

Liar's Forum®

Paul Cappiello

Voice: Is it true that top grafting will lead to faster flowering than grafting closer to the root zone?

Bob Geneve: In addition the grafting work you mention, work with grafting in apple has shown the further you can get the meristem from the root system the sooner you are going to get the maturation change. So it is not really a chronological thing.

Voice: What about bending?

Bob Geneve: I was going to mention that. In the fruit industry it has been shown that bending branches works. There is something about the horizontal orientation that accelerates flowering. You have to remember that in apple you are already using wood that has gone through the maturation phase and it is already programmed in.

Voice: What about hard-to-root cuttings and going back to the cone of juvenility?

Bob Geneve: This is a subject that we could spend a long time on. There are two aspects to that. Tissue that is around the root/shoot meristem has a juvenility memory. So if you can induce shoots from that area, you have a better chance of getting a cutting back that can root. Also, if you can induce root suckers from difficult-to-root plants, root systems do not go through a maturation program and shoots from the roots are usually as juvenile as a seedling.

Voice: How do you induce plants to sucker from the root system?

Bob Geneve: There are only certain plants that are going to do that. Wounding is probably the best way to do that. Another way is to simply look for suckers and they often have different shapes to the leaves related to the juvenile character. It seems that plants with compound leaves will often form adventitious shoots on roots.

Bill Barnes: Why are seedling roots different from cutting roots? Or how are roots physiologically different from seedling roots. An example is *Stewartia pseudocamelia*. When you root cuttings you have a difficult time getting the rooted cuttings through the winter. This is not so with seedlings. Also, if you treat seedling *Stewartia* with certain herbicides they will die. However, cutting rooted *Stewartia* with the same treatment do not die. Another example is with mulberry. If you cut a seedling off at the ground it will shoot back but a rooted cutting will not.

Bob Geneve: The simple answer is I do not know. I can give you some insight into it though but it may not answer the question. There was work back in the 1950s describing root systems. It showed that roots on a seedling are not all the same, they have different functions. For example, some form a tap root.

Richard Olsen: I thought that I read in the literature that there is communication going on in the hypocotyl region between cells. Have you heard of anything like that?

Paul Cappiello: Some of you may have heard a talk that Peter Del Tredici presented a number of years ago that looked at the rooting of *Kalmia* and the regeneration of *Kalmia* and he found that same thing. That when you have a rooted cutting

and cut an established plant back hard, it does not sucker, while seedling plants when cut back readily shoot from the cotyledonary node. So that tissue holds the ability to produce those shoots.

Charles Tubesing: When you have a seedling you have a crown with multiple buds while with a cutting you may not have that.

Dick Zimmerman: Vegetatively propagated crape myrtle will send up thousands of shoots from the roots. I know because I cut down a 30 ft one in front of my house and I have shoots some of which are 30 ft from the ground out stump.

Paul Cappiello: So as Bob said, we don't know. The best way to propagate an *Aesculus parviflora* is to cut it out.

Bob Geneve: If you go back to the *Stewartia* problem, I have always wondered what type of root system is induced on a cutting of that plant. We have noticed two patterns for adventitious root formation. There is the direct one with a good connection with the vascular system. The other is indirect with a callus intermediate. I am wondering if that might not be the case.

Paul Cappiello: Another question I had is related to the propagation of bamboos. The question is with the clumping bamboos and how far down can you divide them and be successful with propagation. We are fortunate we have Susanne Lucas here who is the bamboo expert.

Susanne Lucas: Paul is just testing me. I am not an expert when you consider the likes of Nevin Smith who is here. This is a very broad subject that would require much time. But basically, seed is rarely available and short lived so most propagation is by division. That is also the case with tissue culture of axillary branches. If you have an over-crowded container of say *Fargesia*, and depending on the species they may have only one shooting period (*F. nitida* or *F. murielae*) in the year. They remain branchless and leafless during the first winter. In that case I always make sure that I have an older culm to go with a newer culm. This will give you a more vigorous regeneration of the explants. With those that are quite prolific with shoot production as long as they are happy, they are making new culms, branches, and leaves in the same year and you do not have to do that. With those you can go down quite small but need to recognize that it will take longer to get a sizable plant. Those produced in tissue culture are quite vigorous and regenerate quite quickly — back to the juvenility issue again.

Nevin Smith: We are quite opportunistic with our bamboo division propagation and do it throughout the year depending on growth cycles. With *Fargesia fungosa*, which has become quite popular with us, I noticed under growth conditions in the ground that it would send up asparagus-like leafless spears in the fall and leaf out in the spring. Once we got into dividing them and became more opportunistic we began to notice a different type of growth. The new shoots that would come up would have leaves from the start and many more of them. It seemed that the more you divided them the more they produced shoots — kind of a ballooning process. It is almost approaching a tissue-culture-type situation. For those of us who have a coastal situation — the temperature goes up and down. We can have long periods of foggy weather interspersed with warm sunny weather. That seems to confuse the plants and leads to secondary and tertiary types of growth. This leads to multiple cycles of division.

Joerg Leiss: Is it true that once a bamboo flowers it dies?

Susanne Lucas: No.

Joerg Leiss: I have *Fargesia* that have flowered over a 2-year period and are still shooting.

Susanne Lucas: You are growing *F. nitida*?

Joerg Leiss: Yes.

Susanne Lucas: In the U.S.A. they have always been propagated by division. There are probably 20–30 clones in cultivation. In most cases we are seeing those flowering and dying in the case of *F. nitida*. We see the same thing in Europe. The Chinese have thought that if you cut the flowering stems you could delay that. It is an extremely complicated phenomenon. The production of viable seeds appears to be selection dependant.

Nevin Smith: There are extreme differences between species. We had *Chusquea coronalis*, a very beautiful Mexican bamboo, and expected it to die from experience with another related Mexican bamboo, *Otatea acuminata*. However, they were crippled for a while but then resumed normal vegetative growth. But in Chile, *Chusquea culeou*, died in large masses all over southern Chile but regenerated from seeds. It seems that within species you will find variation where some will die but others will reorganize themselves and restart vegetative growth.

Paul Cappiello: I was in Belgium this spring walking around in Antwerp and there was a small city park with a *Fargesia* in full flower behind the maintenance building. I of course had to get seed. I discussed what I wanted with the workers who spoke little English but commented “a bamboo seed caput.” So they expected it to die.

Doug Justice: I notice in a nursery the air layering of bamboo. The owner indicated that it was fairly successful. So my questions are: is it difficult, is it being done on a large scale, and I assume you would use second year wood.

Nevin Smith: Yes we did some experimenting with this process. A foreman tried it but it only works for the indeterminate branching types such as *Fargesia*, *Chusquea*, and *Himalayacalamus*. We would tie-on 4-inch pots and keep the medium watered. They would root and we would tear them apart. We abandoned that, but not because it didn't work — some were actually a little too prolific. We have kept dividing them from 1 gal into 1-gal pots.