AMERICAN PAULOWNIA ASSOCIATION

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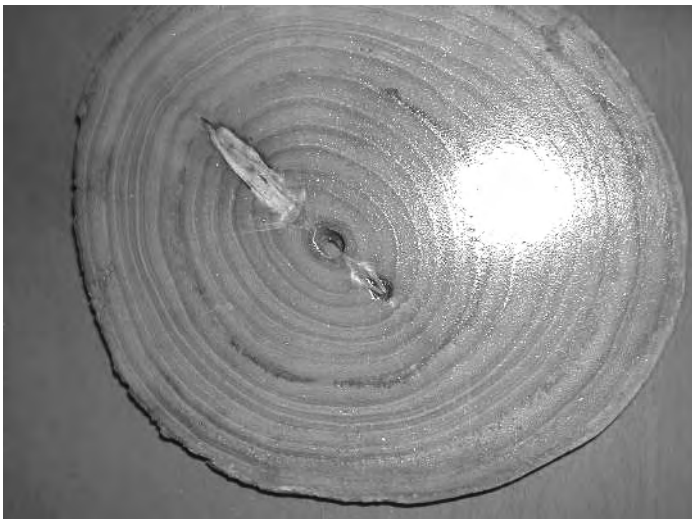
FIFTEEN YEARS, LESSONS LEARNED AND MYTHS DISPELLED

Dan Blickenstaff
Maryland

This year, 2007 marks the 15th year that the American Paulownia Association has been in existence. The following is a collection of my account of the lessons learned and myths exposed during my Association membership of the past thirteen years.

First and foremost, I was enticed into growing the Paulownia tree because of the highly promoted and relatively inexpensive startup costs, little labor involved, extremely fast growth to market size, and the very high market value of the wood. Needless to say, it took me less than 2 years to realize that there was much more required as to the "input" tangibles and much, much less to be expected of the "output" value of the final crop.

In the Hey-Day of harvesting and selling wild, slow growth Paulownia logs (1970's thru the early 1990's), indeed the highest quality premium logs brought extremely high returns to the seller and exporter as processed wood shipped to the Far East. Those individuals who made the "leap-of-faith" in assuming plantation, fast growth Paulownia would command the same market interest and price were in for a costly surprise. Not only were there no foreign or domestic markets for the fast growth Paulownia, the domestic market value of the timber was so low that the whole economic plan for a Paulownia plantation became questionable. Not until the late 1990's did some principal members realize that a major function of the Association would require that a domestic market for plantation grown Paulownia be established and nurtured. As we



Tight Ring Paulownia

enter this 15th anniversary, rest assured that there is currently a domestic market that utilizes the majority of mature quality Paulownia

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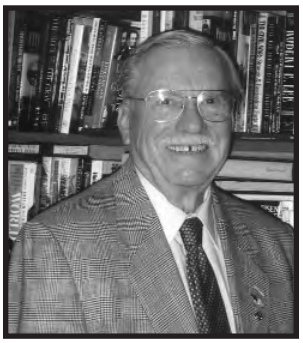
President's Message. . .



Greetings for 2007,

Yes, our American Paulownia Association is 15 years old. Who would have thought 15 years ago the organization would have accomplished so much, not to mention surviving. We have a vibrant membership, and we have learned so much, and visited so many plantations where our colleagues are involved in propagating and growing paulownia trees. I've also been active in speaking and writing about paulownia as the "Wonder Wood" as a "branding" process.

In the process we've come back to Kentucky where it all started in 1991. We have a sparkling program from Vice-President Ralph Donaldson for our Spring meeting in Hazard that capitalizes on the hospitality of our Kentucky hosts, as well as progress reports on grower ventures.

Dan and Sharon Blickenstaff have organized facilities and field trips to round out the meeting format. We will also have persons from Snavely Forest Products of Pittsburgh to tell us about their growing venture in Haiti as well as their importing of paulownia lumber from China. They love paulownia as we do, which is the driving force of our organization. We look forward to seeing you in Kentucky in April.

Vince L.

A Small Log Shop

We set out 539 Paulownia Elongata on about 4 acres in April, 2001. This was a 16' by 16' grid-actually quite widely spaced according to the wisdom of the time. We were not aware of any plantings of such wide spacing as far back as 2001. Some trees that old are 12' by 12', most were 10' by 10', and a few still survived at 8' by 8'. But, as we would see, 16' by 16' was far, far too close.

We have read all we could get our hands on about Paulownia. We have not missed a Paulownia meeting since 2001. We will talk (and mostly listen) to anybody who will sit still for it. And, we have certainly learned a lot! But aside from that, what I report is our own experience. Its transferability to your climate, soil, variety, and cultural practices is unknown, and may be somewhat limited. You will have to be the judge.

We planted too early (April) in a cool, wet spring. Many died, and many more lived but "failed to thrive." After much re-planting, we had a 100% stand to coppice the following January, 2002, and 100% of these survived. By May of 2002, this was the most beautiful crop I had ever seen. It looked like a patch of giant tobacco, tall and uniform, green and obviously healthy. Violent thunderstorms in June and July, 2002, broke the top 6-8' from nearly half of them. The damaged trees were coppiced again immediately. By that winter (2002-2003) some of the now twice-coppiced trees had grown enough to produce at least an 8' log. Those that had not produced an 8' log were coppiced a third time in January, 2003.

So in the spring of 2003 we had a mixed stand of 2 year-old trees more or less intact; 1 ½ year-old trees with short, but at least 8' logs; and newly coppiced and ragged stumps with evidence of multiple cut-back stems all over them. I'll tell you; a mixed stand is a mess!

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timber and both the current and projected market prices justify continued planting and expansion of plantation timber availability in the United States.

When I was first introduced to the Paulownia tree, I was aware of only one species "tomentosa" thought suitable for plantation growing in my geographic area of the mid Atlantic. Over the years, and after much research, trial and error, I have come to realize that several additional species ("elongata", "fortunei", "kawakamii", and hybrids) perform exceptionally well with proper planning, preparation and care, and not only grow but thrive in specific areas within my region of the country. This brings me to the need for all potential growers to perform "due diligence" with respect to both their specific region of the country and local site and micro climates prior to any serious investment in a Paulownia venture. To my knowledge, there are 3 prime reasons for promoting the growth of the Paulownia tree: timber production; ornamental uses; and environmental preservation and reclamation. It goes without saying, each species has it's advantages and disadvantages and only after much inquiry and research will you realize the best suited species for your application. Perform your "due diligence", develop and maintain a detailed management plan for both your physical plantation and your end goals and objective(s).

Plantlet care upon receipt and prior to field planting was another lesson learned for me. Regardless of the plantlet (tissue culture, seedling, or root cutting; green house grown or nursery grown; bare root or potted) all

Donaldson Plantation - Uniform Plantlets Ready to Plant

require specific care, often unique to the type plantlet. The one thing for sure is that you do not want to rush an immature plant to the harsh field environment. Take the necessary time and precaution to harden the plant off, re-

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The Paulownia Mail Box

MSubject: Paulownia Boards
R.S wrote on 12-5-2006

D.B.

We are currently looking at Paulownia boards 1" x 6" x 10" to be used in a farm fencing project. We are looking at acquiring this material from China. The board will be machined and coated with approximately 1-2 mm thickness of PVC in a co-extrusion process. Could you provide us with information on the applicability of this lumber in this process?

Thank you,
R. S.

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12-19-2006
Dear R.S.,

Our Association has no information of the application process of PVC coated Paulownia wood nor product usage of such.

Please contact Huber Engineered Wood Inc. whose company has completed some research in the plastic bonding processes using Paulownia. I have copied a POC for their company on this response.

Best Regards,
D.B.

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12-20-2006

R.S.,

I shouldn't think you'd have any trouble getting the PVC to adhere to Paulownia. Paulownia is like any other wood in that respect. The only thing I'd be concerned about is the density of the lumber, which depends on the species. If you get tomentosa, it's likely to have a higher density and therefore higher stiffness and strength. It also is not as easy to dent. If you get elongata, it is likely to have lower density and therefore lower stiffness and strength, and it dents easily, but there is a considerable savings in weight. Both species are lighter than almost anything else you can find, and they have a very high stiffness and strength, given their low density. This would make handling much easier. From my limited knowledge of the fencing business, I am aware that fences that are more for privacy and looks don't really require much in the way of stiffness and strength, but for a farm fencing application, it may be an issue. My advice would be to run a small amount of the product through the process, and find a good testing facility to do strength and stiffness testing for you. I would also run a more typical wood (pine for instance) at the same time

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pot if necessary to obtain the size and vigor for maximum survival, irrigate and fertilize as necessary. Once these steps are successfully completed, you will be rewarded with a growing crop of uniform size plants ready to go to the next step.

In addition to the geographical considerations mentioned above, there are several specific local site characteristics that you must be aware of and their affect upon the Paulownia success or failure. Type and makeup of the soil must be analyzed in advance. The most common mistake is that one often assumes that the planting site and soil conditions have little affect on the planting because other crops have been previously grown there successfully. The site must have adequate top soil and a deep subsoil that is; penetrable, ideally a clay content of less than 15%, a soluble salt content of less than 0.1%, ph between 5.0 and 8.5, natural or added nutrients of NPK to sustain vigorous tree growth, a planting area devoid of standing water, adequate water supply with excellent drainage, growing location not within a frost pocket, and maximum sun exposure without undue late afternoon hot direct sun light exceeding a total of 85 degrees inclination or causing extreme daily temperature swings. The Association and numerous other sources exist where this information may be obtained. Complete your research and analysis in advance to preclude the untimely mistakes so many of us have previously made.

A thorn in my side, as well as in the side of many other growers, was realized when we planted our original plantations on a grid much too close to produce healthy marketable trees in a reasonable time frame. At that time, many universities, agricultural organizations and private marketers published papers and recommendations suggesting Paulownia could reach phenomenal sizes in short rotation periods, planted on very close grids (often 10'x10' or less) with limited canopy space and native nutrient levels. After thinning up to 75% of my original plantings, I have come to accept the fact that Paulownia is like most other trees under extreme competition for the basic elements of light, moisture and nutrients; they grow very slow, are subject to disease and pests, and usually disappoint the grower who expected an above average return on investment. For timber production, without the requirement to conduct thinning operations, I now promote a minimum of 625 square feet of canopy space per tree (no less than a 25' x 25' spacing between trees) or 1.5 foot spacing between trees for each one-inch diameter of butt log expected at harvest. The few exceptions to this rule would be for those individuals wishing to: control tree ring spacing (production of higher value slow growth logs); production of livestock or wildlife forage; nursery and ornamental plant production; and, growers intent on maximizing the number of small diameter stems for chips, peeling, or small caliber logs by the use of intensive life-cycle irrigation and fertilization routines.

Much has also been learned regarding proper plantation maintenance. Do not expect to have a successful planting and a valuable end product unless you rigorously perform the following:

1) Keep grass, weeds, brambles and other competing growth under control at all times;
2) Prepare to coppice the entire plantation one or more times to obtain a uniform and vigorous stand of trees;
3) Make use of pruning techniques to ensure marketable butt logs that are; of a minimum length (9 feet), free of limb scars and knots, straight and of a uniform taper;
4) Keep accurate records of annual growth and apply necessary irrigation and nutrients to sustain annual uniform log increases necessary to meet your final objective;

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Donaldson Plantation - 1st Year Uniform Planting

While I should have been planting another tract, some of these babies still needed suckering, spraying, and intense weed control.

O.K. With the once-coppiced trees and the twice-coppiced trees serving as "trainer trees," the three-times-coppiced trees grew very rapidly, tall, straight, and right up to the only little remaining sunlight left directly above them. Many of you have seen these trees. They appeared to be our Paulownia ideal. They were tall and straight. But their tops were tall and straight as well, and by tops I mean the branched area of the trees where the leaves are located. And you know the leaves are the "stomach of the tree." Since there was little space for leaves to grow and access sunlight,

Donaldson Plantation - Broken Tops (4 yr trees)

these trees were destined to "fail to thrive." These trees would be the first removed.

Meanwhile, fairly healthy-looking once and twice-coppiced trees kept growing up while their lower branches kept being shaded out and dying. Now this (self pruning) appears to be a natural phenomenon-at least to some degree. But when about 1/3 of the tree is a little narrow top with few leaves all on the outside top surface; about 1/3 is the log we want; and the 1/3 in between is elongated, crooked, intermediate stems with lots and lots of dead branches, something is wrong. Each tree had kept reaching up to expose more leaves to the sun. Unfortunately, the trees all around were doing the same thing. The entire canopy kept "lifting up,"and wasting unneces-

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5) Cruise the plantation often during the growing season to head off preventable problems such as drainage issues, disease and insect damage, wildlife and human damage, etc. This activity also provides you the opportunity to enjoy the fruits of your labor if you are doing things properly;
6) Possess and exhibit patience. There is a saying that states, "All good things come to he who waits".

English Ivy Damaging Valuable Paulownia

The final subject area, for which I have yet to experience as a grower of my own crop, is the harvesting and subsequent marketing of my timber. Be prepared to do much of the harvesting and marketing yourself if you wish to maximize your return on investment. My experience with the harvesting of other forest timber has convinced me that there is much profit to be made by the harvester and the grower must be willing to wait and investigate all offers rigorously before making a final decision. Remember that a healthy timber stand continues to grow and increase in value while you are negotiating the best opportunity for yourself.

As to the marketing of Paulownia, that function is still in its infancy here in the United States. The larger use commercial companies are unwilling to establish any type of long term buying contract without a guarantee of a continuous supply of timber. Therefore, until we as growers can produce a steady supply of harvestable timber coming to market, it will be necessary to initiate, develop and maintain our own local and regional use markets. In my case, this process has been quite favorable by offering a timber brokerage service, log milling process, and custom lumber ordering service to niche markets.

I am sure that responses to these same issues, if addressed by other Paulownia growers, may be as varied as the individuals responding. Therefore, I encourage each reader to make plans to attend our 16th annual conference, to be held in the town of Hazard Kentucky April 13-14, 2007, and hear from the many other members, growers and researchers as to the "best way" to; plan, plant, grow, maintain, harvest and market your Paulownia investment.

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for comparison sake. Universities that you could contact for the testing include University of Tennessee, Mississippi State, U. Maine, Virginia Tech, Washington State, Oregon State, and North Carolina State. There are others I'm certain, but these are the ones I'm most familiar with. There are also a number of private test labs that you could find on the internet. Just look for ASTM qualified labs. Hope this helps.

E. L.

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E.M. wrote on 11-13-2006

Hello D.B.,

Thank you for all the time you spent with me on the phone. I hope to give you as much useful information as I can about what I am trying to investigate.

I have a 16 acre parcel in SE Mass, in the town of Sutton (just S and E of Worcester). The parcel is a south facing slope, about 600' wide and about 1,000 long. The bottom of the property slopes at only about 2.5% to 3% the top is fairly flat. The top soil is about 2' deep, it is a sandy loam farm soil. The property does not have any standing water on it. It is fairly well drained, but, not a dried out piece of property.

The property is subdividable and I am currently in the process of doing the formal or definitive plans for a subdivision. To make a long, agonizing story short - I am actually interesting in flipping gears entirely and hopefully using the property for a managed forestation or agroforestry project instead, or, at least that is what I am investigating. The property has tremendous value as a subdivision, like most people, that is what I have been focusing my sights on. I farmed this property for years before I moved to Michigan. The process of developing and building a piece of land is time consuming, expensive and agonizing in many ways. The returns are great and so are the taxes for example.

As hard as this is to digest for a lot of people, I began doing research into the possibility of growing one or more cash crops on the land instead and using it for a potential (we all know what potential means in farming) income for years to come, instead of taking the funds all at once (over a 5 year period). As I was researching potential cash crops, I managed to eliminate the possibility of growing veggies, fruit and nut trees. Fruit and nut trees have value when they produce and they have wood value later. However, these markets are tightly regulated and I am curious that the Paulownia trees might actually have better value (all things considered, such as annual labor costs etc.)

I have been trying to do as much research as possible into the value of wood for example. This information is extremely difficult to nail, especially credible, real information. As someone who works with wood a lot, I really liked the description of the wood of the Paulownia trees. I have seen a lot of hype and sensationalism concerning the value of these trees, but no solid market information (buyers, sellers, distributors, millers etc.)

If there is a growing market for these trees, then I have no problem at all taking the risk of planting them in hoards and waiting for that market to happen. My intention was to plant all or most of the 16 acres and then harvest a few acres a year on a rotation schedule. That creates issues

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sary nutrients and energy in doing so. And the logs had nearly stopped increasing in thickness. We saw a major catastrophe coming. In hopes of avoiding wholesale death and failure to thrive, we decided to thin-perhaps drastically.

First we removed most of the three-times coppiced trees. These tiny "pointy-heads" were far too "hemmed in," and were never going to grow. I believe they would have died first. This cutting included about 130 trees, but made little difference in the canopy.

Then we designated every other row as either a "cutter" or a "keeper." But rather than being a slave to a selection scheme and cutting good trees and leaving bad ones, we selected each tree to cut based on its performance, as well as the good its removal was likely to do for those surrounding it. This cutting included about 110 trees and opened the canopy considerably.

This is where we stand this New Year's. Once the logs and tops are removed from the field, we may actually cut a few more to open the canopy further in some places.

The yield is not too impressive. We have a pile of about 150 logs as large as 10" and as small as 6". We have a sawmill coming tomorrow to see how many 4X4's we can make from the pile. We still have about 110 logs in the field with trunks up to 14 or 16 inches in diameter. Time will tell how many 6X6's and 6X8's we can make from these. I hope to have enough to build a small log shop.

Thinning Paulownia trees for us has been a salvage operation. And it might not even yield the desired results. You can avoid it. Just space your trees more widely apart when you plant. I think you will be glad you did.

Or you, too, can work six long years for a small log shop.

Happy New Year! See you in Kentucky.
Ralph Donaldson, Georgia

AMERICAN PAULOWNIA ASSN. INC.

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as someone has to be willing to come out for what they consider a "small quantity". Those are all problems that can be addressed however. If push comes to shove, I can deal with that in the sense that I do not need to go with an existing co. on that matter, I may be able to "create one". to get it off the field and bring it somewhere. My biggest concern is what to do with the wood after that.... It becomes a matter of getting it off the field and to a grader, then to a buyer.

I hope to get more info on that matter. The wood can sit in the field for years waiting for all of this to come into fruition, or a true market with high market demand. At this time, and as you substantiated, there is not a whole lot of demand. I anticipate that can change, here in the US. From what I have read there is great demand in Japan for instance and to the best of my knowledge, places like Switzerland essentially have no wood due to excessive populations. It seems therefore, there would be demand in some places in Europe for example.

As you already pointed out, I may have a temperature issue. I was hoping to identify a species tolerant of my own area. That is also something I am perfectly willing to take the risk on. Also, I note that someone is growing these in Montreal, I have no further info but intend to fully investigate that one.

I should also point out that although I am not qualified to do so, I could engage in some breeding practices and attempt to create a hybrid that *is* tolerant of my climate there. I have 2 places I can experiment. I have 17 acres here in Mi. too. My property in Mi. is further south (latitude) than my land in Mass. The tree is known to grow in Southern Ohio. There is obviously more to it than just lat. however, we all know that...

I would like to find out more about what sort of "potential petty income" I might be able to anticipate from this in the future. If things look optimistic on this matter, it will be enough to drive me away from the subdivision project and do this instead. We are not looking for a lot, just something steady that we can supplement retirement off of...

Any assistance you can provide is extremely appreciated!!

Thanks,
E.M.

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Dear E.M.,

I like your enthusiasm, willingness to perform "due diligence' and investigate inter cropping possibilities.

First I would advise you to plant a few Paulownia "tomentosa" and test the cold hardiness of the tree species on your 16 acres. If successful, only then would I recommend engaging in a program to plant the entire area.

Another option that has been very successful for me and other Paulownia growers has been the use of inter cropping. I inter cropped my Paulownia trees with Canadian hemlock and sold the hemlock at retail for landscaping when they were about 5 years old (4-5 ft high). They did well in the shade and damper soil that the Paulownia trees created and did not negatively affect the growth of the Paulownia. Other northern inter crop species could be rhododendron, holly, etc. Regardless of the inter crop species, this would provide you with periodic income while waiting for the Paulownia to mature and also minimize the risk of total economic loss if for some reason the Paulownia failed to perform to your expectations. For planning purposes, I attached a copy of the price sheet that we use for estimating the value of both cut Paulownia timber logs and processed lumber.

Please consider joining our association and attending the annual conference next April at the University of Kentucky extension campus at Hazard Community & Technical College in Hazard Kentucky. This will be a "research based" event and you would learn at lot about the needs of growing Paulownia at the conference. Once the actual date is set and other registration details are made available, it will be posted on our web site: www.paulowniatrees.org

Best Wishes,
D.B.

Membership Dues

Just an advance reminder that annual dues are payable in the Association's office on-or-before February 1, 2007. Your dues are what pay for the publication of the newsletter, postage, and other basic costs of operating our non-profit organization. All of our loyal members participate at some level. Officers and State Directors serve by donating their time and energies in the conduct of the organization's business, some members provide information for publication, some conduct research, and some provide presentations and host field trips at our conventions. All the while, all members pay their annual dues that keep our Association viable and moving forward.

Yearly dues remain at a modest $25.00 US for members residing in the continental United States while those in US territories and foreign counties remain at $50.00 US. Send your dues in now and save the Secretary the time and postage necessary to send you a reminder.

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