"Graft Union and Incompatibility" Question-Answer Period

Jon LaForge: Steve, you mentioned a fungicide dip used in the field for Marianna. Could you explain that in more detail?

Steve Veyna: Sometimes we use Captan or Physan 20. We follow label directions to determine concentrations.

Frank Santamour: I forgot one word: predict. We can predict the incompatibilities without having made the graft on the basis of the isozymes for those species I was talking about. Our predictions were 80% correct with the oaks.

Phil Barker: If a nursery wanted to identify the peroxidases in their material they are grafting, who could work with them?

Frank Santamour: *Beautiful question, Phil. I investigated a nursery friendly* home-design kit a number of years ago and it worked pretty well. But, this was done for human and animal blood work. When I tried to stain for peroxidases with this gel kit, it didn't work. For the price of postage, if it's real interesting, get in touch with me.

Jim Conner: A question for Steve Veyna... I had an opportunity to visit Bailey Nursery and Sherman Nursery in Iowa and I noticed when they are digging, their material is almost always put back into cold storage so it can be graded later. I noticed you laid your trees out in sunlight. Is there a limit to how long you leave it out? Second part... I noticed last year buying trees from Oregon, Minnesota, or California, there seems to be a difference in grading. Is there a standard that is acceptable?

Don Kleim: I'll make an easy comment. Didn't you notice all that fog during his digging operation? Most of the digging that's done on the Valley floor occurs when the relative humidity is high due to fog.

Steve Veyna: *Those other nurseries ship to the colder areas and the reason they* have to use cold storage is because they have to wait until those areas thaw out before they can ship to them. We grade three fingers from the bud union. That's way above the union.

Charley Hess: How did you choose peroxidase to use to correlate to incompatibility and did you look at other substances that might correlate to degree of incompatibility?

Frank Santamour: Actually, we got into the use of isozymes for clonal identification. There are sometimes 10 isozyme patterns you have to run to zero in on one clone. *Peroxidases were easy to work with and they did something. They make lignin.* We don't know what the other enzymes do. Peroxidases stain easily and there is plenty of variability.

Bill Burchell: Frank, interested in your comment on rot in grafting areas, can you expand on that and are we losing something in sanitation?

Frank Santamour: The discoloration you saw that proceeded down from the cut surface of the understock should stay just about there. As far as the wound

compartmentalization and its relationship, I just can't say, but I would suspect that if you had many weak wound compartmentalizers as your understocks and we don't know that your take of budding might be a lot lower than if they were strong. This is highly theoretical at this point and I don't think that sanitizing, applying fungicides, will do any good.

John Nitta: What is the availability of the pistache, Keith Davey? Can you explain your propagation technique for it?

Don Kleim: I am more than delighted to explain the technique. Here are a few important things to keep in mind. Experiment with various seed sources for your understock. Eventually, you will find a source that will be more effective than others. *Pistacia chinensis* is a fast-growing tree that "bleeds" when cut. The bleeding prevents callus formation and can flood the bud out. To overcome this you can use a bottom cut or an inverted T-bud and a balance wrap. Wait until the bud pushes before you unwrap it. During the winter months, let the trees go dormant, then bring them into a cold house (no heat) and let them start to swell (may take 3-6 weeks). If they are brought in in December they are ready to work with in late January. When they start to swell gather scion wood from terminal shoots. Use an English approach graft or a side-veneer graft, as some people call it. Once the graft is made, use a sealant called Tree Doc. We put the grafted plants on a bench with bottom heat (60 F). In three to six weeks, growth should be apparent.

Phil Barker: Up around the Sacramento area, almost all the pistache trees produce nonviable seeds because of an insect that infests almost all the fruit. Is that a problem elsewhere and does anyone have a solution to this problem?

Don Kleim: Trees in our area form seeds readily.