

OUTDOOR GRAFTING OF PECAN

BEN DAVIS II

Ozark Nurseries

Tahlequah, Oklahoma

There is actually nothing unusual about our method of grafting pecan trees at Ozark Nurseries. Our application of this method to our pecan propagation schedule is, however, different from the practices of most pecan growers. Budding is our primary method of pecan propagation with grafting being used as a follow up. Pecan seedlings are budded during their second summer of growth, during the month of August. The following spring all seedlings in the same block are grafted; (1) which were too small at the time of budding or; (2) on which the bud failed to take. The grafts and buds then start growth at approximately the same time. This gives us a larger percentage of trees from a given block of seedlings than we might otherwise get. This is especially desirable since all of our trees are machine dug and it would be impossible to leave the seedlings for budding the following season.

The grafting is done in the spring just as soon as the sap starts to rise in the stock. This is determined by watching the seedlings for signs of terminal bud swelling. Grafting is begun just as soon as this swelling is detected in the most advanced seedlings. Grafting must be completed before the bark starts to slip on the stock. The scion wood used is one year wood cut during the winter and kept in cold storage until grafting time. The method of grafting used is the ordinary whip and tongue graft.

Grafting is done as low on the stock as possible, but the height varies somewhat in order to match the size of the stock and scion as much as possible. Extra large seedlings are cut off with lopping shears and the graft is made on the side of the stock. On the larger seedlings it is necessary to set the scion in from the side of the stock, otherwise the cambium will not match due to the differing thicknesses of bark on the stock and scion. On seedlings on which the bud has failed, the graft is made so that the lower point of the graft will be on the opposite side of the stock from the bud scar.

The grafts are wrapped with cloth backed grafting tape which is one-half inch in width. The wrap is started at the lower point of the graft union, lapping one-half of the tape on the stock and one-half on the scion. The tape is wrapped upwards in a spiral, lapping as little as possible and taking care to keep each round absolutely as tight as possible. If the graft is properly made and wrapped, it should be possible to grasp the tip of the scion and wiggle the stock without be able to detect any movement in the joint. It is important that too much tape not be used as this multiplies the problem of girdling when the graft begins to grow. It is better to have small gaps in the tape than to lap too much. Since the tape is expensive, using too much is also a wastful addition to production costs.

After the grafts are wrapped, they are sealed with a water emulsifiable asphalt. This material is a by-product of the petroleum refining industry and is very inexpensive. The material is applied with a one inch paint brush, covering all of the tape and the tip of the scion. We discontinued using grafting wax about three years ago because the asphalt is cheaper, it is used just as it comes from the barrel and it requires no heat. When using grafting wax it is very difficult to get the laborers to keep the wax at the right temperature. They either get it boiling hot and scald the grafts or they let it get so cold that it will hardly turn loose of the brush. We noticed a definite improvement in our stands of grafts when we abandoned wax in favor of the asphalt. There is one disadvantage to the asphalt. It tends to preserve the grafting tape much better than wax so that, in some cases, the tape does not rot before it begins to girdle the graft. We overcome this difficulty by cutting through the tape on two sides of the graft with a razor blade at the time the grafts are staked.

After the grafts and buds have made about twelve inches of new growth a steel stake is placed by each one and they are tied with plastic ribbon. It is at this time that the grafting tape is cut as previously described. Periodically throughout the summer the trees are retied to the stakes as growth necessitates.

MODERATOR TUKEY: Now is the opportunity to ask these three fine speakers any questions you may have.

VOICE: Would there be any advantage to covering the entire scion with asphalt tape?

BEN DAVIS: The whole scion is not covered. The asphalt is only over the grafting tape around the graft union. I do not see any advantage in covering the entire scion with the asphalt solution. We do put a little dab on top of the scion on the cut surface to prevent it from drying out.

VOICE: I would like to ask Dick Vanderbilt how much running around of the roots does he experience in the one- and two-year containers?

DICK VANDERBILT: We have had very little because we shift the plants to larger containers. I imagine if you allow the plants to remain in the two gallon containers for more than two years, you would run into problems. With the five gallon containers it would probably take three or four years before you would have any difficulty.

ARIE RADDER: I would like to ask Dick Vanderbilt if he has taken any solubility readings?

DICK VANDERBILT: The Solu-Bridge readings are rarely over 25.

BRUCE BRIGGS: Do you use incandescent light and what type of a cycle do you use?

DICK VANDERBILT: We do use incandescent lamps. The cycle is six minutes on in every thirty minutes from eight in the evening to four in the morning.

VOICE: Are you using Dexon as a preventative or an erad-
icant for *Phytophthora* on rhododendron.

DICK VANDERBILT: The only eradicator for *Phytophthora*
is a fire.

VOICE: In our experience it doesn't seem to be a preven-
tative either for as I understand it, it breaks down in the pres-
ence of light within twenty-four hours.

DICK VANDERBILT: We put it on with water and water
thoroughly so that the material is right down to the bottom of
the can. There is not too much light there. It's true that if
you put it on a dry form on top of the can, there will be no ben-
eficial effects. It must be in solution and applied in large
enough quantities so that it will be distributed right to the
bottom of the can.

VOICE: Do you observe any root damage when using the
higher rates?

DICK VANDERBILT: No, we have not observed any prob-
lem.

JIM WELLS: Dick, you said that you kept your rhododen-
dron stock plants in a condition of studied neglect. Would you
elaborate on this phrase and tell us what it means and what
results and value you obtain from a condition of studied neglect?

DICK VANDERBILT: The only thing it means is that by the
time we take our cuttings, the plant has run out of gas. If we
continue to feed the plant as we would a plant which was to
be sold, we would have much more trouble in rooting because
of the high nitrogen level. By limiting our fertilization to a
light feeding in April, the cuttings are just in the right con-
dition by the 13th August.

JIM WELLS: Do you think you get better rooting from the
gasless cuttings?

DICK VANDERBILT: There is no doubt that we do.

HANS HESS: How do the wooden baskets stand up dur-
ing the time plants are growing in them and until they are
ready for sale?

DICK VANDERBILT: They are dipped in a 2% solution of
copper naphthenate and at the end of three years time there is
absolutely no deterioration. The baskets are set on black poly-
ethylene.

PETE VERMEULEN: Why did you use 2% copper naph-
thenate? I understood from some research at Ohio State that
1% was satisfactory.

DICK VANDERBILT: We dipped some wooden bands in 1%
copper naphthenate and they broke down whereas if we use
2%, there was no problem of deterioration.

BRUCE BRIGGS: Are your stock plants fed a 1-1-1 ratio?

DICK VANDERBILT: No, we use the same ratio as we do
for our other plants — 9-45-15.

BRUCE BRIGGS: Do you ever encounter any injury on root-
ing from the high phosphorus level?

DICK VANDERBILT: No, we have not run into any problem of retarded root development.

CHARLES SCHEER: Dick, have you checked the actual phosphorus levels in the containers when you use the high phosphorus fertilizer?

DICK VANDERBILT: For some reason or another the readings vary all over the block. It is usually greater than 80 parts per ten million and in some cases, in excess of 200. It doesn't seem to make too much difference as long as it is above 80 per ten million.

MODERATOR TUKEY: The first speaker on the last portion of our program today is Mr. James Law from Stark Bros. Nursery. He will speak on "Spray Programs and the Propagator".

SPRAY PROGRAMS AND THE PROPAGATOR

JAMES LAW

*Stark Brothers Nursery
Louisiana, Missouri*

The title of this paper may be a bit misleading. It sounds like I am going to give you a spray program to fit your propagation system. Far from it and in fact about all I want to discuss with you today is how we are approaching the problem at Stark Bro's and how some of our techniques may be of benefit to you. Like a lot of us sometimes we talk a better ball game than we actually play, so bear with us.

Let's try and get a spray program into proper perspective in our total growing philosophy. Basically, on outdoor production (and I'm purposefully avoiding discussion of microclimates such as greenhouses, mist beds and specialized propagation structures) we are working with three noncontrollable growth factors — heat, light and air. With the controllable factors we have water and nutrition.

In these two areas of water and nutrition we can manage several things to modify our control of these factors; namely, weed control, irrigation, fertilization and pest control or insect and disease control if you prefer. The point I am attempting to make is this: without the management of all these controllable factors we can't come up with the final stand, size and grade of a finished plant that we want or desire. Many of us get on a "kick" to have blocks of stock absolutely clean of weeds and yet we are content in our happiness over these weed clean blocks to overlook a disease or insect problem that is either reducing our total stand or grade. It sounds like I'm rationalizing our weedy fields. I'm not, but let's look at the whole picture.

We, and I say WE because our spray program at Stark Bro's is a cooperative effort. We approach our spray program primarily as a preventive program, not *eradivative*. We begin