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2005 China Paper

Beijing / China
September 2005

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TAPPI

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Eucalyptus: Forests , Pulp Mills & Pulp Markets





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State-of-the-art mills

“People, who plant forests, believe in the future”

Plantation forests

Plantation forests

The plantation forest model

- Utilization of rural farmers land areas (less expensive and enlarged social benefits)

- Utilization of low quality soils (degraded pastures, not competing for agricultural lands)

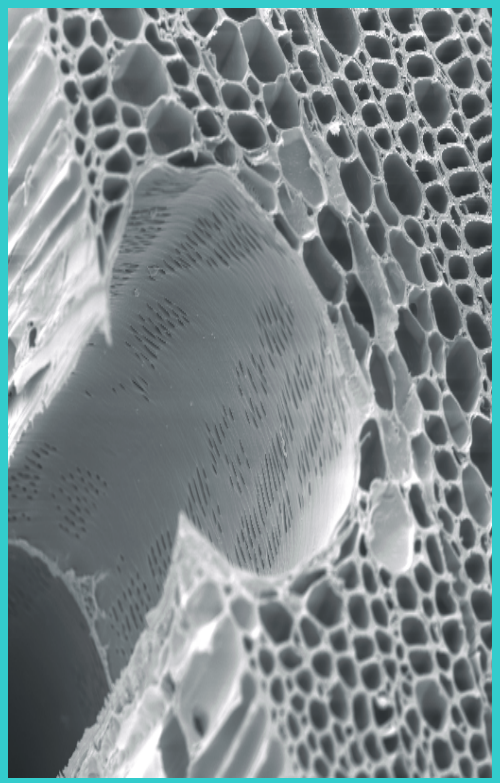
- Involvement of local partners as many as possible

The virgin pulp based model

- Substantial growth in virgin pulp and not in paper: oriented to “market share” growth
- Most of EBITDA formation comes from the pulp side: paper does not add too much further
- Worldwide distribution of pulp a lot easier than paper
- Domestic paper recycling allows virgin pulp surplus for exports

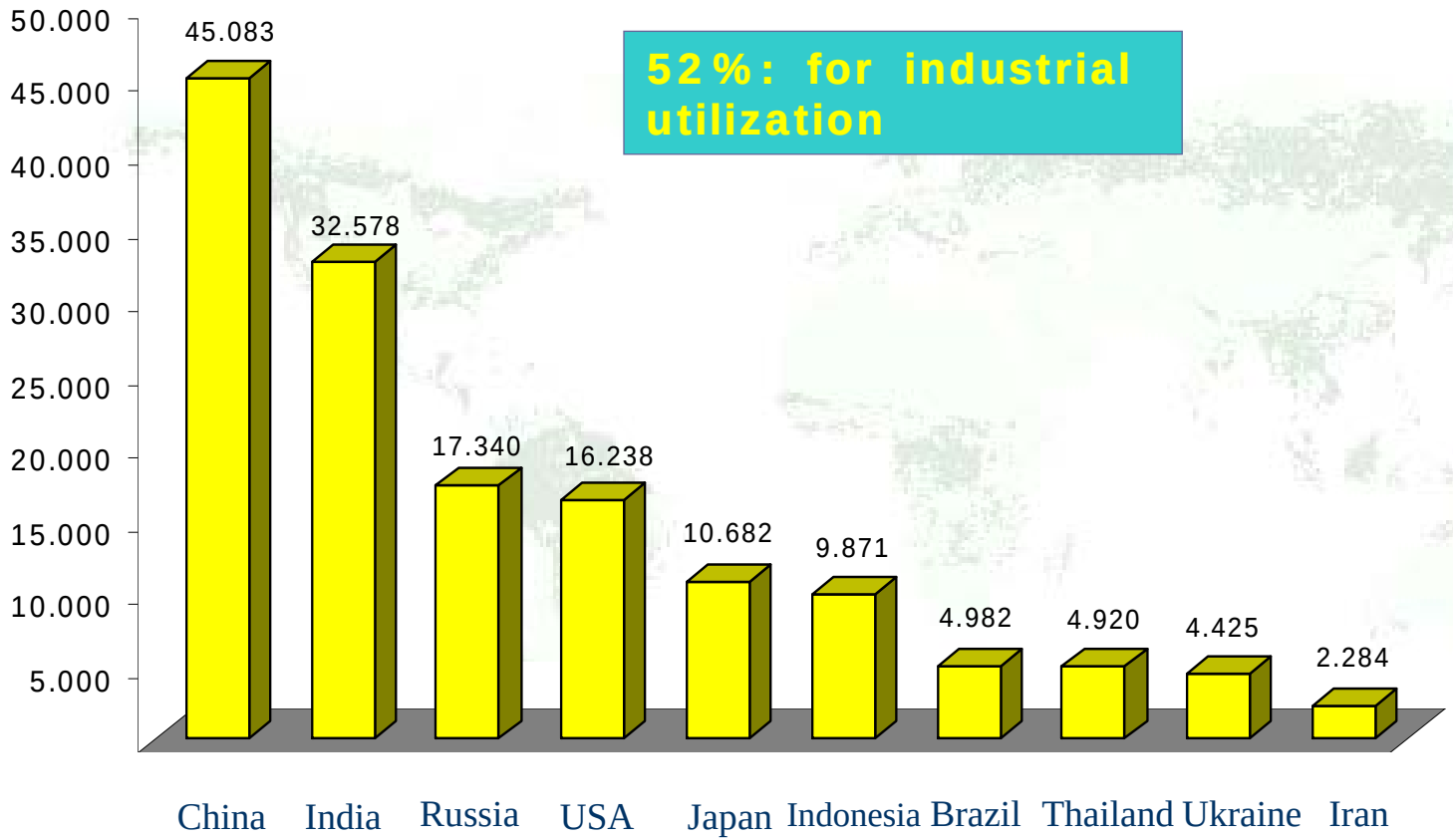
“People, who build competitive mills, deserve to play the best markets”

Eucalyptus & Pines



Low-cost woods
and
superior quality

Plantations: 187 million hectares worldwide



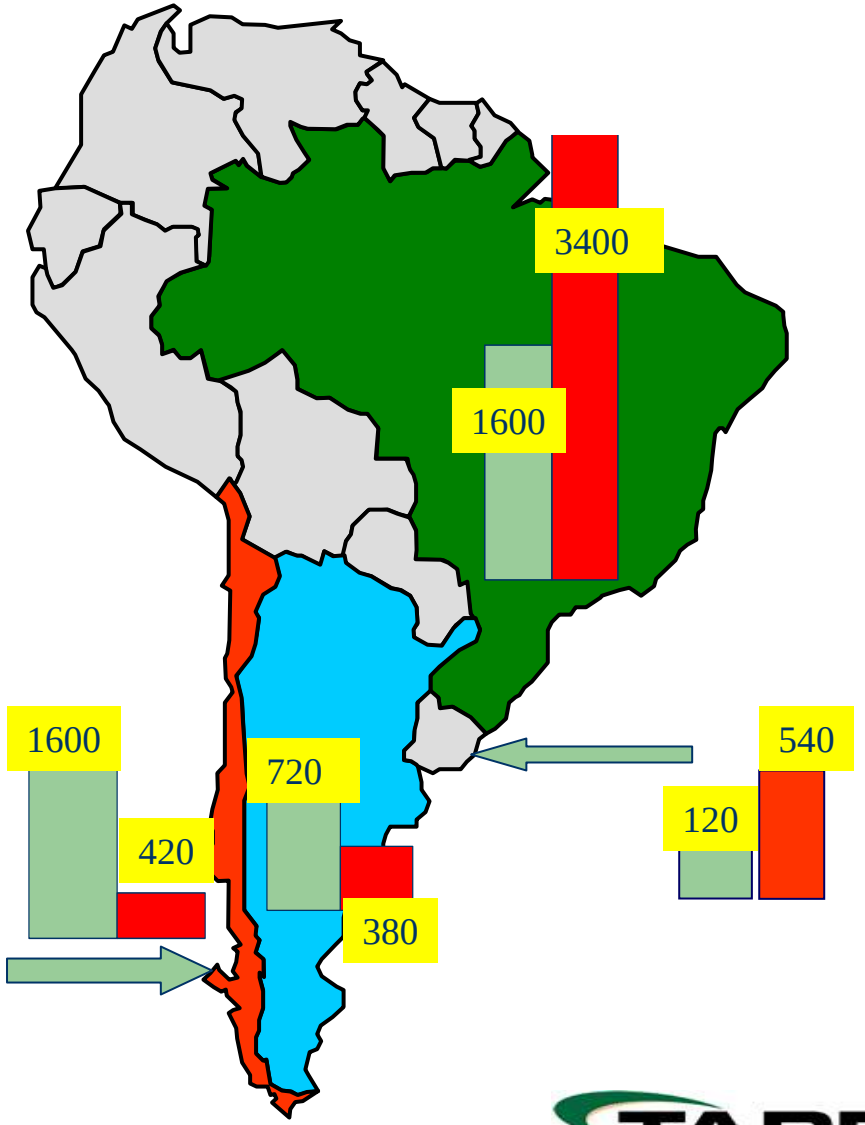
52%: for industrial utilization

Source: FAO

ABC & U countries

In thousand hectares

Total: 8,780 ha
Softwoods (green): 4,040 ha
Hardwoods (red): 4,740 ha



BSKP operating costs

	Chile	Sweden	Finland	US South	France/ Germany	Canada East	BC Interior	BC Coast	WORLD WEIGHT A
Wood	99	246	276	142	270	204	134	134	173
Chemicals	35	36	40	37	44	45	47	50	41
Energy	9	16	8	21	14	21	42	45	24
Variable costs	**143**	**299**	**324**	**200**	**328**	**270**	**222**	**228**	**239**
Labour	18	50	43	58	56	74	66	104	59
Maintenance	8	19	16	19	20	35	23	35	22
Other mill costs	28	26	17	92	32	31	86	52	58
Fixed Costs	**55**	**95**	**77**	**168**	**108**	**140**	**175**	**192**	**139**
OPERATING COSTS fob mill	**198**	**394**	**401**	**368**	**436**	**410**	**397**	**420**	**378**
Ocean freight	45	16	35	59	25	60	79	63	52
Marketing & sales	9	18	8	21	11	5	8	8	13
TOTAL DELIVERED CASH COSTS cif	**253**	**427**	**444**	**448**	**472**	**475**	**484**	**491**	**443**

Source: Hawkins Wright , 2004

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BHKP operating costs

US$/tonne	Brazil	Indonesia	US South	Portugal	Sweden	France/ Belgium	Canada East	Finland	Spain	WORLD WEIGHT A
Wood	71	102	128	188	212	178	158	243	219	132
Chemicals	28	17	37	59	40	60	30	38	41	33
Energy	10	14	23	6	19	13	24	2	11	14
Variable costs	**109**	**134**	**188**	**253**	**270**	**252**	**211**	**283**	**270**	**179**
Labour	8	13	40	49	51	65	50	41	49	30
Maintenance	12	13	31	22	15	14	23	16	19	18
Other mill costs	24	25	50	37	18	35	35	19	36	31
Fixed Costs	**44**	**52**	**122**	**107**	**84**	**113**	**108**	**77**	**104**	**79**
OPERATING COSTS fob mill	**153**	**185**	**310**	**360**	**354**	**365**	**319**	**360**	**374**	**258**
Ocean freight	44	37	53	18	17	17	73	38	26	43
Marketing & sales	17	12	10	5	19	11	7	8	15	12
TOTAL DELIVERED CASH COSTS cif	**214**	**234**	**373**	**383**	**390**	**393**	**399**	**406**	**415**	**313**

Source: Hawkins Wright , 2004

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Eucalyptus market pulp in 2004 (Source: PPPC, 2005)

- **Brazil ..... 5.475 M tonnes**
- **Spain ..... 1.235 M tonnes**
- **Portugal ..... 0.925 M tonnes**
- **Chile ..... 0.695 M tonnes**
- **Thailand ..... 0.470 M tonnes**
- **South Africa ..... 0.250 M tonnes**
- **Norway ..... 0.185 M tonnes**
- **China ..... 0.170 M tonnes**
- **Morocco ..... 0.135 M tonnes**
- **New Zealand ..... 0.055 M tonnes**
- **Others ..... 0.050 M tonnes**
- **Total** **9.645 M tonnes**

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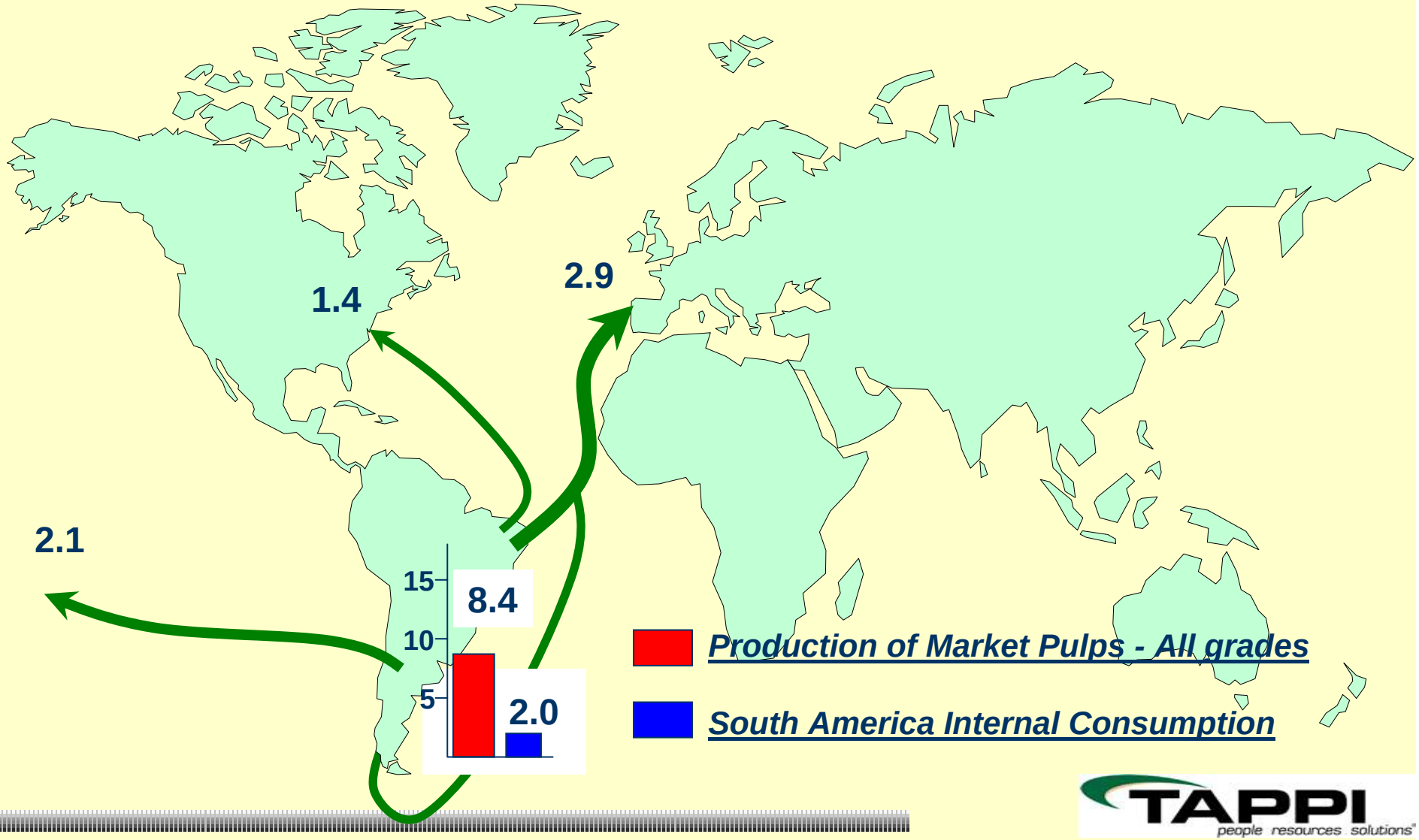
2004 South America: Total Market Pulp

Million tonnes



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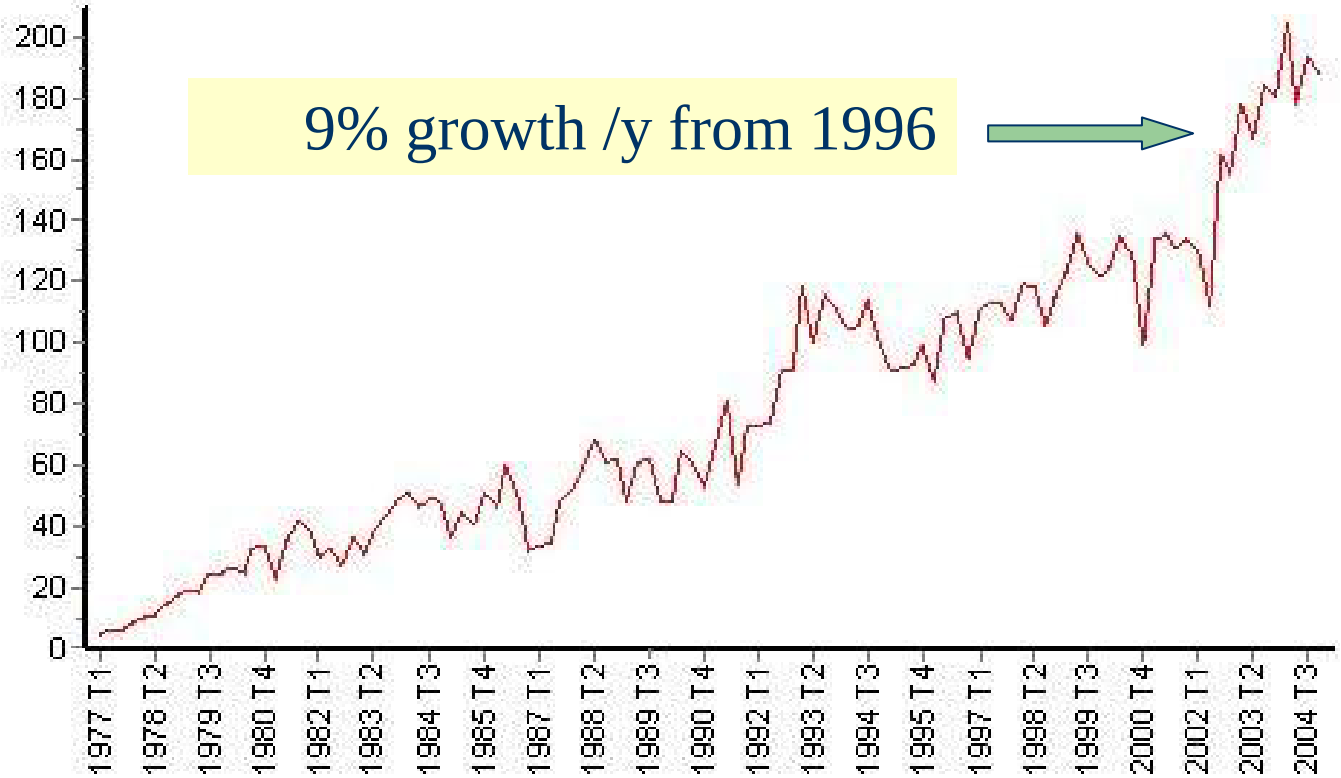
Brazilian P&P exports: 1996 = Index 100



Source: IPEA Data

Growth: 7.7% / year

Pulp Production Growth in Brazil

Year	Production (Million tonnes)
1970	0.7
1980	3.1
1990	4.5
2000	7.6
2004	9.6

5. 5 market pulp in 2004

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BRACELPA - P & P expansion plan to Brazil

PULP	2002	2012	
	1000 t	1000 t	Growth %
•Production	8,000	14,500	81
• Exports	3,500	7,400	114

PAPER	2002	2012	
	1000 t	1000 t	Growth %
• Production	7,700	13,400	74
• Exports	1,400	2,000	43
• Country population (1,000)	176,000	190,000	
•Per capita consumption	38.2	50,0	32.0

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Chile: “un país forestal”

From 35 million dollars exports in 1970 of forest products to 3 billion dollars in 2004 (40% is market pulp)

Eucalyptus wood availability will grow from today’s 4.7 million m³ / year to 10 to 11 million m³ em 2011

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More virgin market pulp coming till 2010 - 2012 (from South America) .....

- Eucalyptus BHKP: 6,700 Thousand tonnes
- Pine (BSKP): 685 Thousand tonnes
- BCTMP Acacia: 280 Thousand tonnes
- Dissolving pulp: 250 Thousand tonnes

Forestry Driving Forces

- Eucalyptus forests growth rates:

(average Brazilian producers 40 m^3/ha.year and top clonal forests reaching 60 m^3/ ha.year)

- In Argentina Eucalyptus grow about 25-35 m^3/ha.year; in Uruguay 15 - 30 depending whether *E.globulus* or *E.grandis*; in Chile 20 - 35 also depending whether *E.globulus* or *E.nitens*)

- In Chile, *Pinus radiata* grows 30 m^3/ha.year; in Brazil, Uruguay and Argentina *Pinus taeda* has a growth of 25-30.

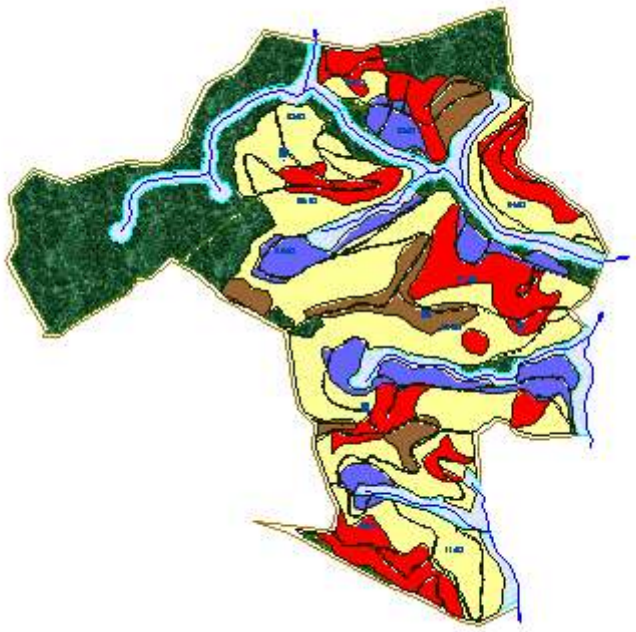
- Wood cost /ton of BK Pulp: US$ 65 - 90 (HW) ; 85 -120 (SW)

- Possibility of adding value along the forest base chain

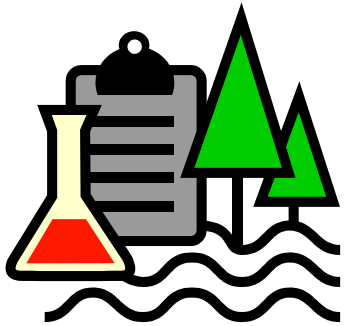
Eucalyptus Forestry Technology

1.Agro-ecological planning before planting

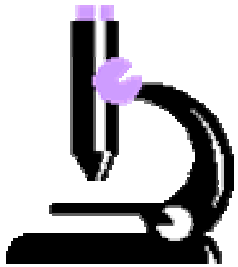
2. Plantations in mosaic design



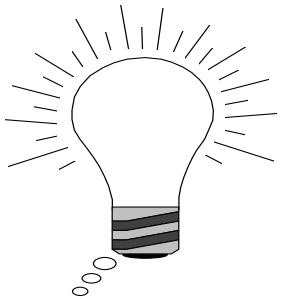
3. Planning operations of silviculture and harvesting



4. Implement a very good quality program to all forest operations



5. Implement a cleaner production program



6. Ban fire as a forest tool

7. Conservation of soil by forest residues management

8. Minimum soil preparation for minimum disturbances and erosion

9. High quality seedlings

10. Guarantee maximum survival of plants along forest cycle

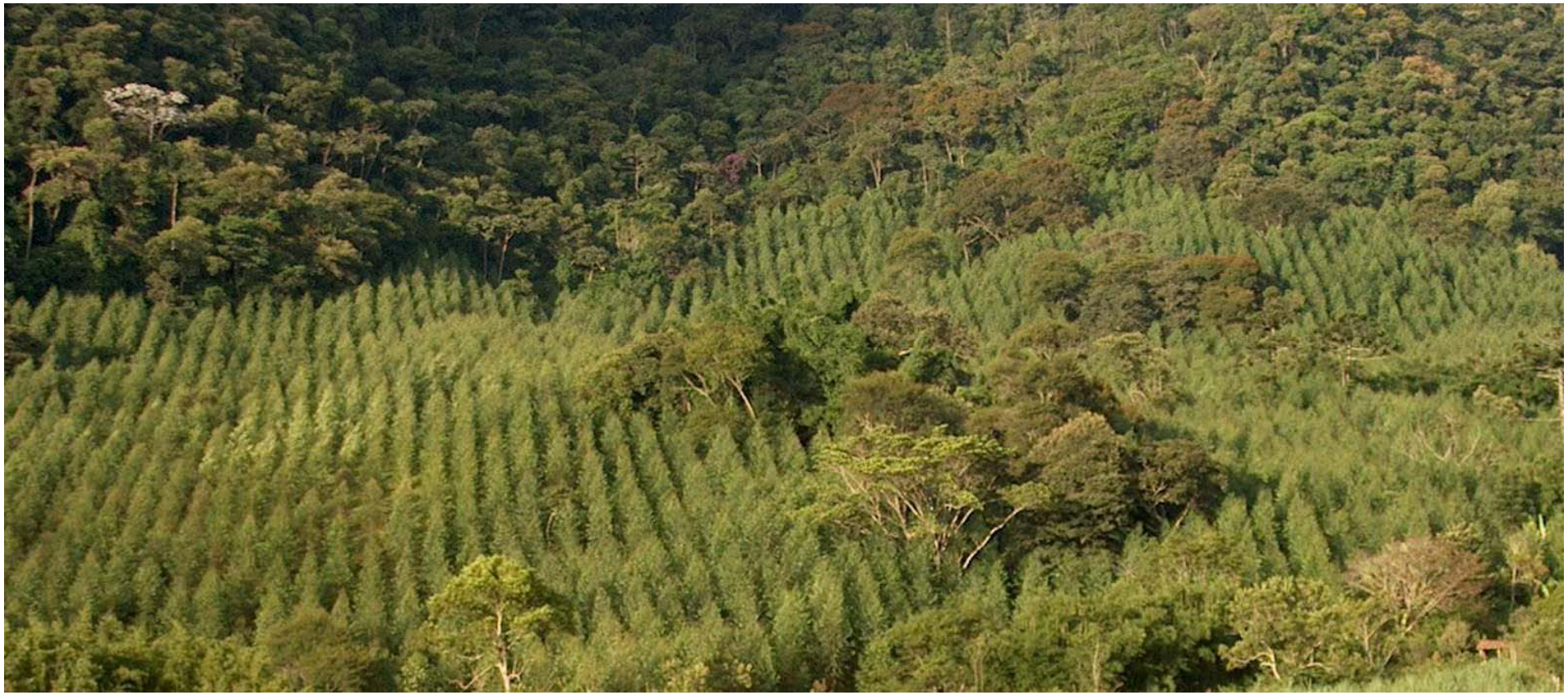
11. Fertilization to restaure soil nutrients

12. Retention of the rain water in the forest soil

13. Intense combat to weeds

14. Preventing and combating pests and diseases

15. Adequate balance between resources, spacing and plant population



16. Longer rotations and nutrient cycling

17. Better design and architecture of trees

18. Maximization of aerial growth

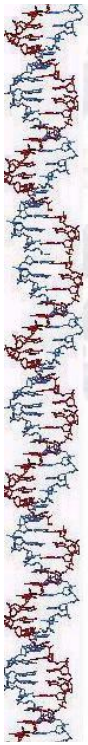
19. Maximization of wood production with less bark, branches, etc

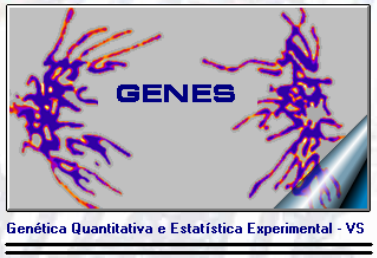
20. Intense utilization of mechanization

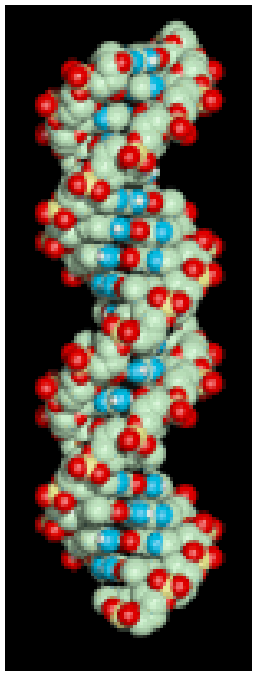
21. Improved trees by forest breeding

22. Selecting wood quality according to end-uses

23. Genomics




GENES
Genética Quantitativa e Estatística Experimental - VS



24. Agroforestry

25. Better knowledge of ecological interfaces

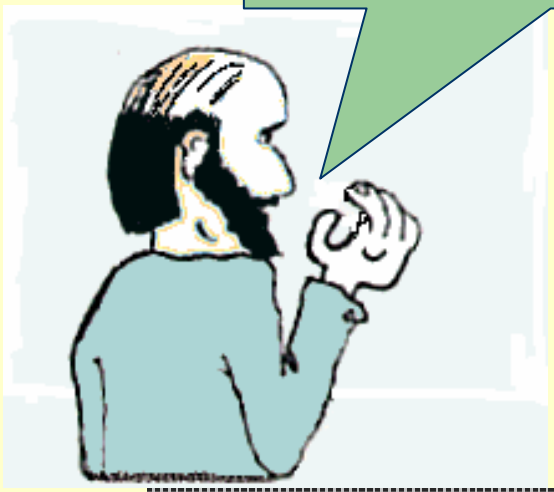
26. Better distribution of the forests on the landscape

27. Better dialogue with the communities with improved information to stakeholders

Well, this is all friends.

Thank you very much.

Good luck with the eucalyptus.



www.eucalyptus.com.br

www.tappi.org

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