

bamboo

Vol. 19 No.2

bulletin



BAMBOO SOCIETY of AUSTRALIA inc.
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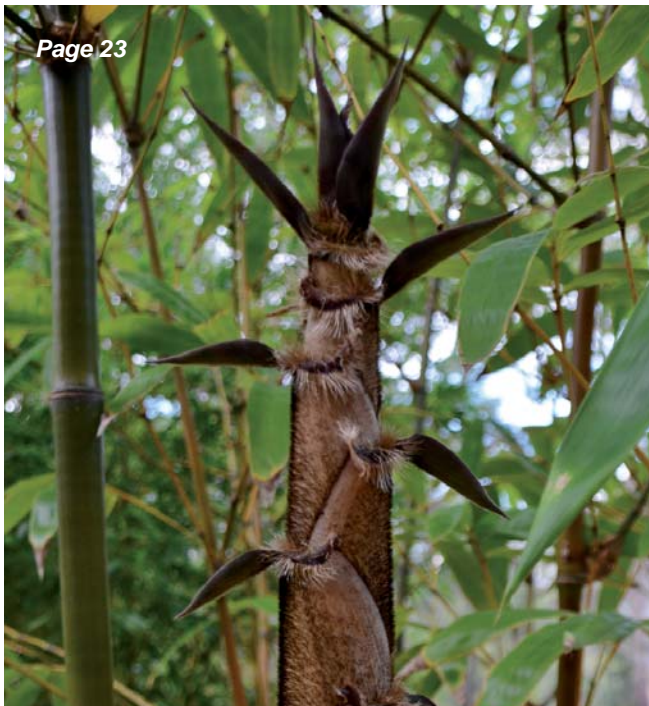
By John Jones

Reader Contributions

We would love to publish your bamboo experiences. If you would be interested in sharing your information on bamboo growing, managing, building or cooking, send text and attached photos to Mark McCarthy at: editor@bamboo.org.au

Inside Front Cover (opposite)

Dried culms of *Dendrocalamus asper* - 'Hitam'.



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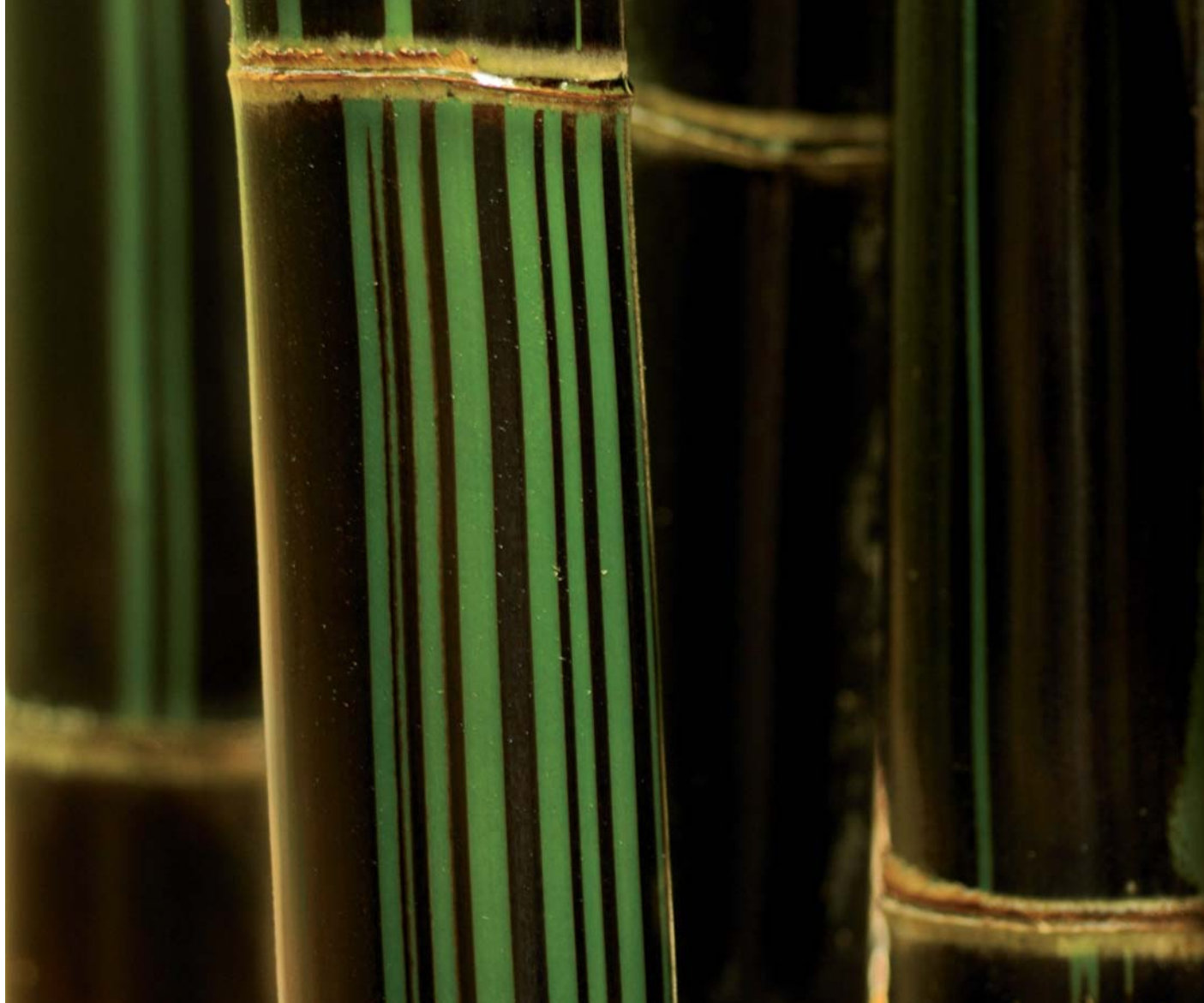
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From the Editor's Desk

In the past, buying Bamboo seeds online has been a complete waste of time, but with a few successful attempts, it was worthwhile taking another look (see page 10).

The feature property this issue is Jim Mahoney's Cutloose Nursery. I have taken many photographs here over the years and seen many changes, from years with good rainfall to some with almost none, as you will see in the article.

I have added a piece by David Farrelly, author of *The Book of Bamboo*, who passed away this year (see page 8). This is not a book you would read for its species list as it was written in the 1980's and a lot has changed in bamboo taxonomy since then. It is the book you would read for the history of bamboo and its role, more than any other plant on earth, in human cultural evolution.

With an increased interest in bamboo fibre, I have added an article first printed in the Bamboo Bulletin Vol.10 No.1, as it is still relevant today.



Opposite: Gigantochloa atrovioacea.



Black brandisii.



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Bambusa dolichomerthalla

Origin:	Taiwan
Average Height:	10m
Culm Diameter:	50mm
Minimum Temperature:	-9c

Native to Taiwan, where it is found growing along streams and waterways at lower elevations. It is an elegant bamboo which is popular in Japan. It has medium-size leaves and a vase-shaped growth habit. It has long internodes and is commonly called “*Blowpipe*” bamboo, as it is used at the cooking fire to stimulate combustion.

I have not seen the principal green form in Australia, but we have three cultivars - *Green Stripe* is the most common, *Silver Stripe* and *Blue*.

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The new culms of Green Stripe are lime green with dark green stripes, turning yellow within 12 months. The wood on older culms is dense and good for craft work.



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On the left is Green Stripe with its bright yellow culms and Silver Stripe on the right with its distinct striping on the lower internodes. Their erect growth habit, medium-size leaves and no lower branches make them an attractive garden specimen.



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Above: Silver stripes on the lower internodes stand out because there are no lower branches.

Left: The striped shoots of Silver Stripe.

Right: Columns of powder covered culms of doli Blue create a dense screen of colour.





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Bambuddhism: Something About Nothing

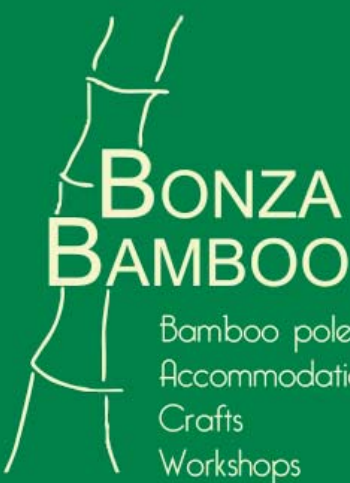
From *The Book of Bamboo* by David Farrelly

"Yesterday upon the stair, I saw a man who wasn't there. He wasn't there again today, I wish that man would go away." Only a silly jingle - but it embodies accurately the Western mind's discomfort with non-being. In the skies constructed by western theologians, there is only a supreme being "I am who am". A supreme nothing is almost unthinkable in the West, while our planet neighbours in the East have always been very much at home in the void. Empty among them is an honoured guest. With micro- and telescopes, Western scientists have discovered that there is much more nothing than something. The gaps have gradually appeared so much more ample than the atoms, space so much vaster than stars, that siding so rambunctiously with being has begun to seem more fragile after all than ease with emptiness which has, for millennia, remained a central feature and patrimony of the East.

In a mind climate so amiable with absence, it was only natural that, of all the useful pieces of bamboo, the part that most firmly rooted the plant in Chinese affections was the part that wasn't there. Radiating into every corner of the culture from its hollow core, bamboo became a natural symbol for that "flexible emptiness" regarded particularly by the masters of Zen as the subtle centre of spiritual development. In fact, to "trim bamboo" was a Chinese phrase meaning to become a Buddhist.

From a botanical viewpoint, we might remark that the abundance of bamboo derives in great measure from its capacity to leap immediately to full growth, which, in turn, depends largely on its emptiness. Instead of sanely constructing itself inch by solid inch, like trees, soberly climbing into the contested forest air, bamboo sprints sunward to complete stature in about two months. We people attain our total altitude in maybe 15 years - say a quarter of our average lifetime. Although its wood is fully seasoned and mature in 3-5 years, a bamboo culm can easily stand as long as ten or more. In one sixtieth its total lifetime, it is as tall as it will ever be. To pursue our Human analogy, it is as if we were fully grown by our first birthday. After this initial vertical burst, bamboo unfolds branches and uncoils leaves to capture the sunlight it leapt up to get.

As a survival tactic among many plant species, reaching up to compete for available light, the growth pattern of bamboo is shrewdly designed. It revolves around a basic emptiness - two-thirds of its volume in thin-walled species, one-third in those with thick walls, never has to be born or fed. The nutrients and moisture that would have been exhausted making and maintaining this empty centre can be utilised for growth of other culms.



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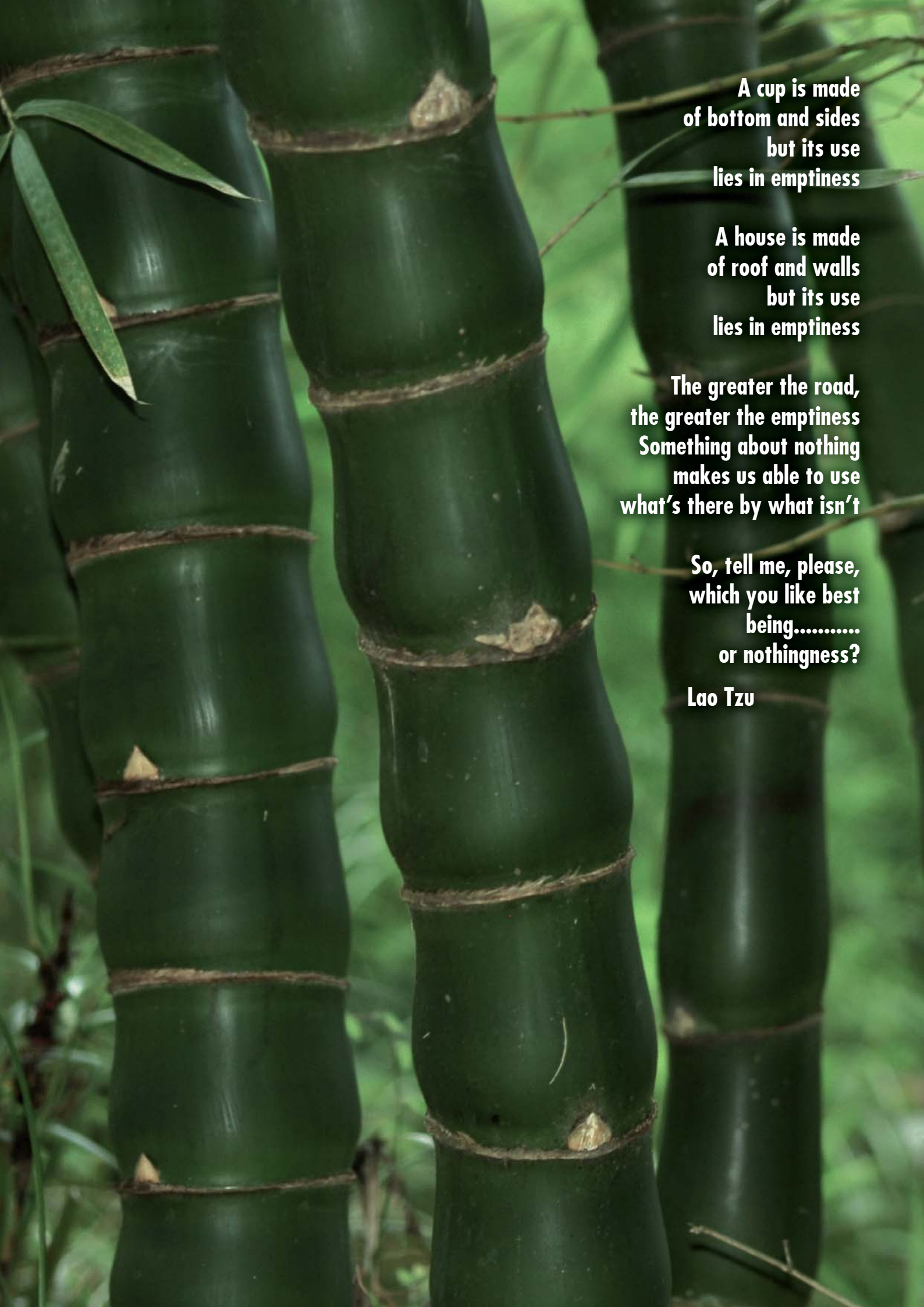
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A cup is made
of bottom and sides
but its use
lies in emptiness

A house is made
of roof and walls
but its use
lies in emptiness

The greater the road,
the greater the emptiness
Something about nothing
makes us able to use
what's there by what isn't

So, tell me, please,
which you like best
being.....
or nothingness?

Lao Tzu



Bamboo Seeds

By Mark McCarthy

The history of buying bamboo seeds is full of stories of disappointment. Seeds failing to germinate or worse, spending years raising plants to find out they were not the ones you ordered. With decades or a century between flowering cycles and short seed viability, the odds of getting the species you want have always been very long.



Over the years there have been some outrageous claims on e-Bay Bamboo Seed sites offering seeds of all the popular species and some that probably don't exist! Claims of a rare, purple bamboo have been on sale for so long now that if it did exist seeds would be too old to germinate. Often the pictures of the bamboo don't match the species of the seeds being advertised.

As an experiment, I ordered a packet of seeds from two Australian sites, both offered free shipping, but one charged me almost twice as much as I had agreed to, but when the package arrived, there was another packet of seeds in there. The seeds were of a different species, which was a good start. In the past, seed often turned out to be *D. strictus*, as this bamboo is always flowering somewhere.

Seeds were soaked in water for a few hours, some were placed on damp paper-towel in take-away food containers, others were placed in pots with seed-raising mix and watered regularly with Seasol. All were kept at between 25-28c and away from direct sunlight. Nothing happened. After five weeks I gave up. Who knows how long these seeds had been sitting on a shelf, without refrigeration.

I went to the Feedback Profile on bambooseedsonline and found that there was 100% positive feedback! Looking closely, I realised it was only for the speed of shipping and delivery.



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In recent years, some success to introduce new species from seeds has come through the Yunnan Bamboo Nursery and the Boonthammee Bamboo Garden in Thailand (which has a very good website). After going to the bambooseeds.blogspot.com, look down the right-hand column for good information, past catalogues have photos of bamboo in natural situations and photos of germinated seeds. Sometimes there will be a question-mark beside the name and after a couple of years, positive identification can be established. They will update the page and tell you whether it was the species it was labelled to be.

They source seeds from around the world, seeds coming out of the Yunnan Bamboo Nursery seem to be the most reliable, but there have been some mis-named species.

A lot of seeds may have been collected by villagers, who do not know the species scientific name. Two or three species may have the same common name.

Knowing where the seeds originated can help with germination, bamboos from very tropical regions may be used to daytime temperatures of 34-36c and night temperatures of 23-26c with atmospheric humidity above 70%. Seeds under these conditions have been reported to have germinated in three days.

The viability of bamboo seeds is relatively short, depending on genus, *Bambusa* seeds can remain viable up to 12 months, *Dendrocalamus* germination rates can be halved after 6 months and *Schizostachyum* down to 20% after 3 months. With refrigeration at between 1-6c, viability can be improved greatly.



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Dendrocalamus maximus lamina - a newly introduced species with large leaves.

Successfully germinated *Dendrocalamus maximus lamina*, *Bambusa membranacea* var. *Grandis* and an undescribed species of *Bambusa* called 'Long Internode' have been grown and confirmed.

In my opinion, the most reliable sources of seeds are the Yunnan Bamboo Nursery and the Boonthammee Bamboo Garden in Thailand. After my experience, I would avoid any other online seed vendors.



The fine leaves of *membranacea* often have a blue tinge in full sunlight.



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In the 1990's seeds labelled *Dendrocalamus giganteus* were introduced. They germinated and young plants widely distributed. It was soon discovered as it grew, that it was a form of *Dendrocalamus strictus*, but different to the one we already had here. It has no lower branches, making it easier to harvest the very thick-walled culms and an elegant arching growth habit. It

goes under the common name of "The non-constricted strictus". Another form of *D. strictus* is distributed under the name of "*D. calostachys*", its fine, solid culms are ideal for bending by applying heat, then cooling once desired shape is achieved. Although these forms all look different, *D. strictus* can be easily identified by its soft, furry leaves.





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Raising *Dendrocalamus sikkamensis* Seeds



By Brian Johnston

*When the clone of *Dendrocalamus sikkamensis* we had in Australia flowered and died in 2006 we were left with only seed.*

I was given some seeds late in the season, with the optimal temperature for germination quickly disappearing and with seed viability decreasing by the week, I had to do something fast. The two requirements for germination are a temperature of 28c and high humidity. This was achieved by adding 100mm of water to an aquarium and adding a platform to place some pots with seed-raising

mix above the water. I did not soak the seeds before planting, but I have read since that it is a recommended step. Lids were fitted and an aquarium heater placed in the water set at 28c. This soon became the perfect humid environment with droplets of water forming on the underside of the lid.





Above: Young seedlings growing well, but still slow compared to propagation.

Within two weeks the seeds started to sprout. As they produced leaves, the lids were opened in stages to acclimatise them to a drier environment. They grew quickly over the next few years, probably due to the extra attention they received, but still a lot slower than other species which I had struck from cuttings.

Bamboo seeds can often be quite variable, but these *sikkamensis* seeds have grown true to form. After talking to other bambuseros who have raised seedlings, the confined humidicrib had stopped predation from rats which had consumed many seeds planted in open nurseries.

Once planted in the ground they quickly grew to 15m with culm widths up to 110mm. The new bright green culms turn to a rich golden yellow after a few years.



*Right: The hair-covered shoot of *D. sikkamensis* powering up from the forest floor.*



Feature Property

CUTLOOSE NURSERY & BAMBOO PLANTATION





A deep vein of volcanic soil runs through Moorland on the Mid North Coast of New South Wales. Fruit trees dominate the landscape, citrus orchards supply the local area with the popular Moorland Orange Juice. It's here that Jim and Rose Mahoney established Cutloose Nursery and Bamboo Plantation.

The site is laid out in a formal garden design with rows of bamboo. Everything grows well in the fertile soil, especially species like *Dendrocalamus asper* and *minor var. Amoenus*.

All the mountain species do well on this property and most of them in full sun. The mineral rich soils help make the plants more robust and able to adapt to the hot sun.



*Left: Jim's son-in-law Scott standing in front of his favourite bamboo - *D. asper*. Scott has taken over the management of the nursery, leaving Jim more time to go traveling and fishing.*

*Above: *Himalayacalamus porcatus* (Nepalese Blue) grown behind a small hut.*

*Below: *D. minor var. Amoenus* with its powder coated culms.*



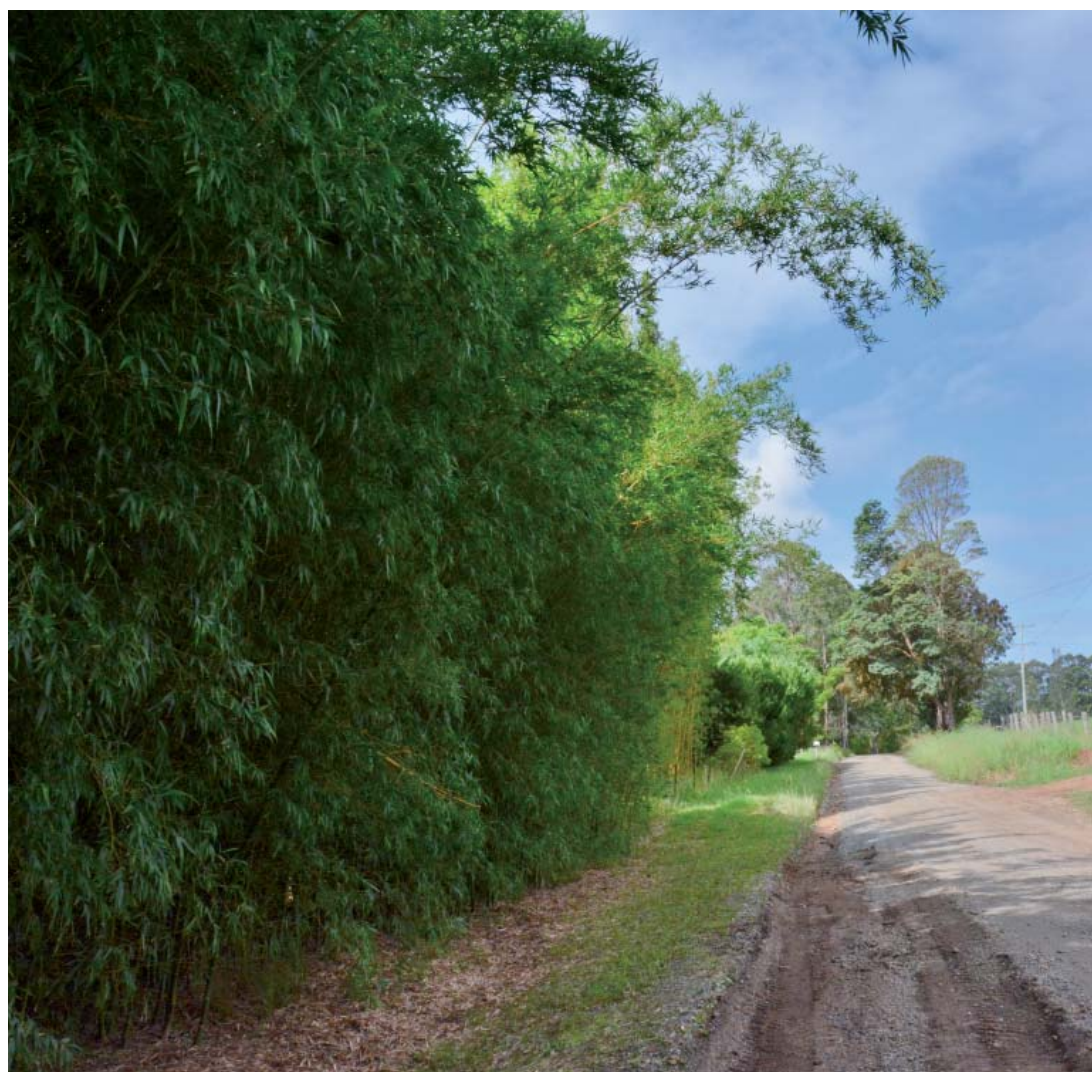




Above: A row of *B. oldhami* grown as a windbreak to protect the orchard. The bamboo would need to be planted at least 10m from the first row of trees as the roots could extend to 8m. The tree on the right has been stunted by the competing bamboo roots.

Left: Jim standing in front of his *B. guangxiensis* (Chinese Dwarf), obviously a wrongly-named bamboo, as the *Compendium of Chinese Bamboos* states that it only reaches 2m. This plant was imported from the United States and on researching American bamboo websites, the species they call "Chinese Dwarf" is *B. cerosissima*.

Right: *B. ventricosa* planted along the dirt road works very well as a light and dust diffuser, as dense branches grow from all the lower nodes.



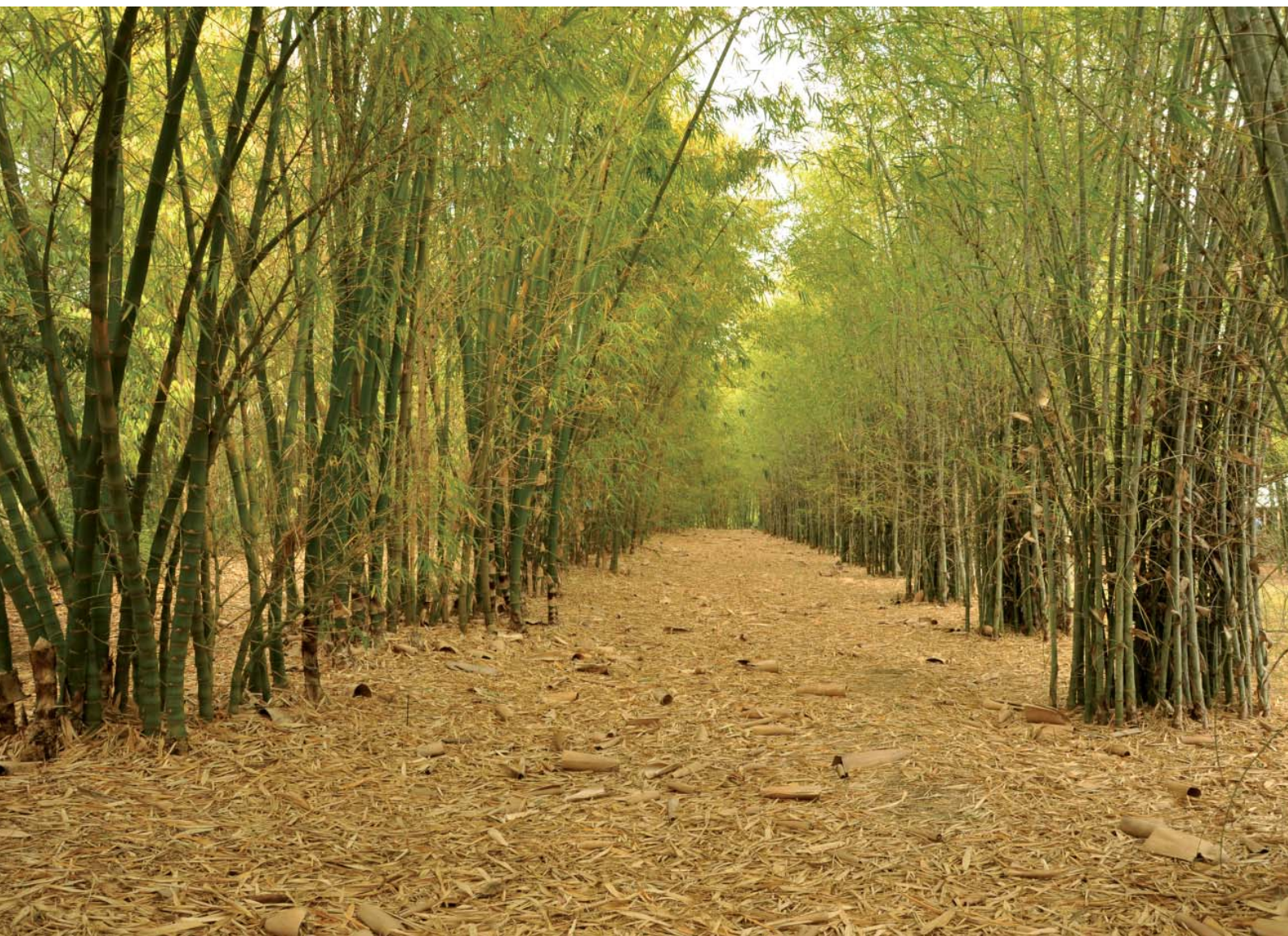


Left: Dendrocalamus latiflorus cv. 'Mei Nung' with its bright yellow culms and contrasting green stripes.

Right: In good seasons the avenues of various species had a grassy lane competing with the root system of the bamboo (top). After the last few years with low rainfall and heavy leaf fall, the grass has been completely covered and will be mulched out unless leaves are raked back onto the bamboo (bottom).

Below: Jim's Sumatran Long House, built a few years ago for a Bamboo Society Workshop, makes a great space for future workshops. In this photograph attendees are making a coffee table. Detailed photos of the construction of the Long House are available on the Bamboo Society website in our Gallery.







Himalayacalamus porcatius (Nepalese Blue)



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What's In A Name?

- The Bamboo Fabric Mystery

by John Eden¹

What is bamboo fabric?

Mystery abounds in the world of bamboo, and that's one of the things that keeps us fascinated. When that mystery is "Why did that new division I set out three weeks ago send up shoots that surpass the height and breadth of the culms in the division?" or "What is that bamboo in the bonsai pot my friend gave me?" then mystery is good and stimulates our intellectual integrity. When mystery extends to the true nature of products offered for sale as "bamboo fabric," then our whole bamboo venture is at risk.

I have been a bamboo lover for most of my life, and have been trying to be a small-scale grower for a dozen years now, so when companies in the USA began offering clothing made from "bamboo fabric," I was excited. I ordered a few shirts from a company in South Carolina, and have enjoyed wearing them for several years now. They are soft, cool, and comfortable, seem to resist odor in the humid south Georgia climate, and wash well - just as claimed. I've always been a fan of "natural clothing" - cotton especially - and found I just could not wear things with polyester in them. So I was really happy that this new cloth was so wearable and bamboo too.

I have sent gifts of this "bamboo clothing" to family and friends and extolled its virtues to everyone, eager to promote use of bamboo that would encourage wider acceptance and appreciation of this wonderful plant. Here was clothing as comfortable (almost) as cotton,

yet without the "Cost of Cotton," as the frightening film from back in mid-20th century had it.

For those of you too young or otherwise innocent of the lovely facts of cotton production, let me just say that producing cotton with slaves was only a little worse than the way cotton was produced for most of that century - workers in the fields while DDT was being sprayed is one of the vivid scenes from that film. I imagine it is little better today in much of the world, despite the outlawing of DDT in the US and other industrial countries. Cotton-growing seems inherently detrimental to the environment, what with its huge requirements for petroleum fuels and fertilizers, water, herbicides and pesticides.

So, though I was not prepared to eschew cotton tshirts, I was excited that there seemed to be a natural option, an environmentally benign source of fabric, and that it was my beloved bamboo.

And then, of course, the bubble burst. In the process of searching online for help in identifying that mystery bamboo in the bonsai dish, I came across an article suggesting that so-called bamboo fabric is a hoax.

I was horrified! How could it be? All these companies marketing clothing made from "bamboo fabric" couldn't be wrong. The glowing descriptions of the natural alternative, the environmentally friendly fabric, soft,



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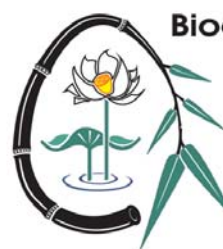
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odor-free, UV resistant... How could it all be simply a marketing ploy? One high fashion clothing website I visited claims bamboo fabric is “the latest and hottest sustainable eco-fabric in the fashion industry.” That pretty much sums up how it’s being presented right now. Sounds so good, doesn’t it? Makes us bamboo-philosophers happy to hear it. Problem is, what is being sold to all these manufacturers as “bamboo fabric” may be just rayon.

The process for making rayon is horrible, and though it’s made from natural sources, the fiber itself is synthetic, an extrusion from chemically liquified cellulose. This is where the issue gets sticky. Certainly bamboo is being used - has been used for a long time - as the cellulose basis for viscose (the technical name for rayon). But what about these other claims that there’s a new cloth made from true bamboo fibers, or that there’s a new and better process that’s environmentally okay?

In the past few weeks, I have pursued these questions with a passion - my wife would say obsession. I wanted to know the truth of the matter, and I felt sure someone out there could give me facts, solid scientific proof one way or the other.

And there’s the next problem. Facts, proof, even just plain old information about all this are dangled hard to come by, as they say here in the South (USA). I have corresponded with several chemists who assure me that viscose - rayon - requires the use of very nasty chemicals, carbon disulfide and sulphuric acid, to break down and then regenerate the cellulose. (A very detailed description of the process is available on Wikipedia.) Regardless of the source of the cellulose in viscose, its chemical and fabric properties are the same. A representative of a company selling “bamboo” clothing is quoted on the National Geographic Green Guide as saying that all the “bamboo fabric” in the US comes from one factory in China, and others have noted that as bamboo chips are a very cheap source of cellulose in China, it’s highly likely that the Chinese are using bamboo to make viscose, which is then marketed as “bamboo fabric.”

The question is complicated further by the existence of documents which appear to be patents (by Zhuzhou Cedar Ramie Industrial Co. Ltd.) on an essentially mechanical process for turning bamboo into fiber in much the same way that ramie is made into thread, and their website claims they are producing “Pure Natural Bamboo Fabric.” Another Chinese manufacturer, China KongFi Textile Co., has a very slick website which describes, complete with photographs, a similar process, which it claims to be fabric made from bamboo fibers, and offers a distinction between “original bamboo fiber” and bamboo pulp fiber.

KongFi says, “As we all know, Bamboo fiber is made from bamboo; but in fact, lots of people don’t know that bamboo fiber is divided into two kinds of bamboo fiber according to different process flow and method: bamboo pulp fiber (bamboo viscose fiber) and natural original bamboo fiber. Natural original bamboo fiber is a kind of new type natural fibers, using physical and mechanical method of making pure natural original bamboo fiber. Original bamboo fiber is essentially different from bamboo pulp fiber.” However, my chemist friends counter that the phrase “bamboo fiber is made from bamboo” is not something we all know.

In fact, in both Germany and Brazil, and possibly other countries, where strict labeling requirements prevail, there is no fabric which can be labeled “bamboo fabric.” There is only viscose. As far as I have been able to determine, no one has validated these claims for a new fiber made of bamboo. According to tests done in Germany (by Verbraucherzentrale Berlin), these fabrics test out the same as any other viscose fabric.

The other problem is that no one, even the clothing manufacturers, seem to be able to get good information from the factories producing the fabric.

This is the full quote from a National Geographic Green Guide article (“How Green are Bamboo Clothes?” By Mary Logan Barmeyer) about the manufacture of bamboo fabric:

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"Not only are bamboo's growing methods questioned, but so is the process of turning the stalk into fiber for fabrics and clothing. According to Morris Saintsing, sales development and operations partner of bamboo clothing retailer Bamboosa, all bamboo stalk intended for clothing in the United States is converted into raw fiber at one factory in China.

"This is a proprietary process and they have a patent on it," says Saintsing. "It's hard to find out what is going on from an R&D standpoint," he adds. Other sources have compared it to the viscose process used on rayon, which involves sodium hydroxide and carbon disulfide, both of which are caustic, and carbon disulfide² has been known to cause breathing and sleeping problems among workers. Sodium hydroxide can threaten aquatic wildlife when released into groundwater and streams."

Saintsing said that greener ways of creating bamboo fabrics are being tested, but those generally result in a linen-like product that doesn't have the silky texture people are looking for in clothing. Few of the alternatives are in use, but "We're doing what we can to make it a greener process," he says.

Many of the people I've corresponded with say that their efforts to find out what is actually going on in these factories have met with zero response. At least one person with impeccable bamboo credentials says that the photos and descriptions on the KongFi website are not believable and appear to be impossible to achieve with mechanical or chemical methods. Another points out, in an article published last year, that bamboo cellulose fibers are only 2 to 3 mm long, whereas creation of textile requires fibers at least 30 mm in length, and that there is no known way to "mend bamboo fibers to make them long enough to produce a yarn."

Here is the text from the bamboo fiber patent:

"Abstract of WO2004076728: This invention relates to a kind of yarn comprising bamboo fibers and its processing method. The basic bamboo fibers can be individual fibers made by the process disclosed in Chinese Patent

No. ZL0211138.7 or technical fibers made by reserving factitiously some lignin and pectin. In order to increase the spinnability and strengthen the dispersion and bundling property of the original bamboo fiber, the basic bamboo fibers are fed with oil (emulsified oil) and dried, and then they are dewed and fed with oil. After being stacked certain time, they are picked, tidied and drafted twice, and then yarn form slivers satisfying the spinning requirement. Slivers are combed, drawn, rowed and spun. At the result, the yarn of basic bamboo fibers matching the textile requirements can be obtained. The bundles of basic bamboo fiber can be drawnd directly or together with other textile fiber bundles so as to achieve yarns of different characteristics. Basic bamboo fiber are applied to make clothes with various count for spring and summer leisure, and its yarn has the function of high wet permeability."

So, is there such a thing as "natural bamboo fabric?" At this point, it seems highly unlikely. The burden of proof, of course, lies with these manufacturers to support their claims, and such proof, so far, has not been provided. Those who have traveled in the area report being shown "Potemkin factories" - facilities set up to present a good appearance but lacking in substance - and not being allowed full access to the facilities. Perhaps the companies are afraid of industrial spies, but some degree of openness is necessary to substantiate their claims. Neutral parties also could be asked to verify these claims. None of this seems to be happening, as consumers seem to be gullible enough - like me - to believe what they want to believe and not ask for any proof.

One potentially highly productive source of information is still pending. Venerable American bambusero Robert Roark is currently touring in Kunming, China, and has said he will make an attempt to penetrate the obfuscation and secrecy surrounding the current processes. We eagerly await his reports!

We as bamboo growers and aficionados would all love to find out that there is a wonderful natural bamboo fabric. However, if this is, as seems likely, a fraud, a



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hoax, a marketing ploy - then the cause of bamboo will be damaged, and we must be the first to step up and say, "But the emperor has no clothes!"

We struggle against (at least here in the States) negative attitudes about bamboo as an invasive crop already. We don't need the image of hucksterism to taint our world further. Without blaming the people who are marketing the product, and without seeming to be on a vendetta against manufacturers, we need to present the case for serious investigation and scientifically verifiable labeling, and we need to be open about what we know and don't know. Anything less would not be worthy of the beauty, honesty and integrity of the great green grasses we love.

Editor's notes:

1. John Eden is a regular contributor to the Bamboo Plantations internet group, in which forum the topics of the promotion of bamboo fibres and fabrics, and the technical details of their production, have received a great deal of attention.

2. At very high levels, carbon disulphide may be lifethreatening because it affects the central nervous system. Significant safety data come from the viscose rayon Industry, where both carbon disulfide as well as small amounts of highly toxic hydrogen disulphide may be present.

The Material Safety Data Sheet for carbon disulphide says, in part, "Poison - may be fatal if swallowed or inhaled. Serious health hazard, affecting the CNS. Readily absorbed through the skin. Sufficient material may be absorbed through the skin to be fatal. May cause reproductive damage, including impairing fertility. Chronic exposure may cause liver, kidney and CNS damage, or impaired vision. Causes burns. Severe eye and respiratory irritant. Skin irritant." See:

http://physchem.ox.ac.uk/msds/CA/carbon_disulfide.html

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Guttation

Good spring rain on the east coast has seen new leaf growth bursting from almost bare branches. When there is a high soil moisture level, water will enter into the plant's roots, because the water potential in the roots is lower than in the soil solution. The water will accumulate in the plant creating a slight root pressure. The root pressure forces some water to exude through hydathodes or water glands on the leaf-tip, forming drops. Root pressure provides the impetus for this flow, rather than transpirational pull.

Guttation is most noticeable when transpiration is suppressed and the relative humidity is high such as during the night. Walking through the groves in the morning, a slight breeze can make it feel as though it is raining as the droplets are dislodged.

Reference: wikipedia



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Schizostachyum zollingeri

Origin: South East Asia

Average Height: 12m

Culm Diameter: 50mm

Minimum Temperature: 0c

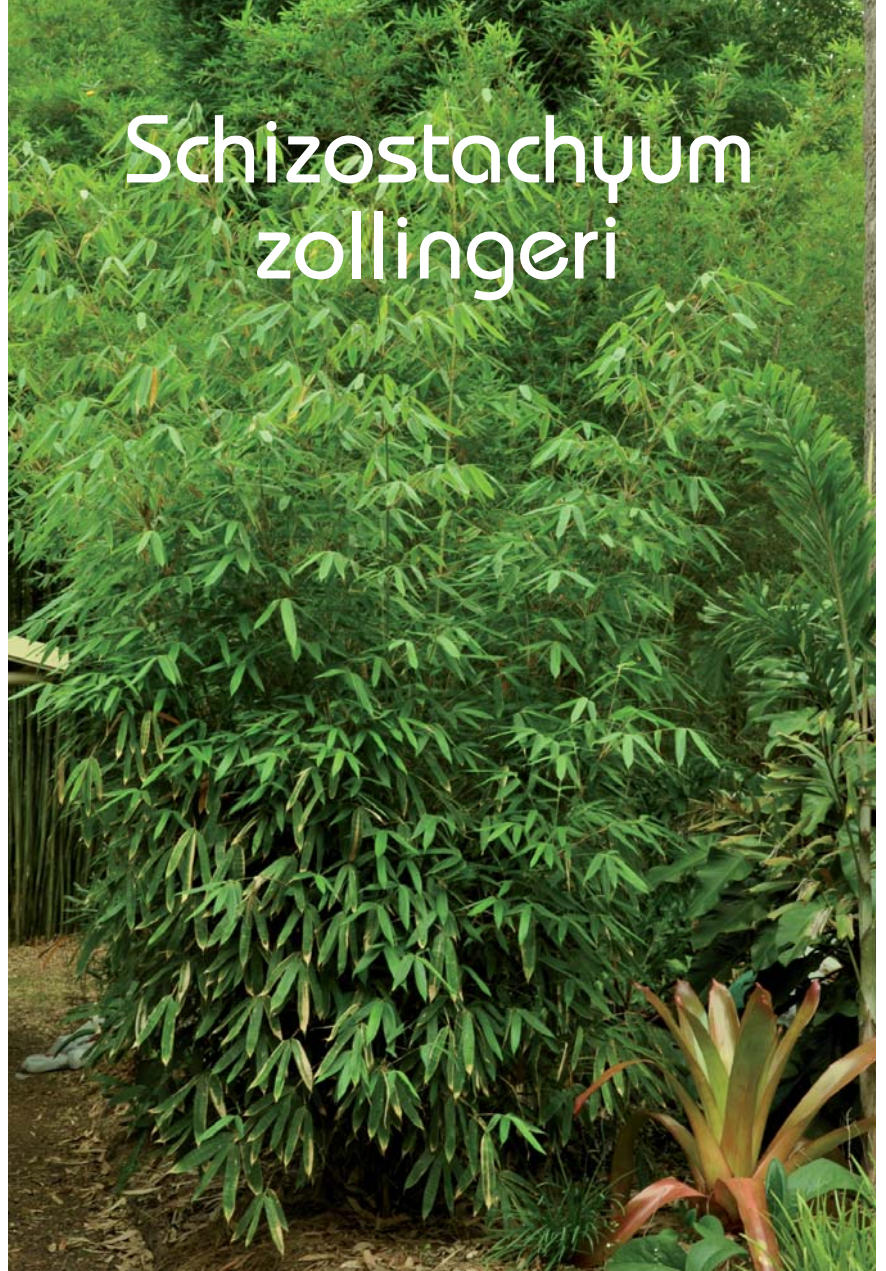
A tight clumping bamboo, with medium size leaves. The lower half is branchless on a mature clump, ideal for a shady spot in the garden as *Schizostachyums* need shade, especially when young.

The shoots are edible and culms can be used for flute making or split for weaving.

Because this bamboo is so tight clumping, smaller, older culms in the centre need to be removed regularly as they can easily become trapped behind the new growth, making it difficult to remove later.

Reference:

Bamboo World by Victor Cusack.



Making Happy Lanterns

By John Jones

Working with bamboo, there are always lots of seasoned offcuts, pieces not long enough for projects, but too good to throw away.

About 12 months ago, the Bamboo Society Facebook page had a picture of some small bamboo lanterns with smiley faces. A cut was made across the node which has a concave and a convex side. as the saw cuts through the concave side leaving a mouth-shaped hole. This takes a bit of practise, so start away from the node and make thin cuts until you get it right.



Drill two eye-holes and use different spacing, depending on the mouth shape.

They can be coated on the outside to make them last longer and the inside can be painted white or yellow to reflect the light. This also protects the soft fibres on the inside of the culm from the heat of the tealight. I would not suggest to use these lanterns indoors as they may catch fire, although I haven't had this happen as yet.





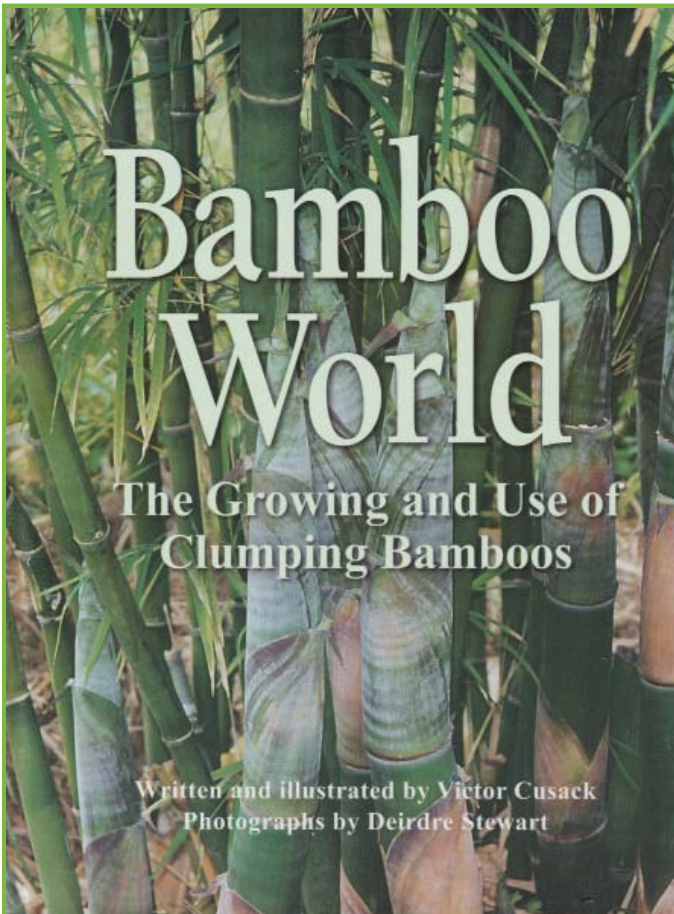
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