Paulownia – The Time has Come

Provided by: Eco Ranchos

Why Grow Paulownia?

The Paulownia is truly a remarkable flora solution to some of the world's most pressing social, environmental and economic problems.

Diminishing Supply

The supply of lumber and the raw material for wood and paper-related products is forever dwindling. It has been estimated that 95% of our first-growth forests here in the United States have been cut in the last 100 years.

1. Human consumption: Temperate and tropical forests are being destroyed (for one reason or another) at alarming rates.
   a. Cleared and burned for grazing land;
   b. Commercial lumber harvesting;
   c. Used for home heating and for cooking fuel;
   d. Natural disasters such as fires and floods ravage millions of acres every year. Natural disasters destroy worldwide an average of from 12 to 14 millions acres of forestland each year. Most of these disasters also cause serious erosion and loss of topsoil.
2. Government regulations: In an effort to protect endangered plant and animal species - and to comply with the pressures of public opinion -- more and more forestlands are being taken out of production by government mandates.
3. Private and government acquisition: Private individuals are purchasing more and more forestlands for their own enjoyment. Many private foundations are purchasing land and converting them to ecological preserves. Governments have and will continue to convert more forestlands to "public lands."

4. Very slow replacement time: With most commodities, when the demand goes up, producers simply plant more acreage of corn or wheat, or the oil companies pump more oil. With these examples -- and with most commodities -- the "turn around time" is a matter of months. In the lumber business, the turn around time from planting to harvesting is usually a matter of decades.

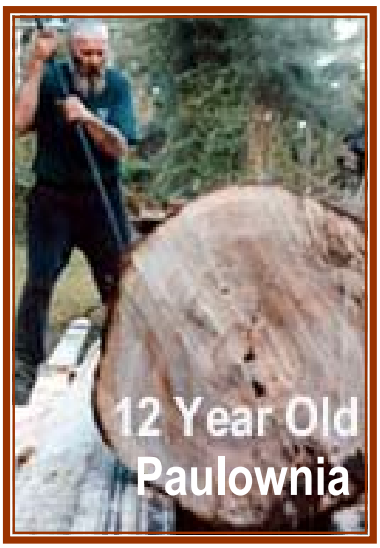
Increasing Demand

Mankind has always and will always have an insatiable appetite for wood and wood products.

1. Population growth: By the simple fact of the steadily increasing human population, there is a concomitant increase in the need for wood (wood for heat, cooking fuel, shelter, furniture, tools, art supplies, and musical instruments, as well as for construction related wood products.)
2. Related products: Wood is needed in the production of various products such as rubber, resins, quinine, turpentine and cellulose. As more wood-dependent products are developed, the demand will increase.
3. Paper-related products: As commerce steadily increases so does the need for more shipping containers, usually made of cardboard. While recycling satisfies part of the need, it cannot keep up with the demand. With the advent of the personal computer with printer and FAX, using reams of paper is no longer considered excessive, but rather is now a basic home necessity (to be used for the children's homework and the family business).

The Opportunity

Basic business economics makes it clear that the most desirable place to be is in the middle between a long term, decreasing supply, and a steadily increasing demand. To plant Paulownia is the way to enter the world lumber market as one of the relatively few "middlemen"/producers/suppliers (without purchasing a forest or waiting 30 to 40 years). To be among the first to plant Paulownia as an Agro-forester means you will be among the first to market, and means you will receive among the highest price for your product. This is the opportunity.



Waiting for forests to naturally regenerate takes far too long, and is not economically feasible. To speed things up, various methods of reforestation are employed (propagating and re-planting harvested forest regions). These practices have shortened the re-growth of a forest region, nonetheless, it still requires 35 to 45 years.

To further shorten the time from germination to harvest, scientists have helped to develop faster growing pine varieties. However, this method still takes 20 to 30 years (depending on all the variables - soils, climate, cultural practices, etc.). To date, the fastest, most effective method for growing wood bearing trees is agro-forestry. This is the planting of wood producing trees on tree farms or orchard-type plantations. Among the fastest growing, wood producing trees in the world are various species of eucalyptus, poplar and Paulownia. The eucalyptus wood is primarily used for cellulose and firewood. Poplar wood is used as a low cost wood for doors, windows and molding. Paulownia is the highest quality of the fast growers (there are also slow growth species of the Paulownia). Of course, as with any wood, the older the wood at harvest the higher the quality (more "character" to the wood) and the higher the price.

Paulownia Has These Additional Characteristics/Advantages:

1. The Paulownia can be coppiced (harvest the tree by cutting it off near ground level and another tree will begin to grow from the same root system). This can be done several times (4 to 6 times) during the life of the tree.
2. Intercropping. Because Paulownia has a mostly vertical root system, growers can plant annuals between the rows of trees for diversified "seasonal" income.
3. The wood is a lightweight hardwood, straight-grained, free of knots, very stable, light in color, easy to work (mill, sand, carve, etc.), very easy to dry, and with less drying defects.

Blooming Paulownia -- Intercropped with Wheat

4. In autumn, the fallen leaves can be used as nutrient-rich stock feed, or as a component of high-grade compost to enrich the soil.
5. The large surface area of the Paulownia's broad leaves take-in correspondingly large amounts of carbon dioxide, and give out correspondingly large amounts of oxygen.

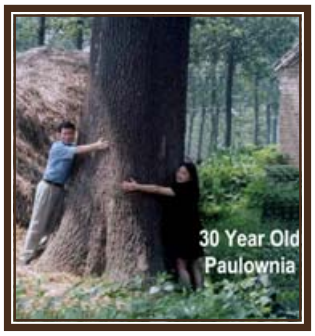
6. The ornamental beauty of the Paulownia is displayed in its cascades of blue to pink shades of blossoms (depending on the species) for 4 to 6 weeks during the spring, and these flowers produce excellent honey.
7. Water sensitive roots will not invade sewer or water pipes.
8. The wood has many uses, including furniture, veneer, boxes for shipping, particleboard, plywood, door & window frames, musical instruments, molding and picture frames, toys, poles and posts, and wood for carving.
9. The wood is also very stable in wet/humid environments, and is highly durable and decay resistant.

General Information

Name:

Scientific:

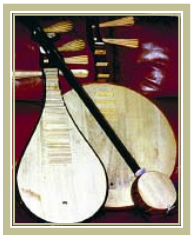
Family -- Scrophulariaceae.
Genus -- Paulownia.
Species – P.fortunei, P.kawakamii, P. tomentosa, P. taiwaniana, P.elongata, P.fargesii, P.catalpifolia, P.albiphloea, P.australis.



Common name for genus:
- Empress tree
- Royal Paulownia
- Royal Princess tree
- Cotton tree
- Kiri (Japan)
- T'ung (China)

History:

The Paulownia has been grown in China for at least 2600 years. Some ornamental varieties can be found in the northeastern seaboard states of the United States. These trees were most likely accidents, started from the seeds used as packaging material in shipments received from China in the late 1800's or early 1900's. When China opened its doors after the Cultural Revolution, an Australian timber company began collecting different types of Paulownia. After more than 9 years of research, and $2 million in development costs, the Australians successfully identified over 30 high performance Paulownia clones suited to a wide range of end use applications. The Paulownia *fortunei* (Eco Ranchos' "ER-11" proprietary stock) is one of these varieties that has performed exceedingly well in desert microclimates.



Characteristics of the Wood:

- Lightweight (14 to 18 lbs. per cubic foot)
- Strong
- Outstanding resonant qualities.
- Extremely stable (resists warp/crack/deform)
- Light color; silky smooth finish
- Grain: fine, straight, knot-free
- Easy to work (no chipping or tear-out in planing)
- Does not require kiln drying
- Takes stains well
- 12% moisture

Uses of Paulownia

Lumber:

- Veneer/plywood constitutes one of the highest value markets
- Furniture and cabinet making also bring high value
- Logs for wholesale export market
- Particleboard, and flakeboard
- Paneling and folding partitions
- Musical Instruments due to excellent resonance.
- Toys
- Pulp
- Poles
- Pallets, boxes, and crates
- Core material (laminated small stock)
- Molding and picture frames
- Packing material (natural insulation, biodegradable packing -- no odor or taste)
- Beehive construction

- Wicking material for evaporative coolers
- Activated charcoal for filtration systems
- Lightweight partitions in airplanes and ships
- Fishing net floats
- Dairy farm bedding

Leaves:

- Mulch and soil amendment
- Fodder -- Nutritional value similar to alfalfa: appropriate fodder for cattle, goats, sheep, and rabbits, with a protein level of 20% with 60% digestibility. Shade -- The value of shade, particularly for intercropping purposes, is difficult to put a value on, however, it certainly is one of its more priceless aspects.
- Air Purification -- Leaves are nitrogen fixing and very large. The size of the leaves "inhale" correspondingly large amounts of carbon dioxide and "exhale" large amounts of oxygen
- Healthcare -- A decoction of Paulownia leaves have been used in China to manage the delirium of typhoid fever, a wash for sores, and to cure swollen ankles and feet.
- Mushroom compost -- Abalone mushrooms can be grown in a medium made from Paulownia leaf mulch for growing in sheds during summer months.

Seeds and Flowers:

- Honey production
- Beautification
- Aroma and fragrance
- Packaging material (seeds)
- Herbal medication -- Flowers are used to cure ailments of the liver or bile, which cause dizziness. Strangely enough, when the flowers are mixed with scrambled eggs, a medication for treating bronchitis is produced.