

BAMBOO

How It's Important to America's Future



Two particularly important attributes of bamboo

First, bamboo stands (i.e., forests) release 35% more oxygen than equivalent stands of trees. An acre of bamboo can sequester 25 tons of carbon dioxide per year, compared to only 6 tons from a young forest. Bamboo is so effective in this role that Japan and the Netherlands are planting vast tracts of bamboo toward their carbon credit. Much of America's lands are suitable for growing bamboo.

Second, bamboo is an amazing fiber for paper and cloth. Global annual production of bamboo pulp is 1.5 million metric tons, with 80 percent from China and India. There is a growing interest in bamboo for pulp in the western hemisphere, but there is also concern for the environmental impact of cutting vast natural stands of bamboo. There is similar interest in bamboo clothing. The cloth from bamboo is as soft as silk, more absorbent than cotton, and contains natural antimicrobial agents. According to National Geographic (May 2007), in 2004 China exported a million dollars worth of bamboo for textile manufacture. By 2006 that amount had already grown tenfold.

America needs to plant bamboo

Planting vast acres of bamboo is a win-win for America.

We can win by being proactive to produce more oxygen and sequester large quantities of carbon dioxide. It is indisputable that bamboo is very

effect at this, and other nations are already moving in that direction.

In fact, both *Time* and *Newsweek* recently identified the planting of bamboo as one of the top things people in America can do to help fight global warming.

We can also win by developing a bamboo fiber industry in America. Why pay to transport and import fiber from Asia, particularly if that fiber comes from old growth

bamboo forests that support entire ecosystems of other organisms?

Fiber

Let's look at the existing fiber industry in America and what we know about the potential for bamboo.

COTTON: The US is second only to China for the production of cotton. Cotton is the greatest revenue crop in the US. Growing cotton also uses more chemicals than any other crop. **In fact, 25 percent of all pesticides used in American agriculture is applied to cotton. Farmers apply one pound of chemicals for every three pounds of cotton.** Bamboo, on the other hand, creates

its own antibacterial agent, and there are no disease or insect issues with bamboo, so it requires no pesticides. Further, bamboo is sustainable in that it only needs to be planted once and then harvested on a periodic rotation. And, of course, bamboo does a lot more than cotton for the global warming issue. Not only does it sequester more CO₂, there is much less use of tractors (and carbon fuels) in growing bamboo than cotton.

PAPER: The US uses 90 million tons of paper per year. Our pulp mills consume 12,430 square miles of forest each year from around the world. Our mills are the largest producer of pulp and paper in the world. The demand for paper is increasing, while the sustainable supply of wood fiber is not. There is considerable interest in alternative fibers for paper, and in China and India that supply is bamboo.

A study in America published in 1968 showed that bamboo can be successfully grown domestically and, indeed, produce twice as much fiber per acre as loblolly pine. Additionally, we know that bamboo can be four times as good as timber at addressing the greenhouse issues.

Why hasn't bamboo been planted in America?

Until recently, America was not in the market for bamboo textiles because the products were not available and there was no consumer demand. That has changed, and the demand is growing exponentially. There is now an increasing interest in growing bamboo as a local, sustainable supply of organic fiber for textiles.

There has been a huge demand for paper fiber for a long time, which is why the US imports so much wood fiber. The research from 1968 that studied bamboo fiber for paper pulp was funded by USDA and was suddenly stopped, not from lack of interest by the researchers but by politics from the timber industry. Even today, a recent document by Boise Cascade downplays non-wood alternatives to wood fiber for paper.

HOWEVER, the primary reason there is no domestic supply of bamboo is that there was never an economical supply of juvenile plants to establish large groves of bamboo. In America bamboo has been produced by seeds or by divisions. A species of bamboo flowers irregularly, about once every 30 to 120 years. That is the only time seed is available, so the source of seedlings is highly irregular. The cost to produce young plants from divisions is very high and simply not practical for large plantings. Every document that addresses the potential for bamboo in America comes to the same conclusion: Bamboo is not practical until someone discovers how to propagate the plants

through tissue culturing techniques.

FINALLY, that process is now available from one company in Mount Vernon, WA: Gardens LLC. It is now economically feasible to move forward with the potential for bamboo on a commercial scale in America.

What's missing

The fiber industry in America needs the capability to process bamboo. Fortunately, the technology exists in Asia, where a vast amount of fiber is produced for paper and textiles. The good news also includes the fact that bamboo can be chipped just like trees (no new technology needed), and the process for making bamboo pulp is ECF (elemental chlorine free). ECF produces 80 to 90 percent less toxic dioxin compared to wood fiber paper that uses chlorine derivatives. The bottom line is that there are no big roadblocks to the processing side other than the need for a large supply of the bamboo material.

What's missing is the need for more experience with silviculture/agronomy techniques. The only major study was done in Alabama and published in 1968. Further work is needed to understand better which species of bamboo works best in different growing zones and different soil types. Then there are issues of plant spacing, irrigation, fertilization, weed control, and harvesting techniques (fortunately, no concerns for pesticides). The 1968 study does show that modified sugar cane harvesting equipment will work for bamboo; strip row cutting is more productive than vast clear-cutting; weed control is necessary in early years; fertilizer increases production, etc.

In summary, business won't start using bamboo for paper or textile without a supply of the vegetative material; the farmer/timber grower won't start to grow that supply without an understanding of the agronomy/silviculture; and that knowledge can't be adequately developed without a large supply of young plants. Working backwards with that scenario, for the first time (because of the proven success of Boo-Shoot Garden's tissue culture propagation technology) the supply of young plants is now available to start the process in motion.

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