus is growing great, healthy plants and learning together how to do things better. The timing of plant material induction to production as well as hormone concentrations and their effect on plant growth are discussed.

INTRODUCTION

Jonathan Jasinski earned a BSc and two MSc degrees in Plant Sciences at the University of Florida. He moved to Oregon in 2015 and is currently serving as the Chief Operating Officer at Microplant Nurseries, Inc. overseeing the production of millions of Stage 2 and Stage 3 tissue culture plants annually.

In the late 1970s, a diverse group of commercial tree growers began funding research on the micropropagation of various tree crops at the Oregon Graduate Center in

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Beaverton, Oregon. The group was comprised of Adams Rootstock, Inc. located in Washington State, Stark Brothers in Missouri, Oregon Rootstock, Inc. (later renamed TRECO®) and A. McGill and Son, also in Oregon. As projects developed, the four partners decided to launch a new company, and Microplant Nurseries, Inc. was born.

Microplant Nurseries, Inc. (**Fig. 1**) opened its doors in January 1980 with two goals in mind:

1) To provide large numbers of new and improved fruit tree rootstocks and shade trees to the owners of the company
2) To provide great plants to the general nursery trade for profit

Figure 1. Microplant Nurseries new facility.

Of the founding owners, TRECO and A. McGill and Son remain. Over the past three decades, we have pioneered the technique of commercial micropropagation on a large scale, producing millions of plants each year. While our original focus was on trees, we soon expanded into all kinds of exciting projects, including new ornamental shrubs, blueberries, hazelnuts, raspberries, hops, grapes, perennials, timber products and bulb crops.

We produce only lab product, Stage 2 unrooted microcuttings, and Stage 3 in vitro rooted plantlets (**Fig. 2**). Over the years our company has grown from two employees to a year-round staff of about 60. Most of our employees have been with us for many years. In the year 2000 we built and moved into a new building, as well as digitized recordkeeping for various departments providing increased predictability, efficiency and quality. We continue to invest in new equipment, new methods and our people. A large portion of our work is done under contract, specifically for individual growers.

We have partnered with some of the biggest, best, and most advanced growers in our industry. We appreciate their trust in us. Microplant Nurseries, Inc. has a world-wide reputation for quality and reliability. Our mission is to get you what you want, when you want it, at a price that makes sense for all and also have fun doing it. Our focus is growing great, healthy plants and learning together how to do things better. We walk in the door each day curious about what the plants are going to teach us.

Of particular interest during the IPPS 2022 Conference were questions relating to tissue culture order request timing of plant material, as well as hormone concentrations and their effect on plant growth. In general, most production-scale tissue culture projects require at least one-and-a-half to two years from plant initiation to produce production-run numbers in the thousands. Generally, after a plant has "settled" into culture after multiple subcultures over those 12-16 months, orders placed at least 6-10 months in advance are required for successful multiplication and delivery during the desired timeframe. As a general rule, the less hormone (cytokinin or auxin) you are able to

use during the multiplication process, the better. In addition, a question was posed regarding how often plant lines should be reinitiated into culture. This is widely dependent upon the risk tolerance of the person interested in the plant material in terms of mutations. The higher the number of times a plant has been sub cultured, generally the higher likelihood of a somaclonal mutation event may occur. However, this is heavily dependent upon the type of plant that is being cultured in vitro and its genetic stability.

Figure 2. (A left, B center) Lab production facilities and (C right) microcuttings.