Clonal *UCB-1* Pistachio Rootstock Micropropagation: Is Pistachio Bushy Top Syndrome a Variant that Occurred in Tissue Culture?

John Preece, Research Leader, USDA, National Clonal Germplasm Repository
Deborah Golino, Director Foundation Plant Services, UC Davis
Franklin Lewis, Technician, Foundation Plant Services, UC Davis
Florent Trouillas, Assistant Cooperative Extension Specialist, Department of Plant Pathology, KARE, UC Davis

INTRODUCTION

Growers have preferred clonal UCB-1 pistachio rootstock over seedling restocks, to produce more uniform, vigorous, and higher yielding orchards. Recently, problems appeared in orchards grafted to clonal UCB-1 rootstock. Stunting, bark overgrowths at the nodes, abnormal growth and cracking at some graft unions became known as Pistachio Bushy Top Syndrome (PBTS). These symptoms may be caused by *Rhodococcus faciens,* a bacterial plant pathogen, or they may be the result of a bud sport or somaclonal variant that formed in vitro on a clonal line that had been micropropagated for years. The focus of this proposal is to obtain subclonal shoot culture lines, from commercial labs, of the clonal UCB-1 where some of the resulting plants have exhibited PBTS symptoms. This study will be to regenerate shoots to be rooted and tested for freedom from *Rhodococcus*. Those free from this bacterium will be planted in a replicated study in the field to determine if the symptoms can be traced to one or more individual shoot subclonal lines.

RESULTS

Clonal UCB-1 shoot cultures were obtained from three commercial micropropagation laboratories. One lab had created three subclonal lines, and we obtained two of them. The third line had low numbers, and once there are sufficient numbers we will also receive cultures of this line. We received about 75 microshoots from the two subclonal lines and have multiplied these 150 shoots into about 1000 shoots. These will be used for rooting and greenhouse acclimatization experiments.

A second nursery provided two containers of their two preselected subclonal lines, totaling 34 shoots. We have created 15 subclonal lines from these, based on microshoot morphology, and currently have a total of 150 microshoots in culture.

A third nursery provided 14 containers totaling about 200 microshoots. Selections have been made based on growth and morphology and color of leaves. We currently have 34 selected subclonal lines from these 200 microshoots.

CONCLUSION AND APPLICATIONS

Progress will continue with rooting and acclimatization as we produce *Rhodococcus*-free plants for field-testing for phenotype.