Why Bamboo

Focus of this presentation

Why Farm with Bamboo.

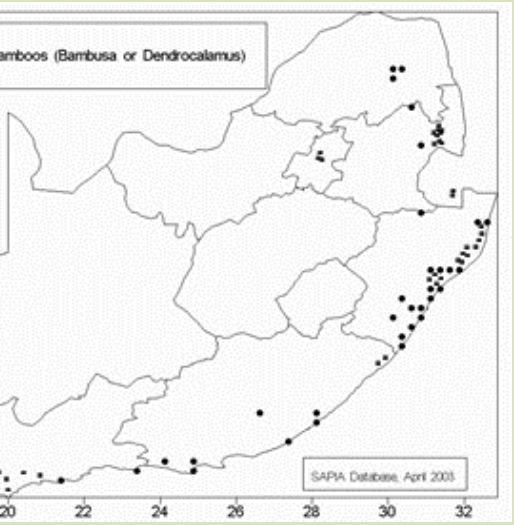
Understanding density and yields

Advantage of bamboo over Eucalyptus

Water advantage.

Downstream

tribution of Woody Bamboos in Africa



f Bambusa Balcooa
ut South Africa, 1st planted
pe in the 1670s.
rom 50 – 2000M

Lowland bamboo *(Oxytenanthera abyssinica)* Plus other bamboos – Bambusa Balcooa, Bambos & Vulgaris, Dendrocalamus Asper and Giganteus – Grows from 100-2000m


Is the fastest growing plant on this planet
Is a critical element in the balance of oxygen and carbon dioxide in the atmosphere
A viable replacement for wood
An enduring natural resource
Versatile with a 105 day growth cycle
A renewable resource for agro forestry production.
And over 2.2 billion people rely on bamboo as a source of income

Species

1500 species world wide

n excess of 14 million hectares worldwide

Grows naturally on all continents except Antarctica and Europe

Choice of plants for this project will be best suited to climate, water and soil conditions

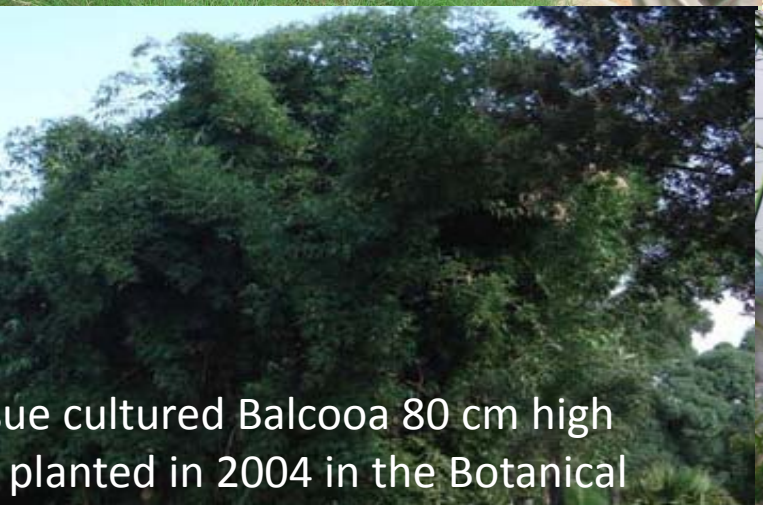
- Bambusa Balcooa (SA Hybrid) Minimum rainfall 1000 mm
- Bambusa Bambos Minimum rainfall 1000 mm
- Dendrocalamus Asper – costal humid areas. Minimum rainfall 1000mm p/a
- Dendrocalamus Latiflorus (colder areas) Minimum rainfall 1000 mm

Chosen plants optimise sustainable development

All Sympodial – non invasive plants

Generally growing in the wild

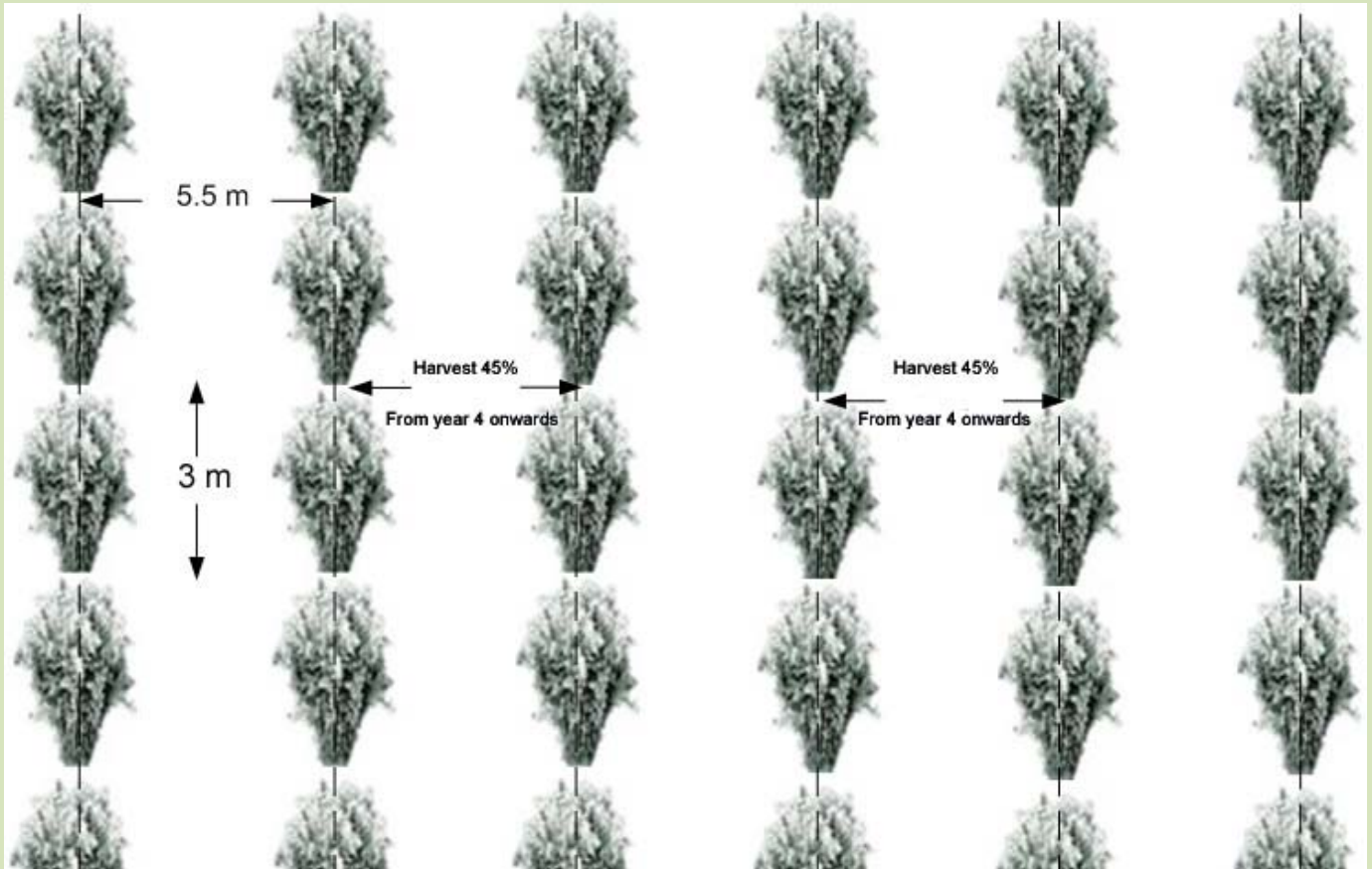
1 and 2 were taken on September
5.



ue cultured Balcooa 80 cm high
planted in 2004 in the Botanical

Why 594 to the hectare.

1. We are not planting bamboo in the wild to occasionally cut some down.
2. The lumen in Southern Africa is very high.
3. Thus we will never harvest more than 45% of standing culms.



Yields of Bambusa Balcooa -Afrikanus

Let us say we will get 100 tons per Hectare at a plant density of 594 from year 4

Per Clump

Year 1 - B Balcooa. 1 plant

In 2nd Year - B Balcooa. 1 + 8 new shoots = 9	Prune 2 shoots
In 3rd Year - B Balcooa. 7 + 11 new shoots = 18	Prune 4 shoots
In 4th Year - B Balcooa. 14 + 16 new shoots = 30	Harvest 13 culms
In 5th Year - B Balcooa. 17 + 24 new shoots = 41	Harvest 18 culms
In 6th Year - B Balcooa. 23 + 27 new shoots = 50	Harvest 22 culms

Therefore:

In year 4 you have 13 x 594 = 7722 / 100 tons = 12.94 Kgs per culm

In year 5 you have 18 x 594 = 10692 / 100 tons = 9.35 Kgs per culm

In year 6 you have 22 x 594 = 13068 / 100 tons = 7.65 Kgs per culm

on of biomass *of Bambusa bambos* on unit area basis
ha)

Culm diameter (cm)	Culm height (m)	Basal area (cm)	Number of culms	Number of nodes	Leaf	Biomass t/ha Branches	Culm t/ha	Individual Culms in Kgs	Total above ground biomass	Rhizome biomass	Grand Total biomass
2.3	1.4	3.1	1 250	7	0.166	0.493	0.70	0.0006	1.357	0.938	2.295
3.3	3.2	4.0	2 250	16	0.668	1.897	6.80	0.003	9.360	3.150	12.510
4.3	9.6	5.0	3 000	37	1.122	17.115	29.25	0.0098	47.487	4.980	52.467
4.8	21.8	6.1	3 500	86	1.862	27.160	92.75	0.027	121.772	6.055	127.827
6.3	27.2	8.3	4 000	98	3.544	33.940	187.22	0.047	224.708	9.600	234.308
8.3	28.5	10.1	4 250	103	4.021	39.886	242.73	0.057	286.637	11.220	297.857

ranches, leaves and rhizome were collected individually, and after determining their fresh weight at the field, were oven dried at 103 ± 2'C in the laboratory. Their moisture free dry determined. The average biomass values of the sample trees were multiplied with the number of culms in hectare, to calculate the unit area biomass. The values expressed are average ependent experiments.

mhugavel and Frances

Advantage of bamboo over Eucalyptus

Yields Of fast growing Eucalyptus
After 10 Years the p/h weight is 200 tons p/h @ R460 per ton
Regrowth 8 years the p/h weight is 180 tons p/h @ R460 per ton

Income for 10 years at yield 200 t/h is R92 000 p/h = Ave R9200 p/y
Income for 8 years at yield 180 t/h is R82 800 p/h = Ave R8280 p/y
Total Income per hectare R174 800 p/h = Ave R9711 p/y

Yields Of fast growing Bamboo
4th Year the per hectare weight is 100 tons p/h R140 p/t = R 14 000
5th Year the per hectare weight is 120 tons p/h R140 p/t = R 16 800
6th Year the per hectare weight is 150 tons p/h R140 p/t = R 21 000
For the next 4 years lets say the weight remains the same therefor
4 Years Income is = R 84 000
Total in year 10 = R 135 800
Total next 8 years = R 168 000
Total Income from Bamboo after 18 years **= R 303 000**

Water advantage

A mature clump Bamboo of bamboo uses on average 2 litres of rain per day. As the rhizomes are all connected within the clump it is difficult to gauge individual culm uptake.

Bamboos do not have an elongated root system that draws water from the aqua-fill, it has a fine hair-like root system to a maximum depth of 80cm. Bamboo only uses surface water, thereby stabilising slopes and eradicating soil erosion.

Plantations can be intercropped for the first two years. This will aid the growth of young bamboo plants.

A 10 year old Eucalyptus uses on average 10 litres of rain per day. This increase with age up to 200 litres.
Eucalyptus has a deep tap root that draws water all year round from the aqua-fill. Generally there is no other vegetation around eucalyptus trees.

Downstream Process

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From Activated Charcoal for water purification
To
Producing a high grade coal replacement to Bio Diesel.
From Paper to Bamboo fibre (clothing etc).
Floors, Walls, Structural Beams & Roofing.

There are now over 5000 products made from Bamboo

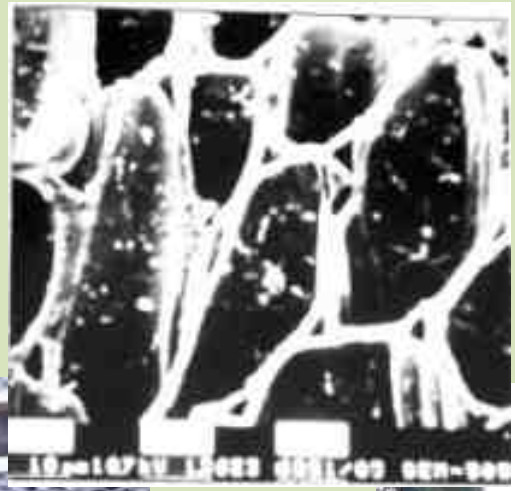
Lets take a look at the Bamboo Revolution


In Australia, India, China, Brazil and
Kenya. Hygienic sewage water works.

Ecological Solution- Complete dispersal of all waste water, with no wastewater remaining on the surface

Guaranteed results- The system has been tested and validated by ANVAR. Removal of all visual, bacterial and smell pollution is guaranteed.

Perennial solution- the bamboo takes in pollution and heavy metals all year round.



Activated Bamboo carbon

mboo Charcoal Filters

Channel with Filters

Cross

Splitting

o making

Sliver making

Laminated Bamboo Lumber

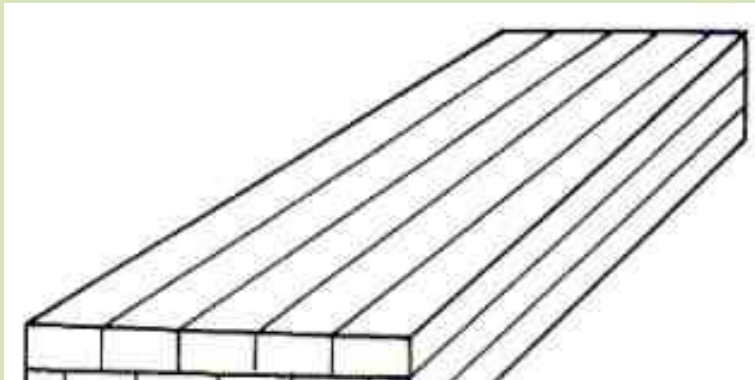
inated Bamboo Lumber is made igh quality bamboo strips.

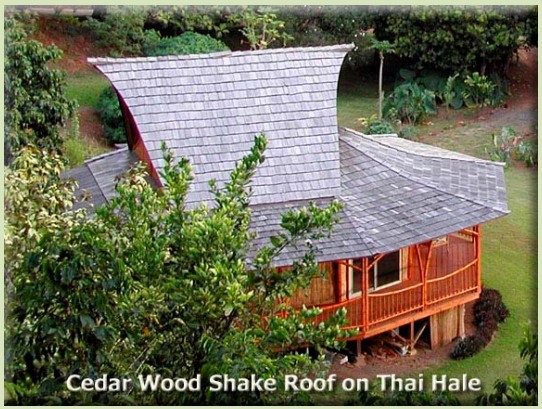
: 3-40x1200x2400mm

mm thin panel for furniture, oration

ck LBL for both structure & oration purposes and art and craft ducts.

duct properties: Density 6g/cm3, hardness 32HB, bending ngth along grain 140MPa, elastic dulus 15000MPa.




Cedar Wood Shake Roof on Thai Hale

Bamboo panel prefabricated module house

Prefabrication is an important trend in wooden house construction industry