

Western Australia's Development and Future Prospects For Tree Crop Industries

Presentation to:

Australia's Paper and Forestry Forum

18 May 1998

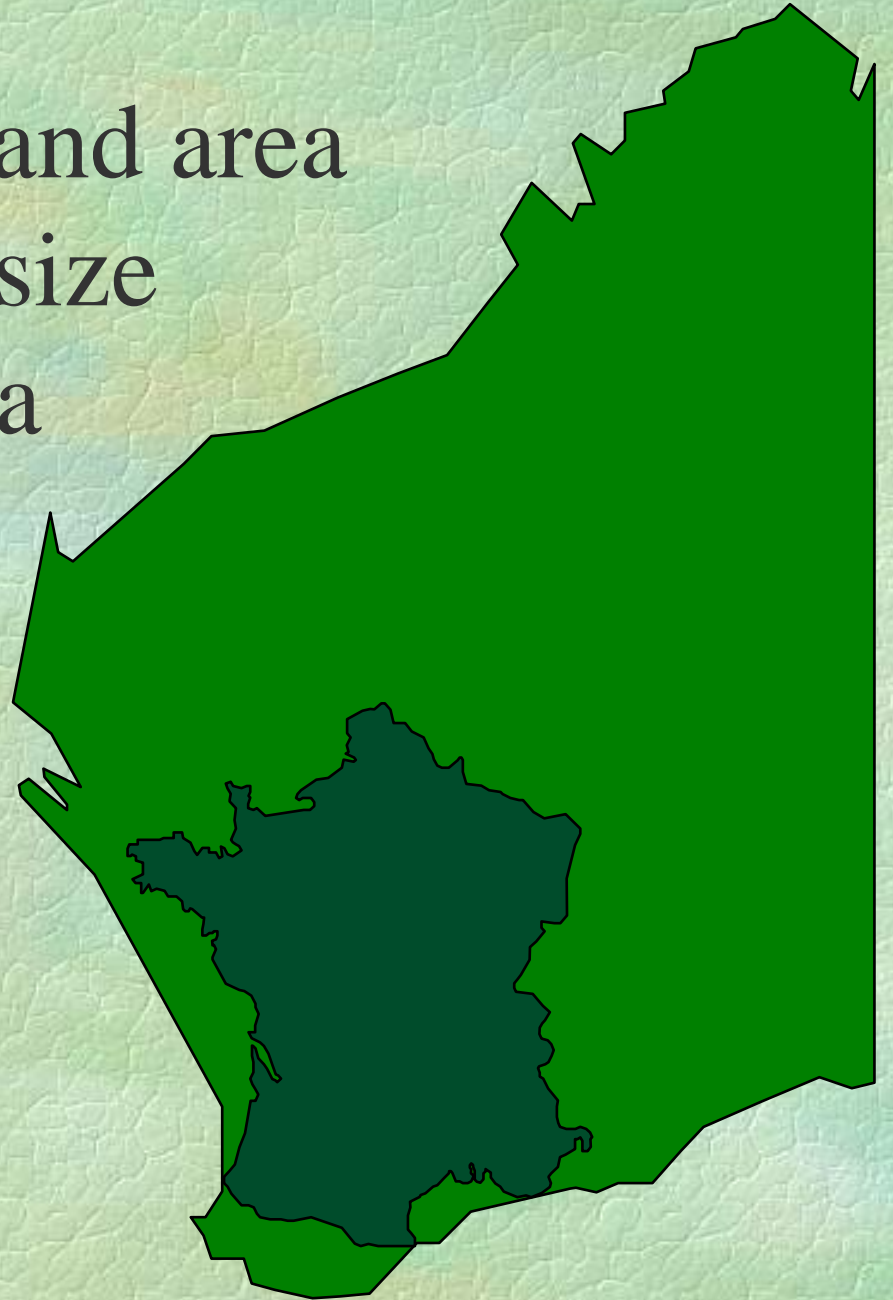
Dr Syd Shea

Executive Director

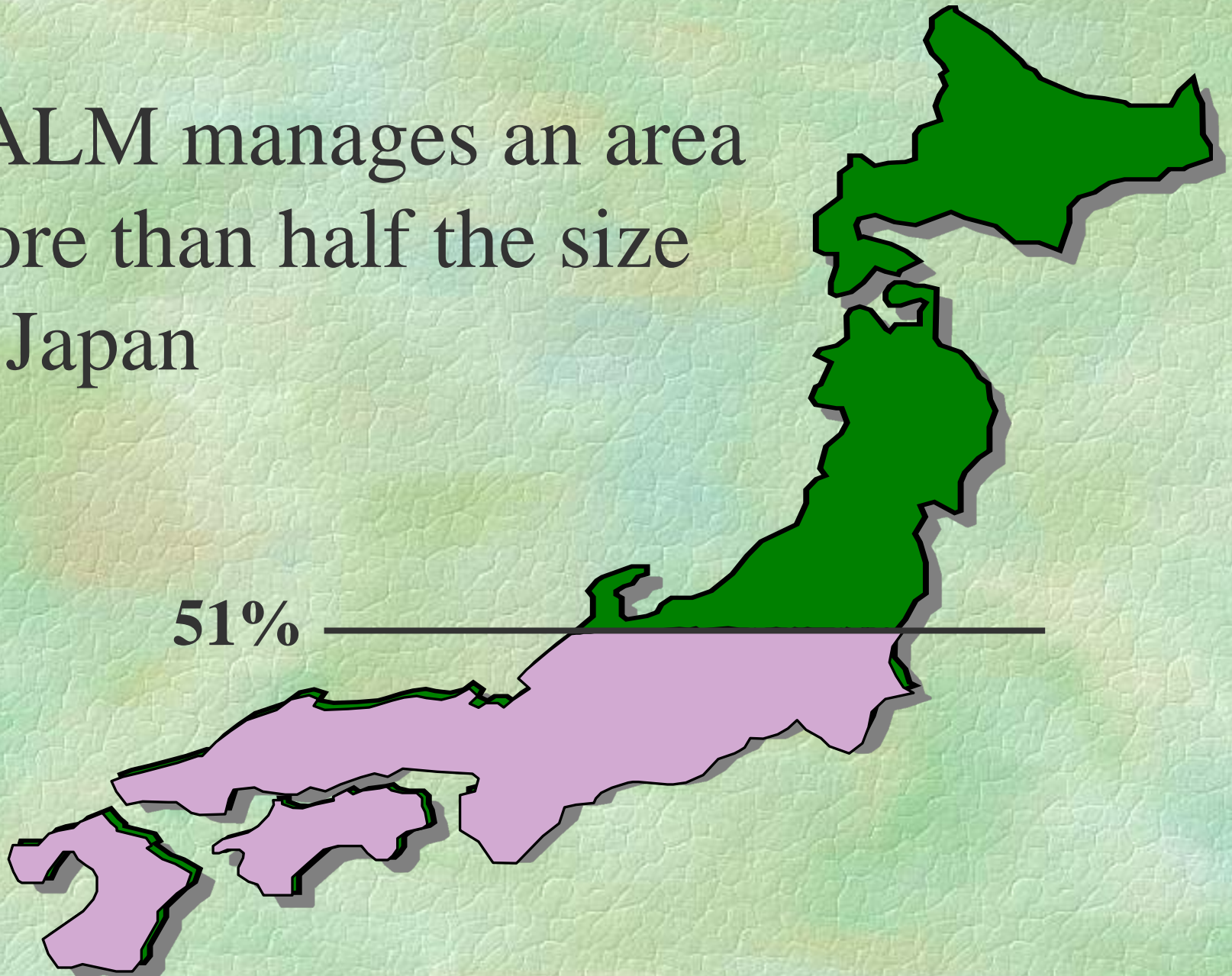
Department of Conservation and Land
Management, Western Australia



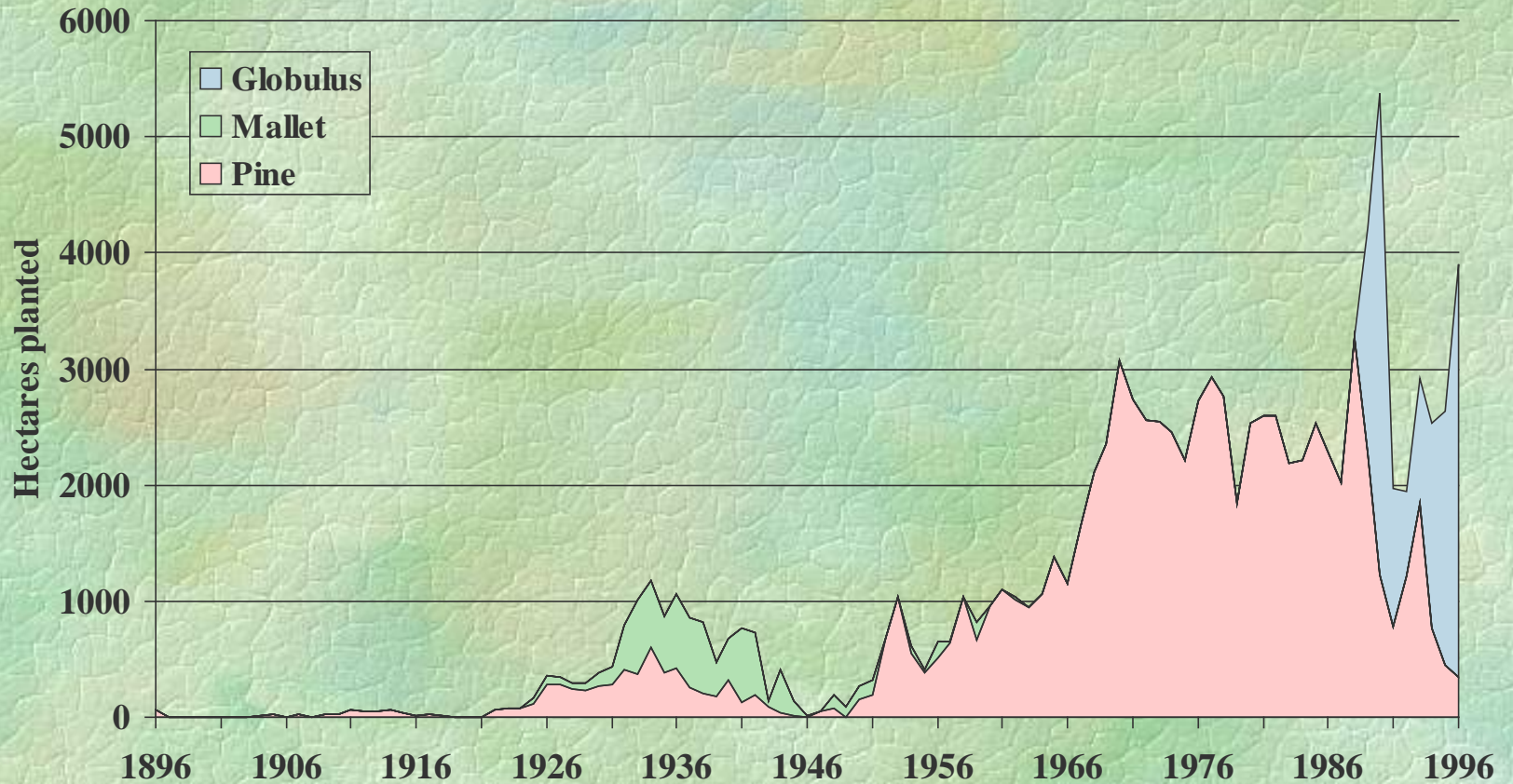
France occupies a land area
about a quarter the size
of Western Australia



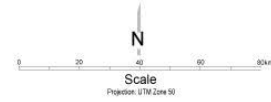
CALM manages an area
more than half the size
of Japan



Tree plantings in Western Australia (WAFD/CALM)



Plantations Southwest Western Australia



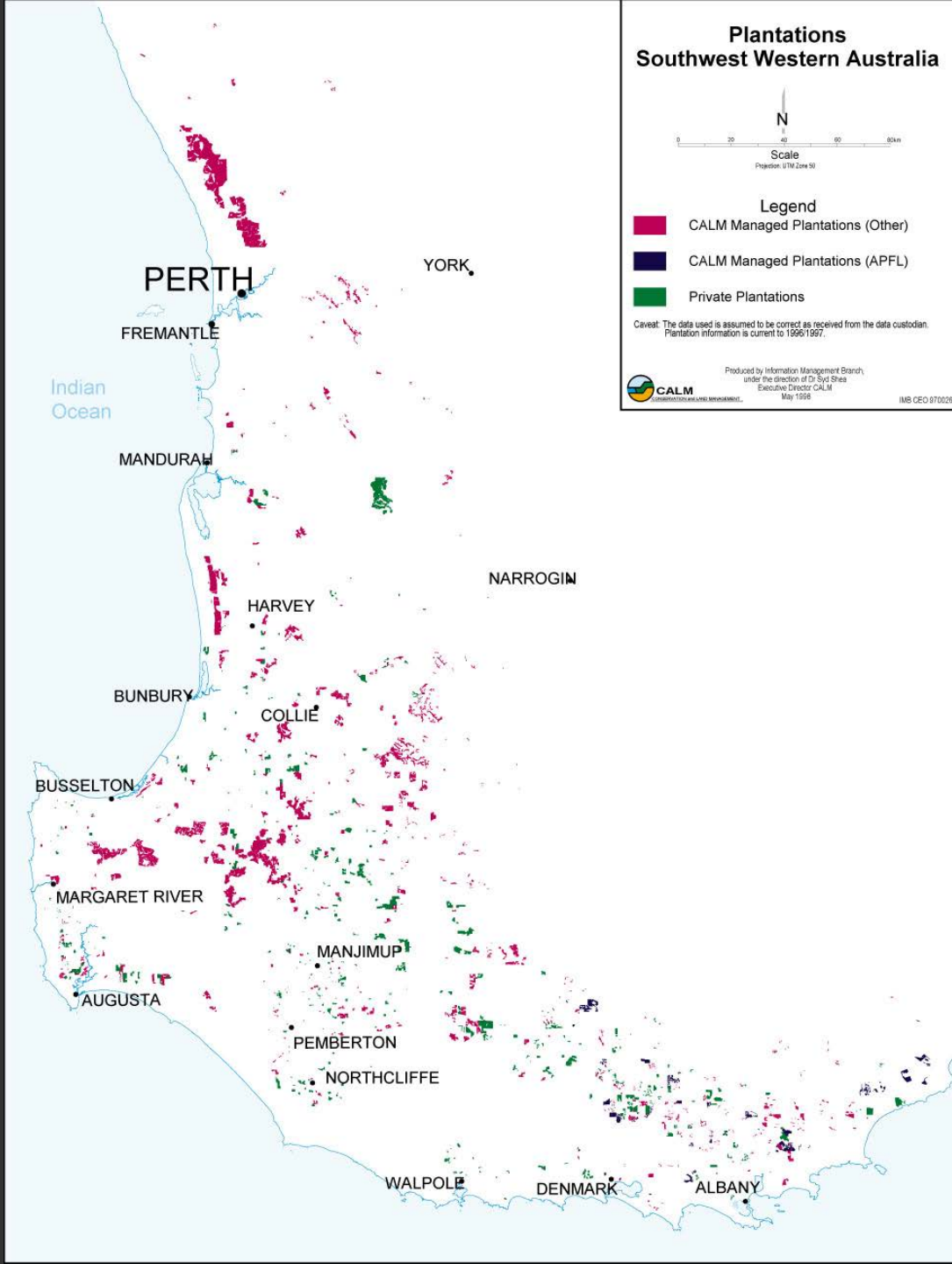
- Legend**
- CALM Managed Plantations (Other)
 - CALM Managed Plantations (APFL)
 - Private Plantations

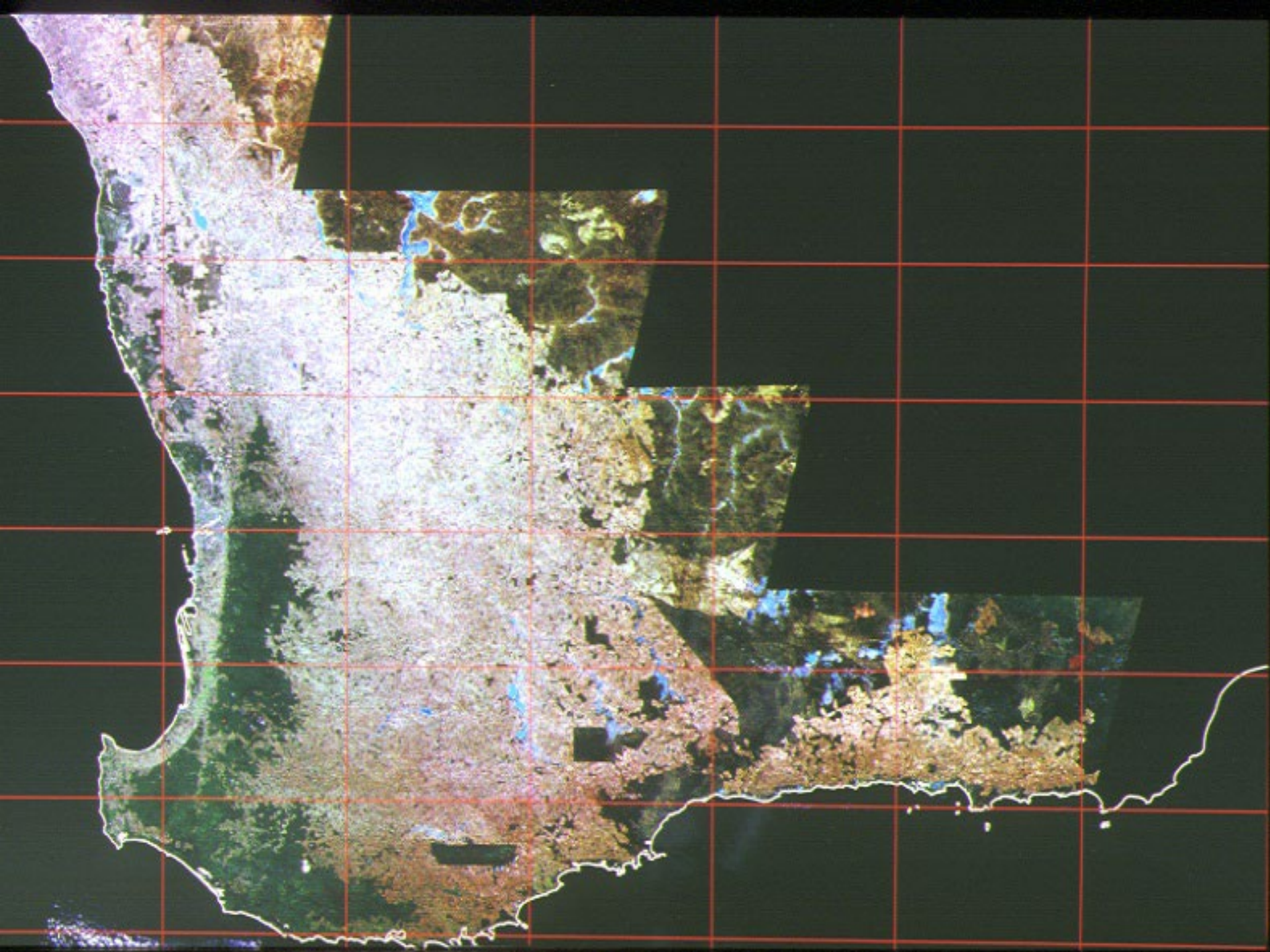
Caveat: The data used is assumed to be correct as received from the data custodian. Plantation information is current to 1996/1997.



Produced by Information Management Branch,
under the direction of Dr Syd Shea
Executive Director CALM
May 1998

IMS CEO 970026







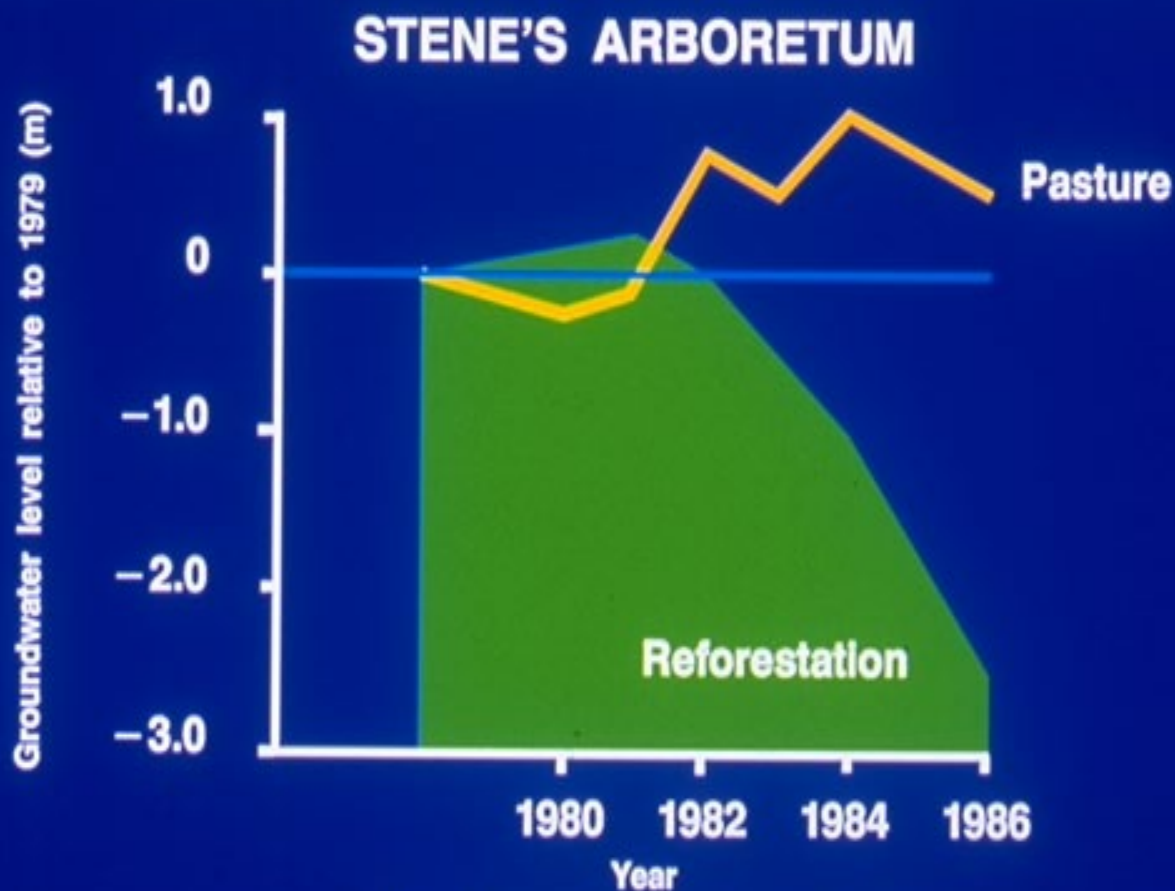






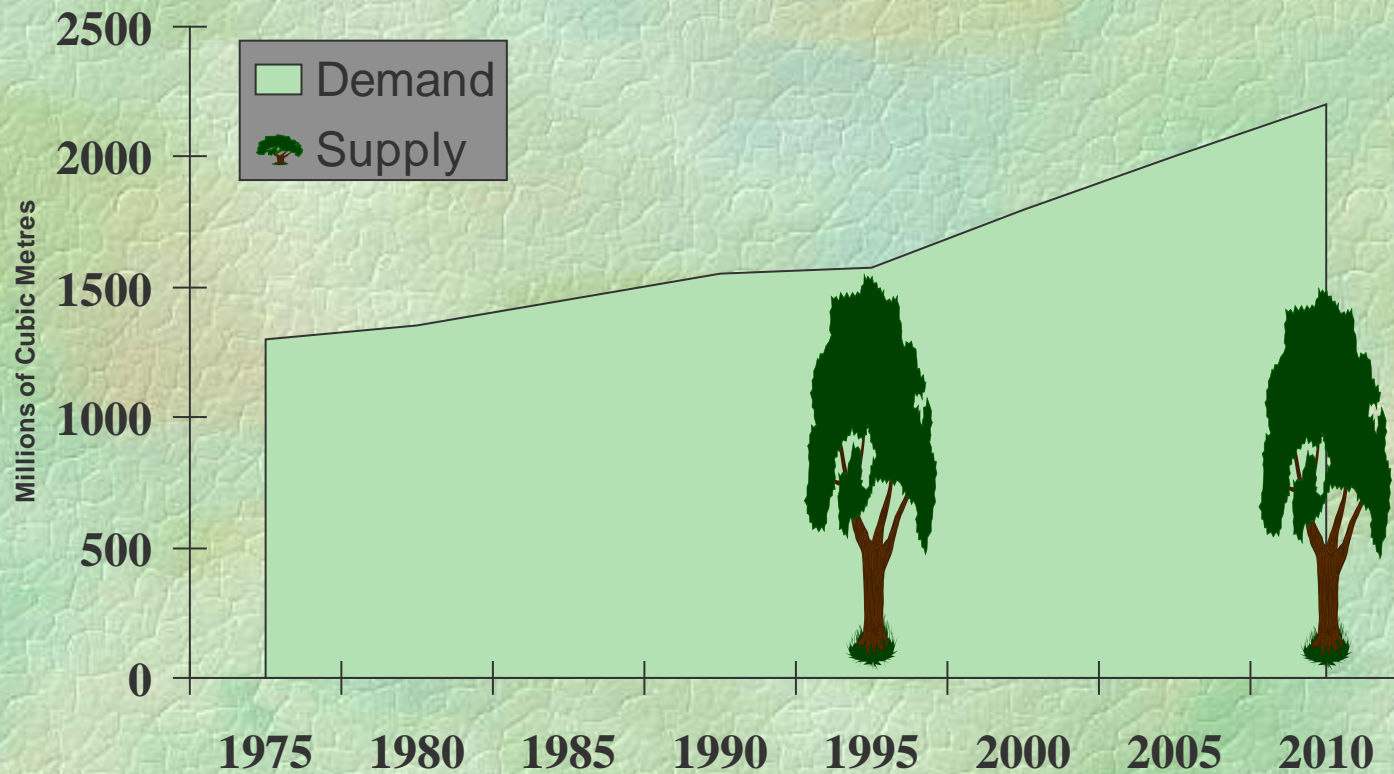


THE EFFECT OF TREE CROPS ON WATER TABLE LEVELS



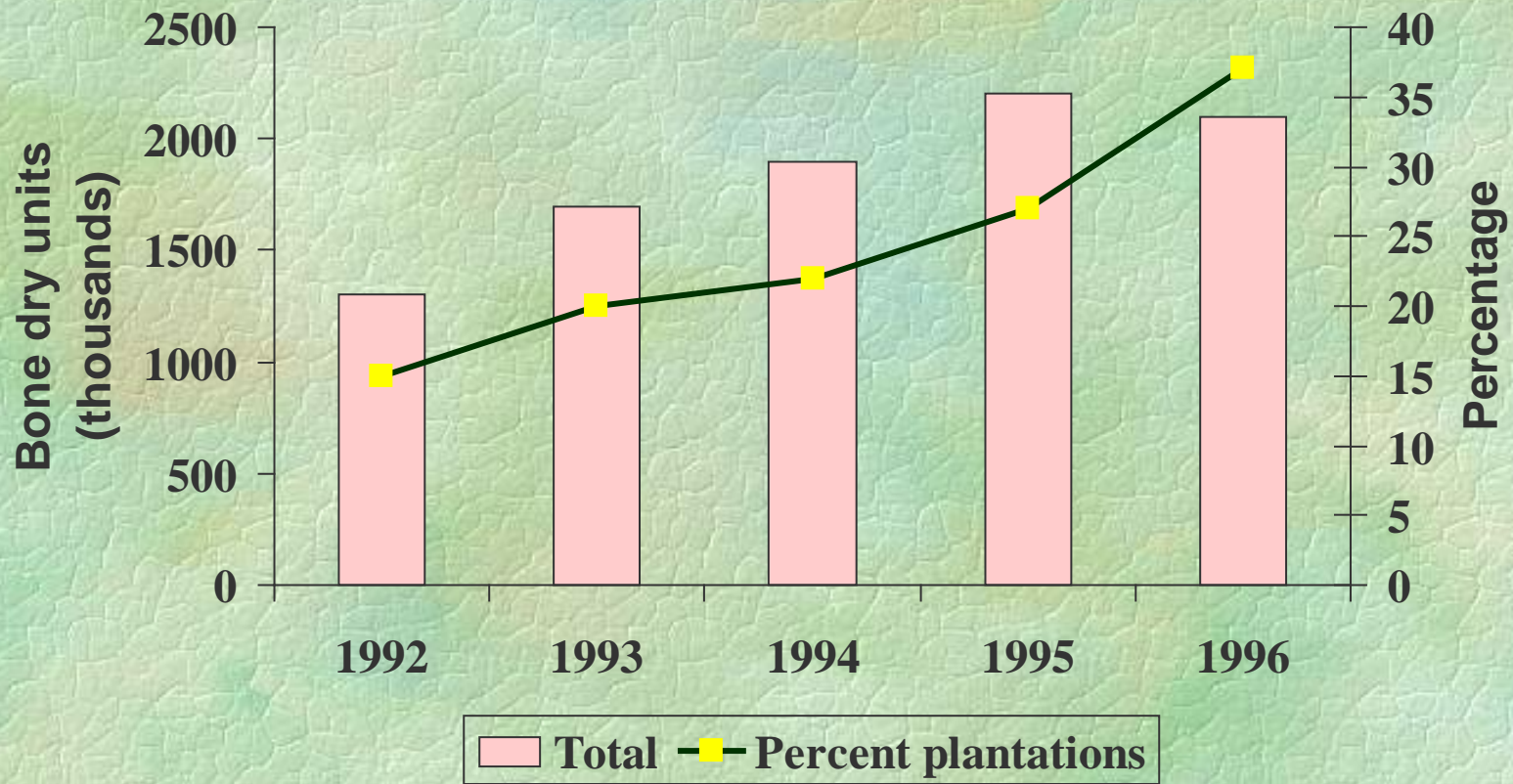
Water Authority of Western Australia
July 1989
Report No. WS 33

Global wood demand rises as supply falls



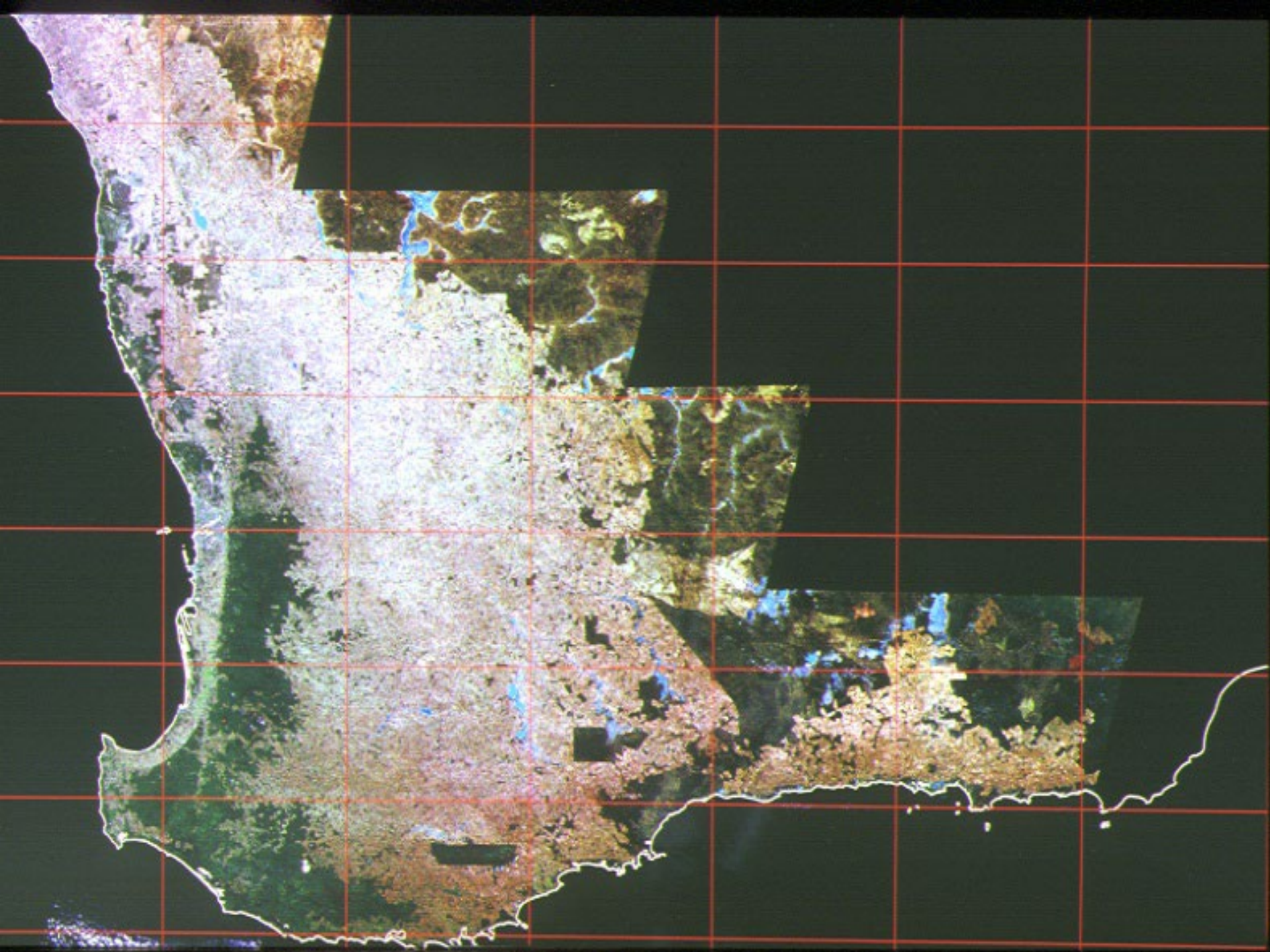


Total hardwood chip imports and the percentage of the imports sourced from plantations



Suitability by country for hardwood pulpwood plantation development to supply Asian markets





Farm Forestry Zones by area and rainfall

	<i>Rainfall (mm)</i>	<i>Area (x 10⁶ ha)</i>		
		<i>Cleared land¹</i>	<i>Suitable land²</i>	<i>Plantable land³</i>
<i>Pine and Bluegum</i>	>600 mm	2	1.3	.26
<i>New Maritime Pine</i>	400-600 mm	6	4.0	0.8
<i>Wheatbelt</i>	<400 mm	10	6.7	1.3
<i>Total</i>		18	12.0	2.36



CALM SHAREFARMS

MARITIME PINE

DORMAN PLANTATION PLANTED 1996

FORM P2
APPROVAL NO. B1629
WESTERN AUSTRALIA

TRANSFER OF LAND ACT 1893 AS AMENDED
PROFIT A PRENDRE

[Under s.34B Conservation and Land Management Act 1984 as amended]

DESCRIPTION OF LAND (Note 1)	EXTENT	VOLUME	FOLIO

ESTATE AND INTEREST (Note 2)

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ENCUMBRANCES (Note 3)

--

OWNER (Registered Proprietor) (Note 4)

--

GRANTEE (Note 5)

EXECUTIVE DIRECTOR OF THE DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT a body corporate constituted by the Conservation and Land Management Act 1984 ("the Act") of Corner of Hackett Drive and Australia II Drive, Crawley Western Australia.

TERM OF PROFIT A PRENDRE (Note 6)

40 years, subject to earlier termination in accordance with clause 8, commencing on and including the First day of January 1998.
--

The Owner hereby Grants a Profit a Prendre to the Grantee for the term specified above over the land described above subject to the encumbrances shown hereon in accordance with the terms and conditions contained in this Deed.





CALM has joint ventures with 1303 farmers



CALM has contracts with 84 land management contractors







Inspect an *E. globulus* seedling for quality. Check the stem diameter, look for a pruned fibrous root system and notice if the foliage has a red tinge to show the seedling is hardy. All these aspects will help in the survival of the seedling. To be confident that the seedling will give you extra profit from its volume production in 10 years' time, look for the Western Blue Gum label.



Eucalyptus globulus

Breeding population trials

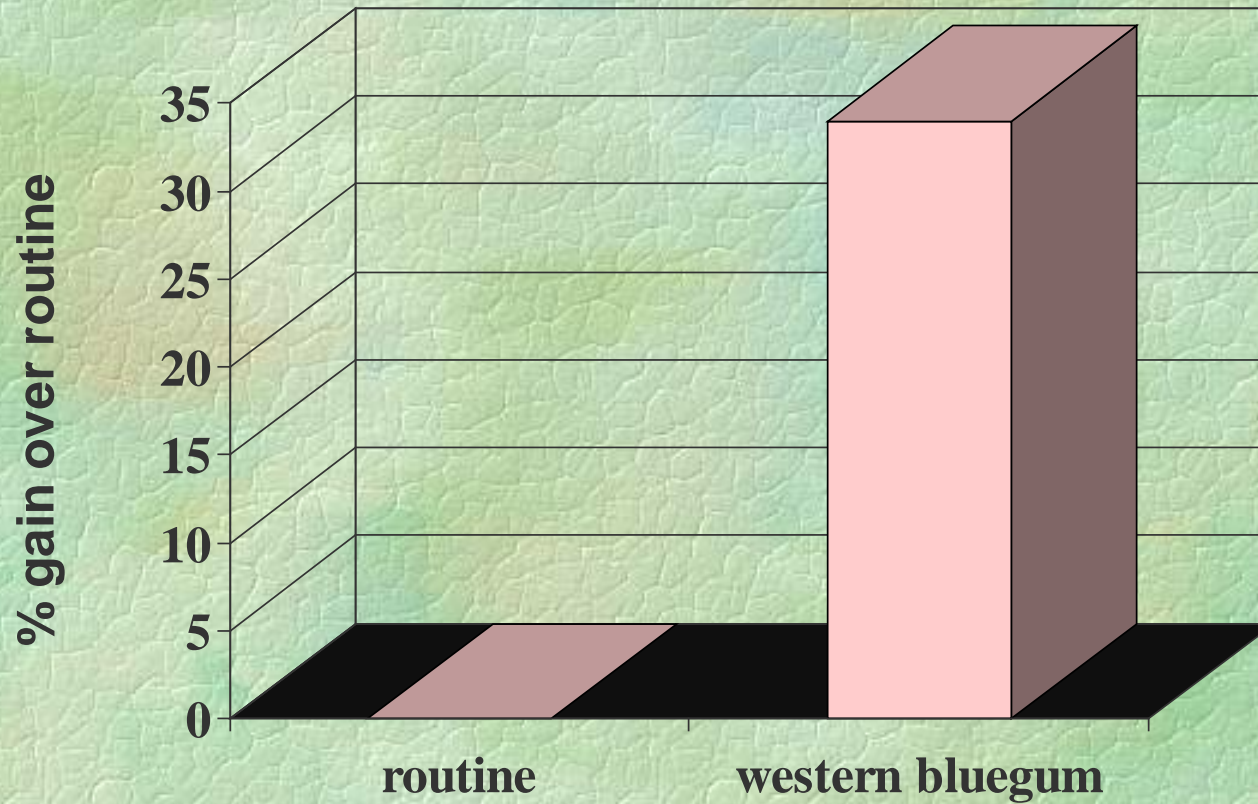
Program commenced in 1980

Source	Parents	Number	Area	Trees
CSIRO 1987 - 90	766	29	117 ha	107 000
King Island	83	1	3	3 000
Salt Tasmania	44	3	2	2 000
Orme	73	1	4	4 000
Orme (Prov)		2	11	6 000
APPM	73	4	4	3 000
CSIRO cc	135	1	3	3 000
Total	1174	41	144	128 000

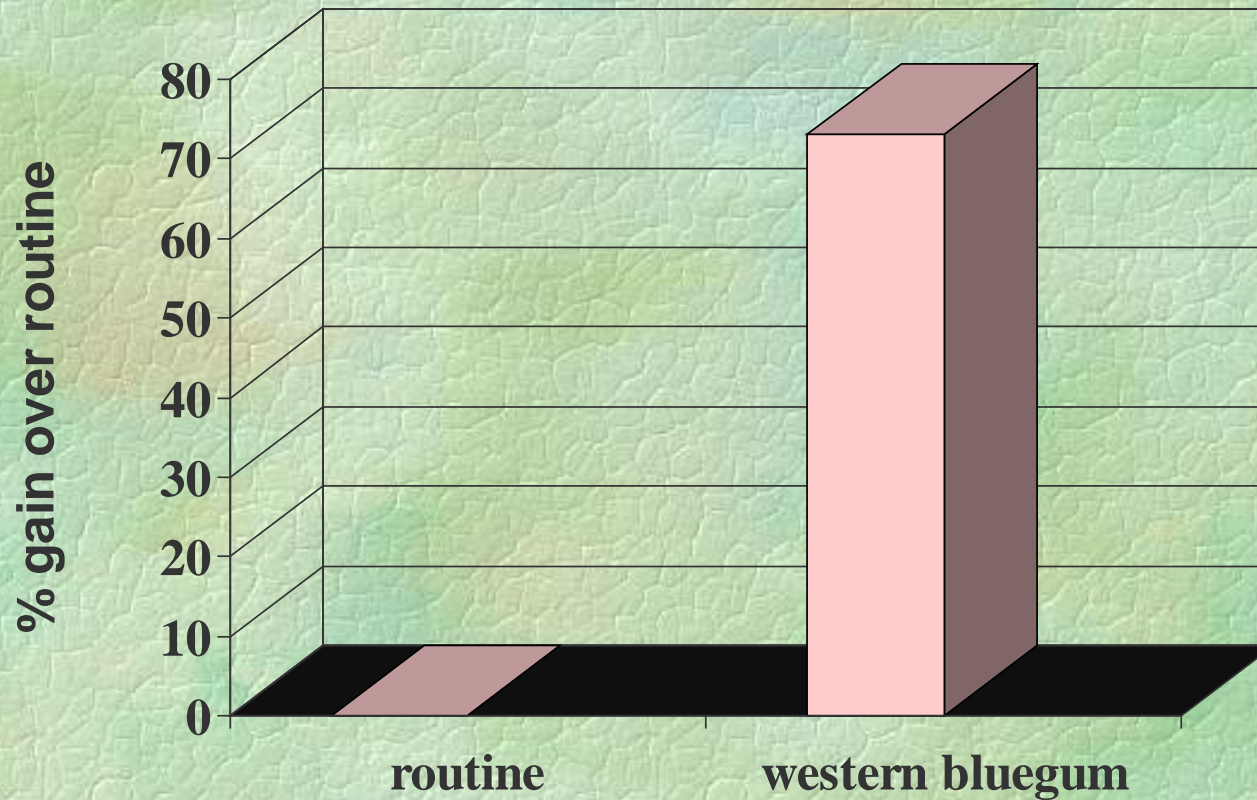
Traits assessed that influence breeding objective

- survival and health
- growth rate
- wood density
- tree form and branching
- drought tolerance
- salinity tolerance
- pest resistance
- flowering precocity and synchrony
- graft compatibility
- rooting ability

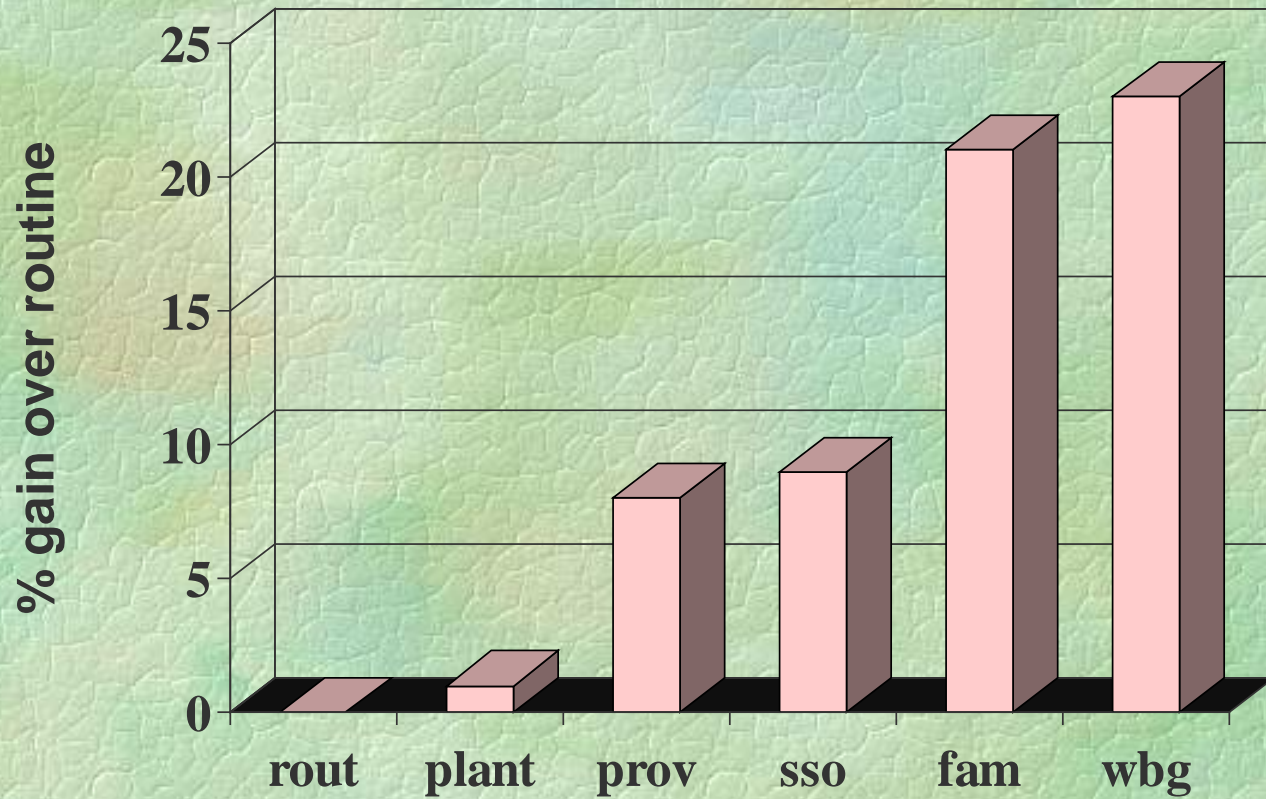
Genetic Gains Trial: **stem form**



Genetic Gains Trial: **crown**



Genetic Gains Trial: **wood volume**



Western Bluegum

Tasmanian Bluegum



Trees are 2 years 8 months old



La Mancha

Maritime Pine





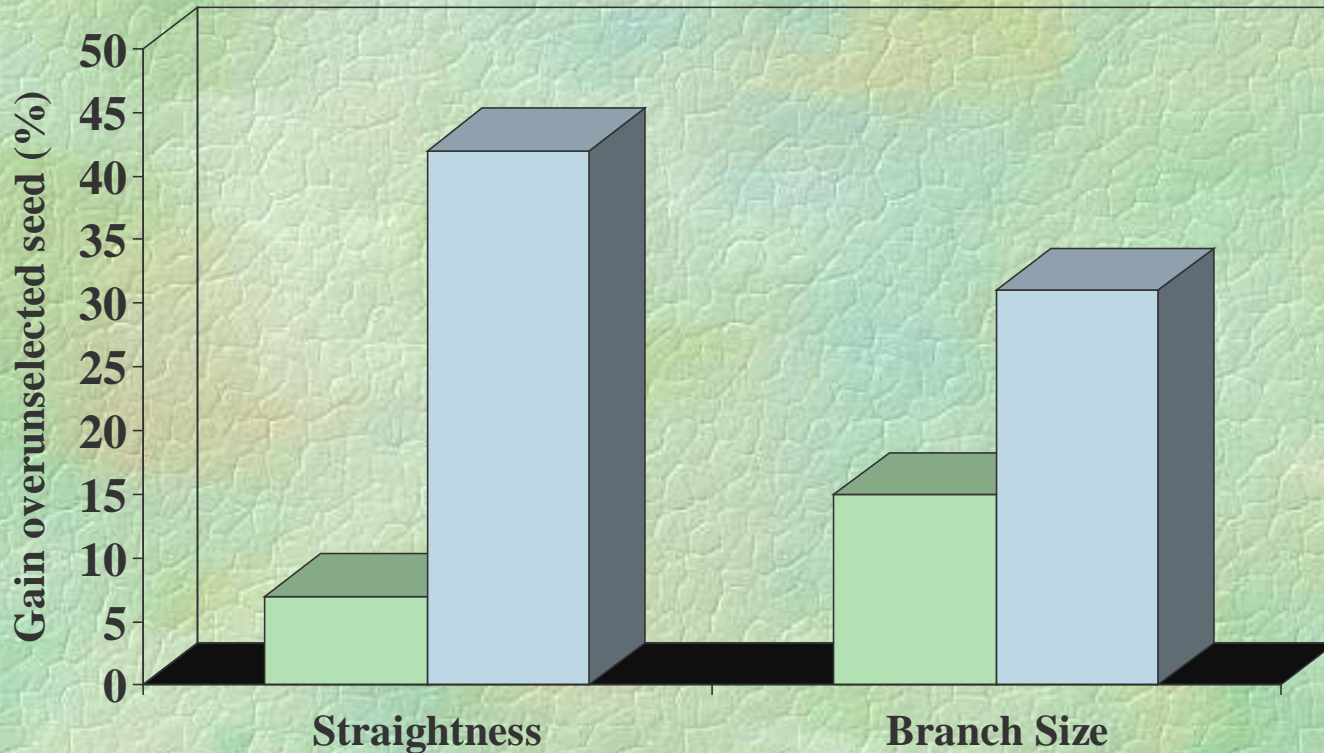
CALM's Genetic Resource:

Pinus pinaster

Program commenced in 1957

	Parents	Number	Area	Trees
Breeding Population Trials	313	93	171 ha	202 000
Breeding Research Trials		11	43 ha	45 000
Clonal Seed Orchards		4	48 ha	(24 ha active)
Clonal Archives		3	6 ha	

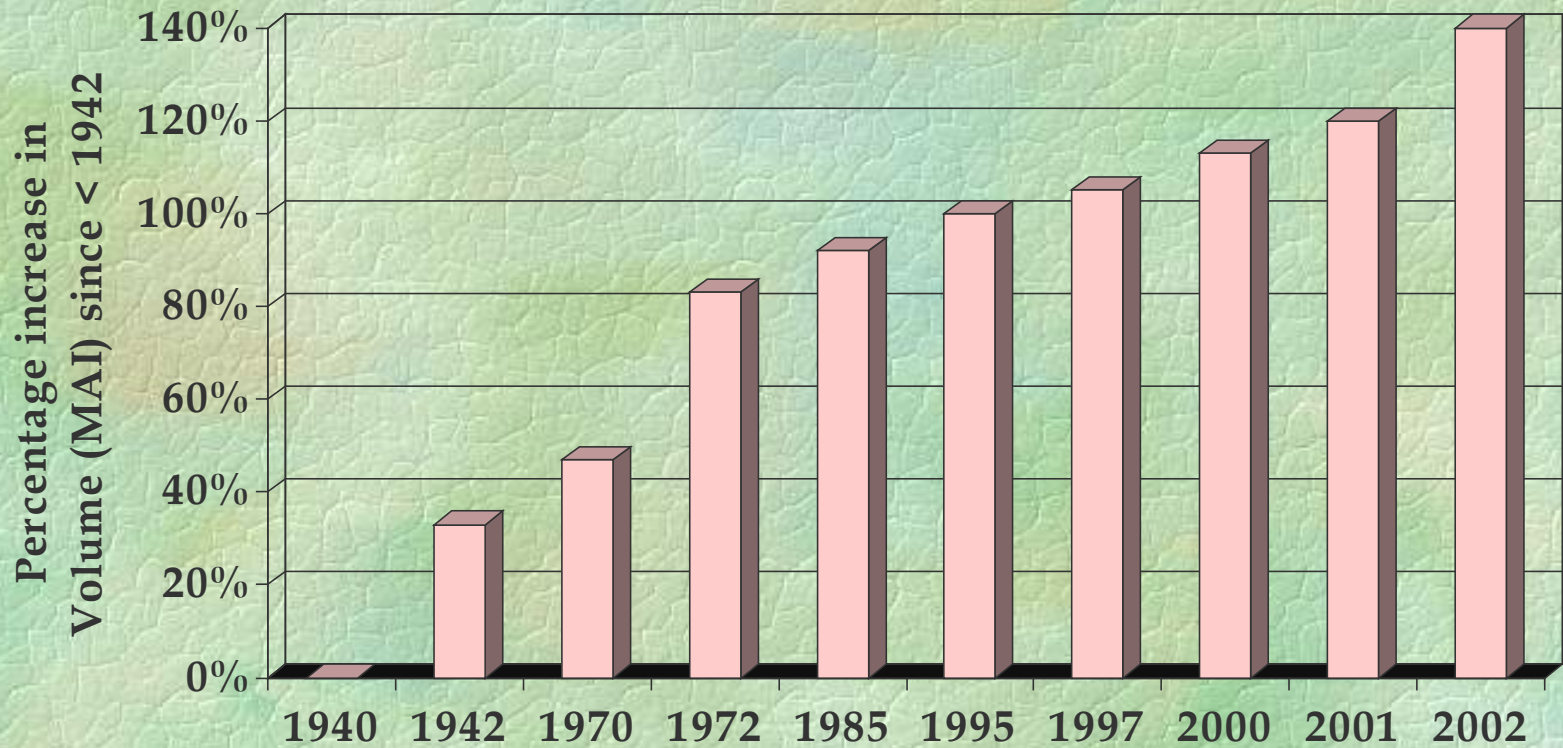
Maritime Pine Breeding Improvement



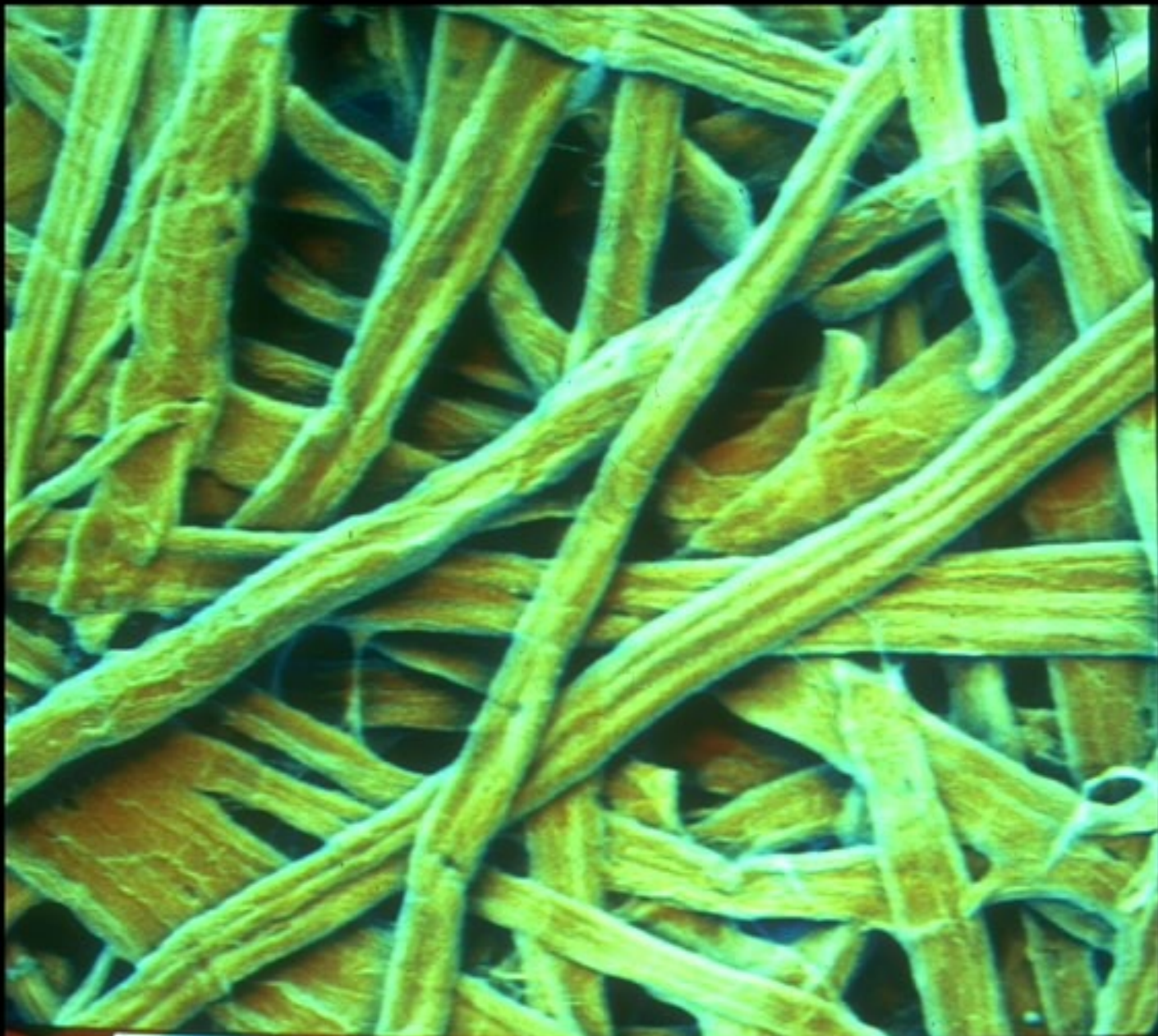
□ Plantation Grown From Unselected Seed □ Stand Grown From Selected Seed



Volume gains from the tree improvement program for Maritime pine







40µM

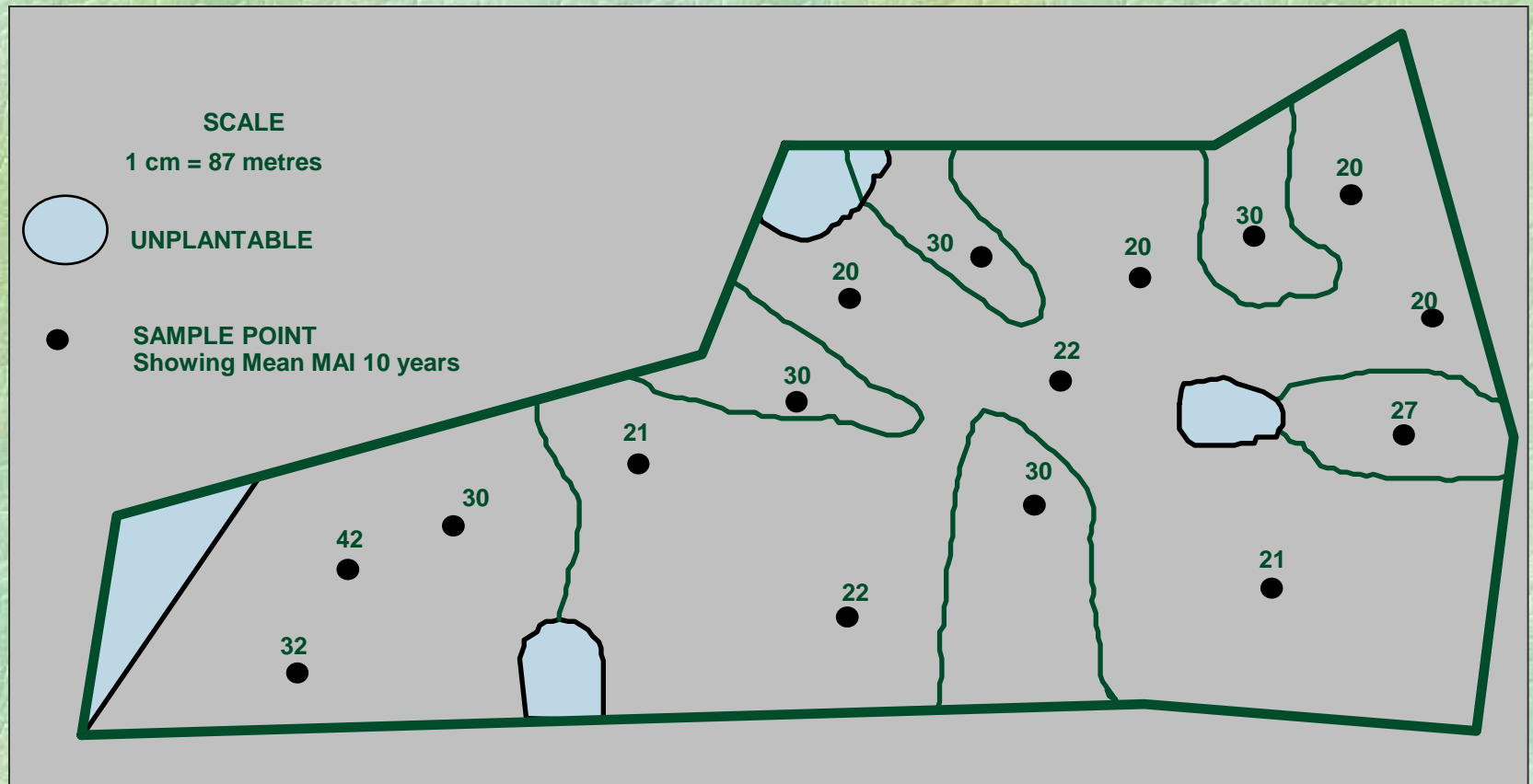
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E. globulus site productivity assessment for a typical farm



Tree Crop Establishment

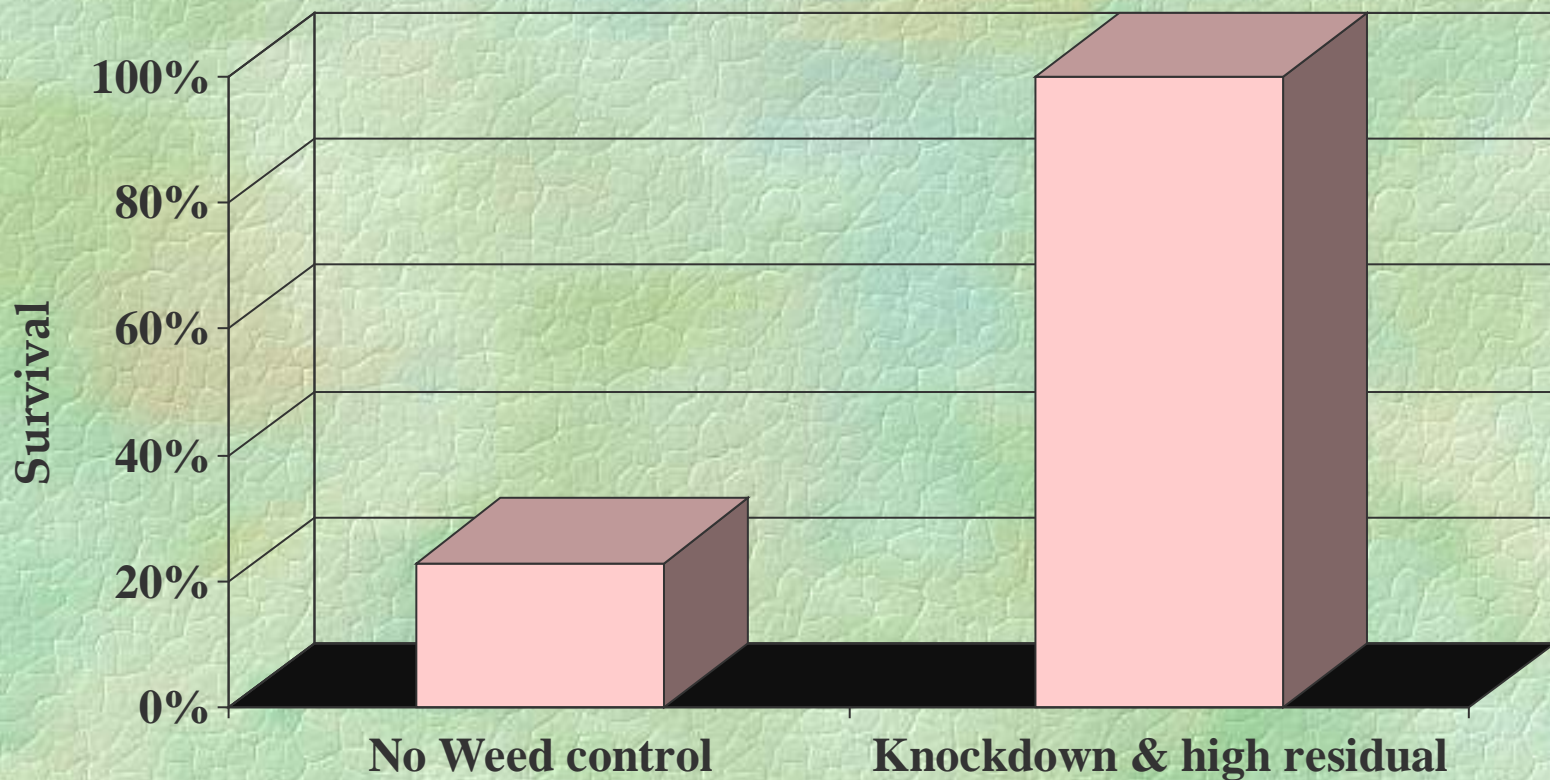








Effect of chemical weed control on *Tree Crops*









Basal area response to Nitrogen and Phosphorus over four years after fertilization

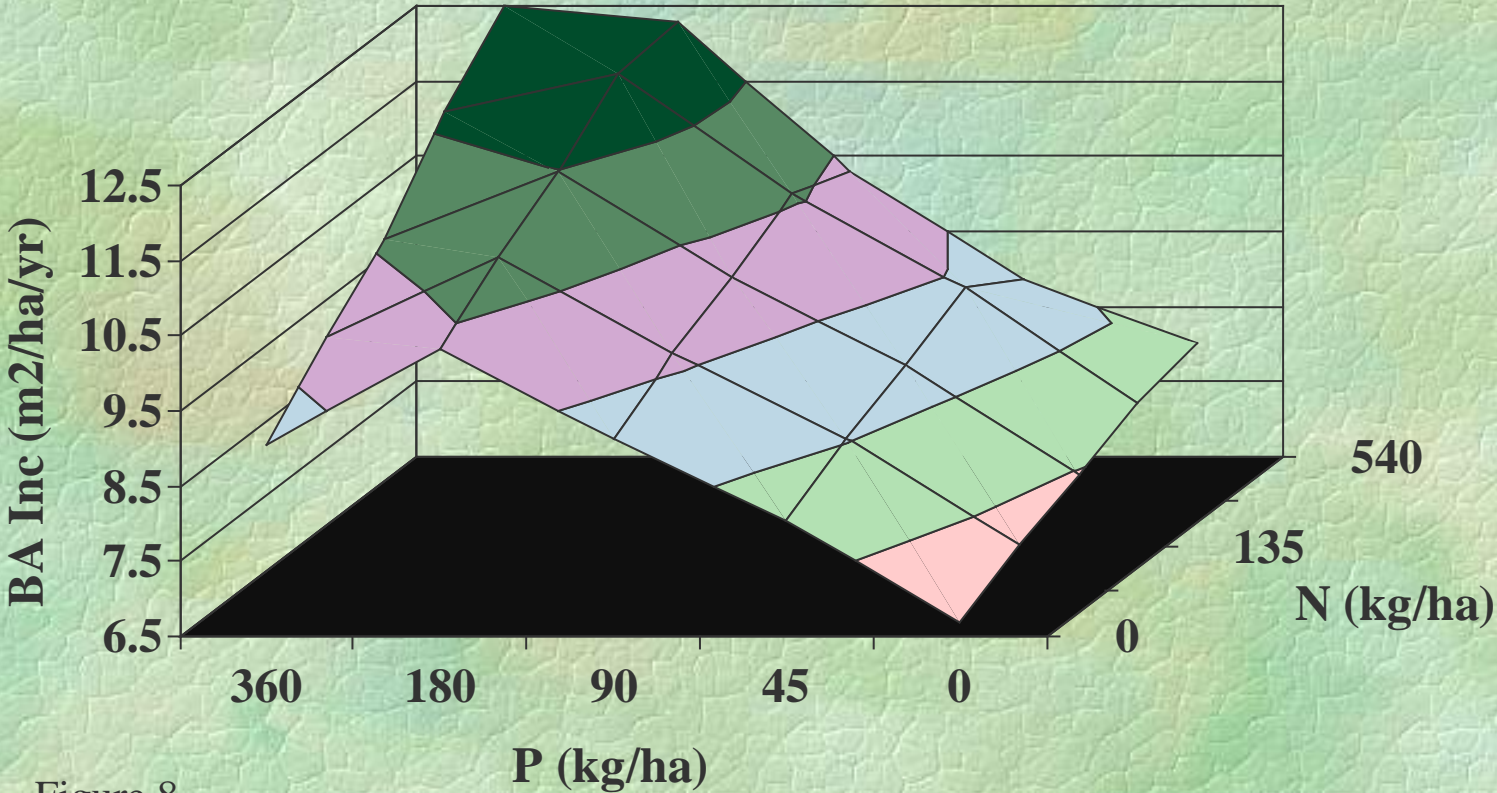
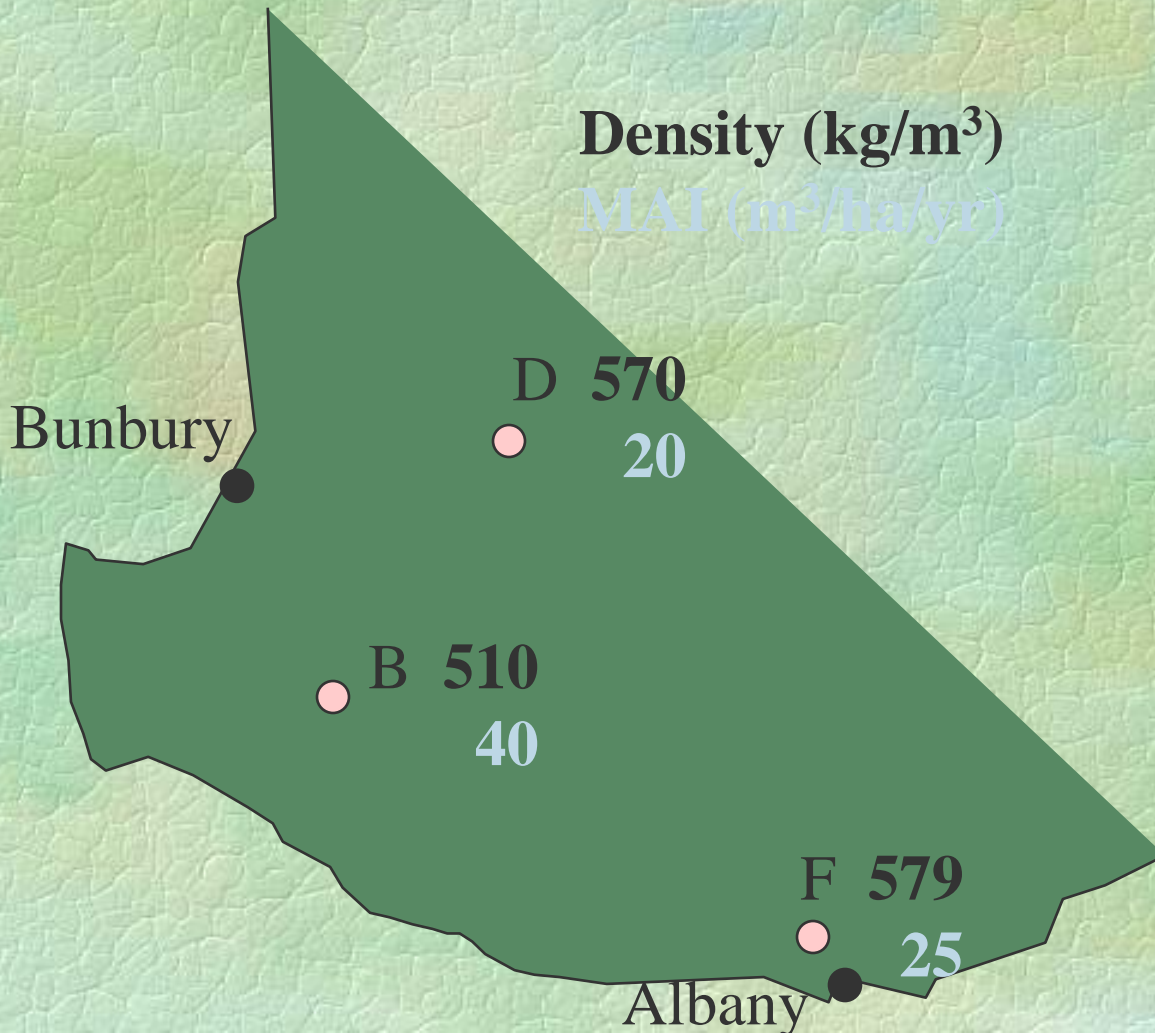
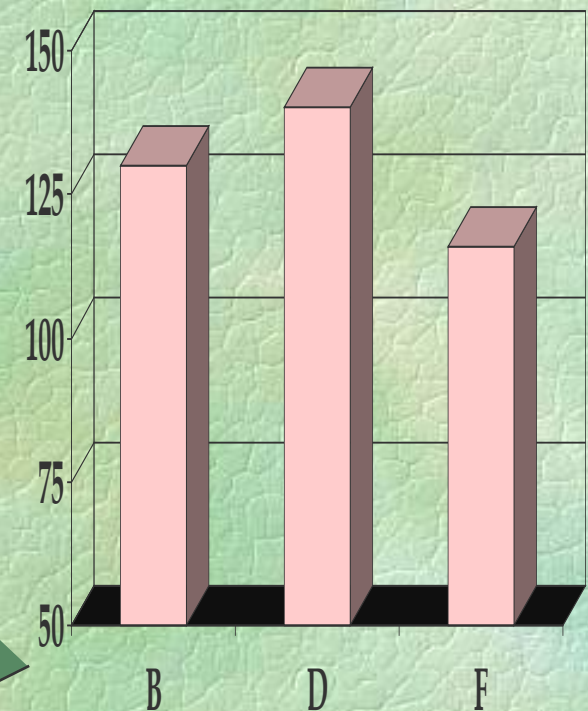


Figure 8

Costs of E. globulus fibre at the port from farms at different locations and with different site productivities



Compounded cost of chips at port (\$/BDU, FOB)



Costs of production

<i>Species</i>	<i>Rotation Age</i>	<i>Net Present Value @ 7%</i> \$	<i>Establishment Costs</i> \$	<i>Intermediate Costs</i> \$	<i>Total</i> \$
Maritime Pine	30	1 920	1 580	860	2 440
<i>P. radiata</i>	30	4 332	2 120	5 890	8 010
<i>E. globulus</i>	10x2	4 920	2 117	5 920	8 037
Mallee	100+	1 000	1 000	---	1 000

Effect of growth rate on the timber rate of return from a conventional regime of 30 years

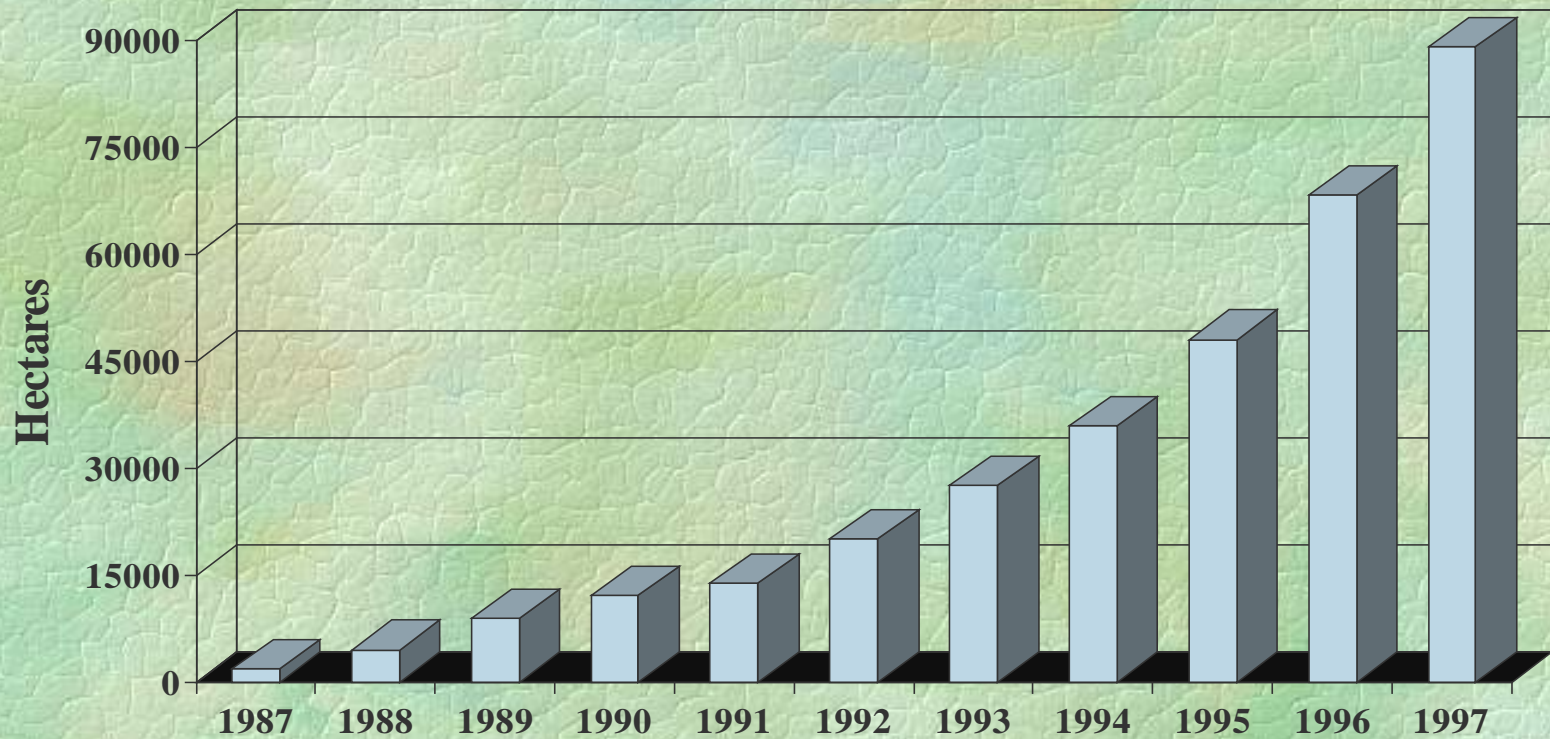
<i>Increase in stumpage over current</i>	<i>Growth rate</i>	
	<i>12m³/ha/yr</i>	<i>16m³/ha/yr</i>
Current	5.1%	6.7%
20%	6.2%	7.8%
40%	6.8%	8.4%



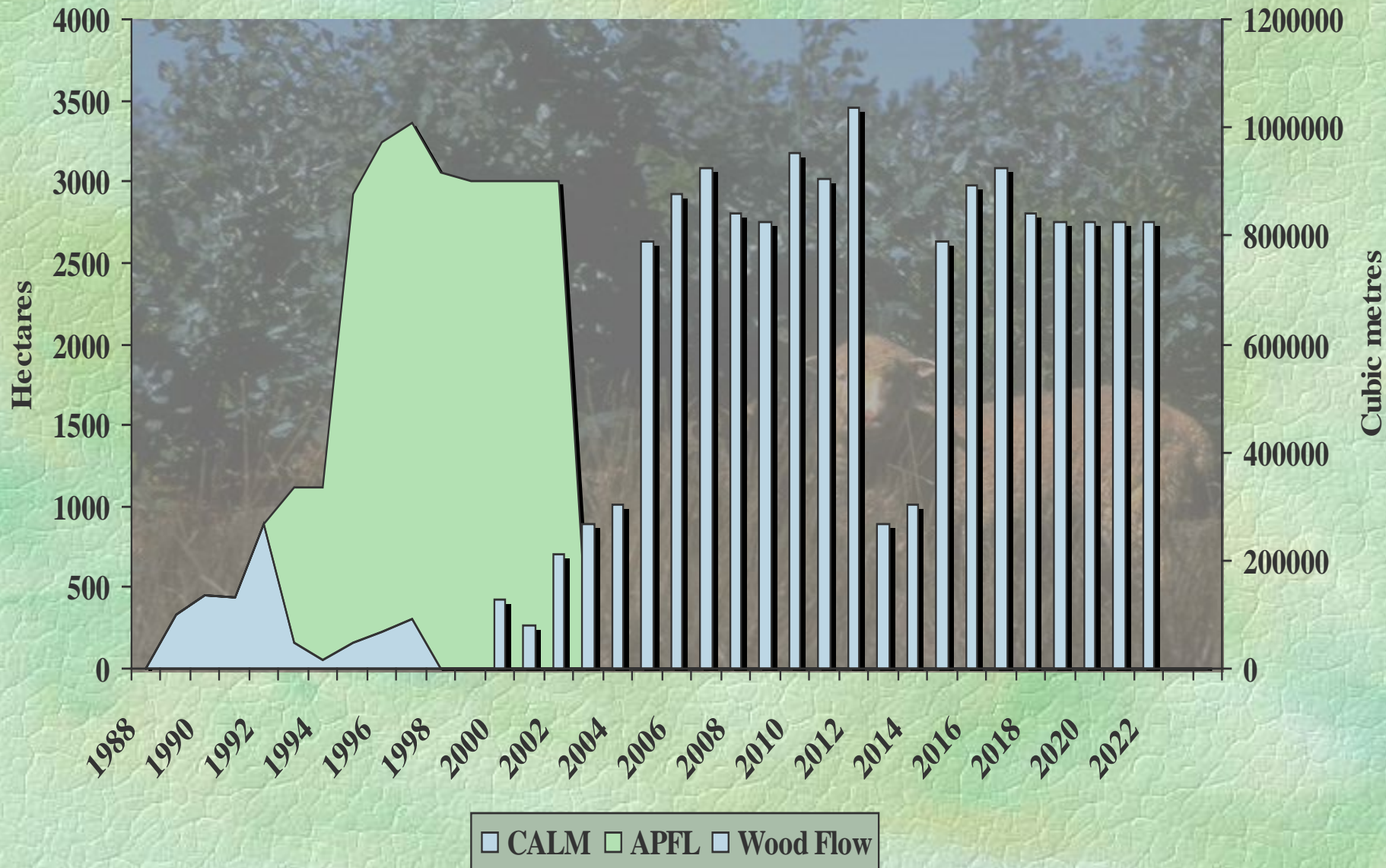




Total area of *E. globulus* in WA



Area of bluegums planted each year (CALM and APFL) and predicted wood flows



Investment to date:

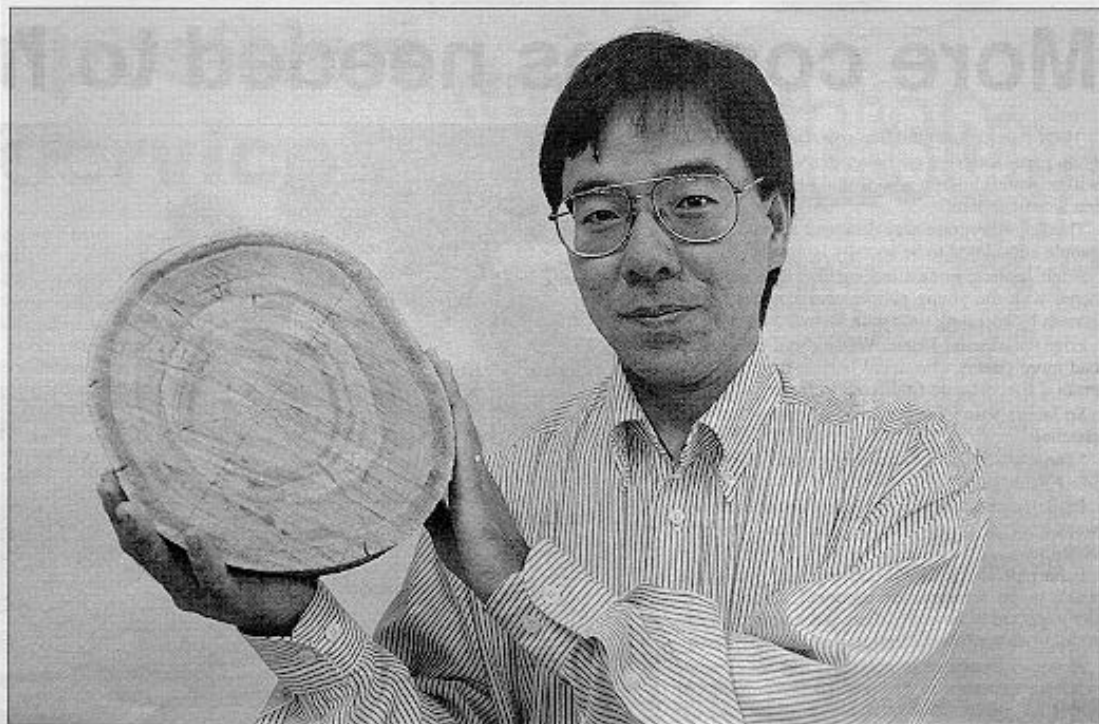
- \$20 million

Investment to complete plantation program:

- \$30 million

Investment required for harvesting, transport and processing:

- \$20 million to upgrade facilities at Albany Port
- \$15 million for a mill to process the harvested logs
- \$3-4 million for a transport system
- \$16 million for harvesters
- \$12 million for loading machinery
- \$22 million for log trucks



WINNING WAYS: Albany Plantation Forest Company director Tom Okada plans to accept the Asia Pacific Marketing Federation's inaugural gold environmental marketing award in Bangkok later this month.

Conservation work wins praise

AN Albany company has won an international award for its services to the environment.

Albany Plantation Forest Company this week took out the Asia Pacific Marketing Federation's award inaugural gold marketing award, launched last year to encourage environmental conservation.

It was chosen from four finalists, from companies working in the 15 countries represented in the Asia Pacific Marketing Federation.

The company was formed in 1993 and plans to establish more than 20,000 hectares of bluegum

plantations in the Albany region.

Working with CALM, it had already planted nearly 14 million trees locally.

Its parent companies Oij Paper and Itochu Corporation are part of a WA-Japanese joint venture (with Bunnings Forest Products) who are planning a \$30 million woodchipping mill in the Great Southern. The project has been tipped to be operational by next year.

Director Tom Okada said the company was committed to preserving the global environment.

"Our project to establish commercial bluegum plantation is a long-term commitment to the environment and

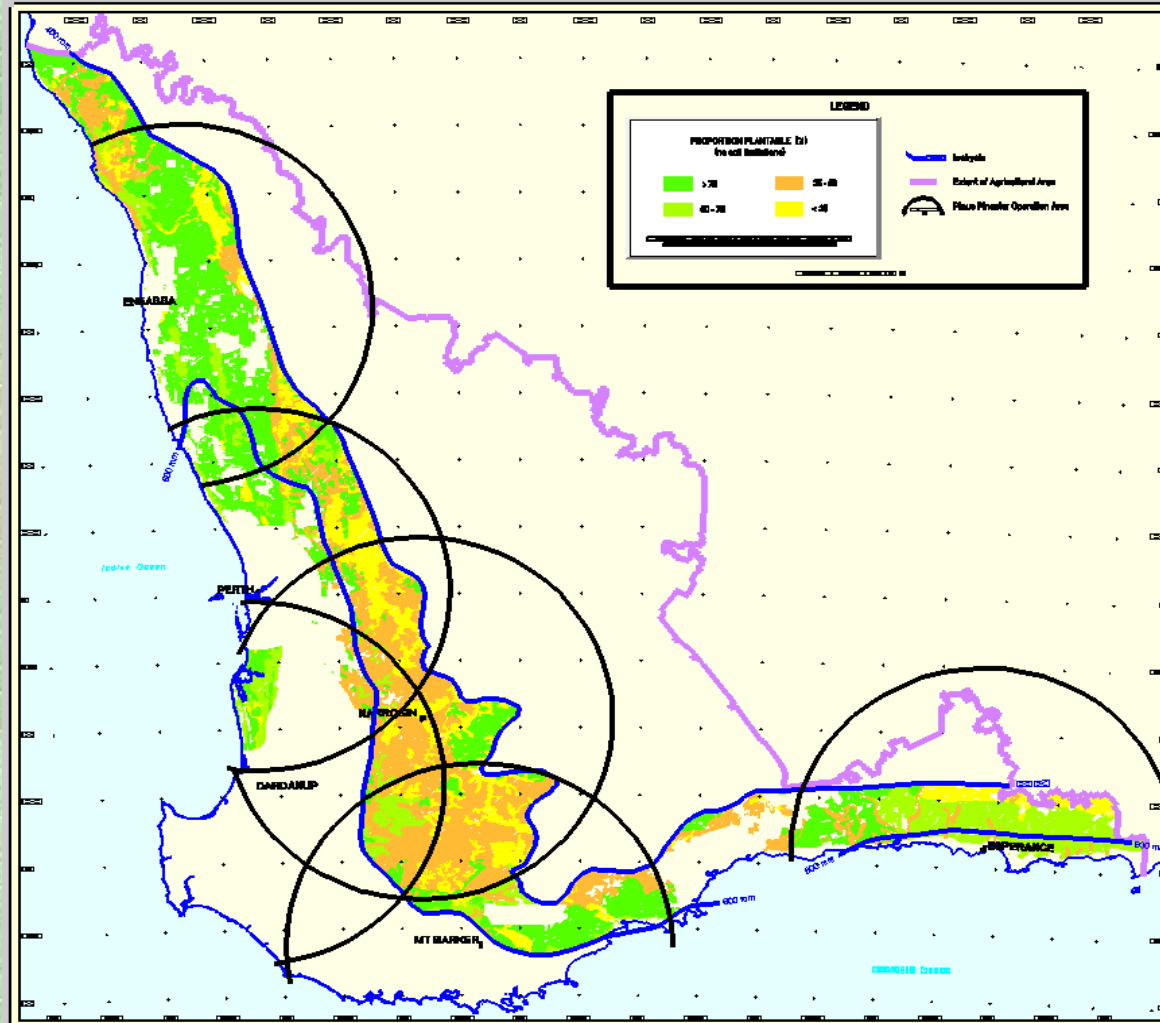
economy of the Albany region," he said.

"Our sophisticated sharefarming scheme, which is being carried out in partnership with the local community, has now brought APFC international recognition."

Mr Okada will accept the award, with representatives Oij Paper, Itochu Corporation and Senshukai Co Ltd, at a ceremony in Bangkok on March 26 by her Royal Highness Princess Maha Chakri Sirindhorn. It is the second environmental award won by the company. In 1995 it won the Landcare Australia award for WA business.



Land availability in the intermediate rainfall zone for maritime pine



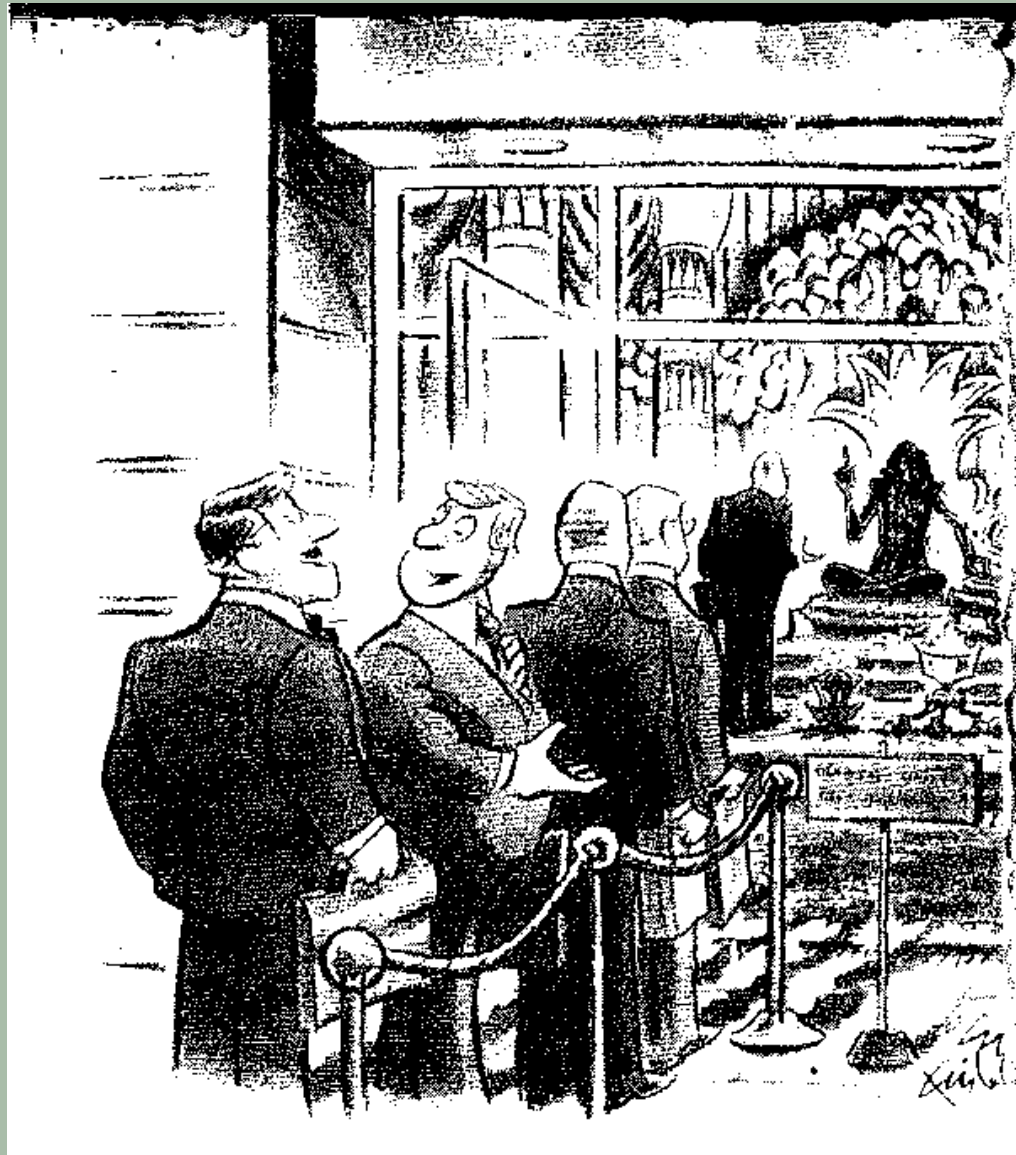








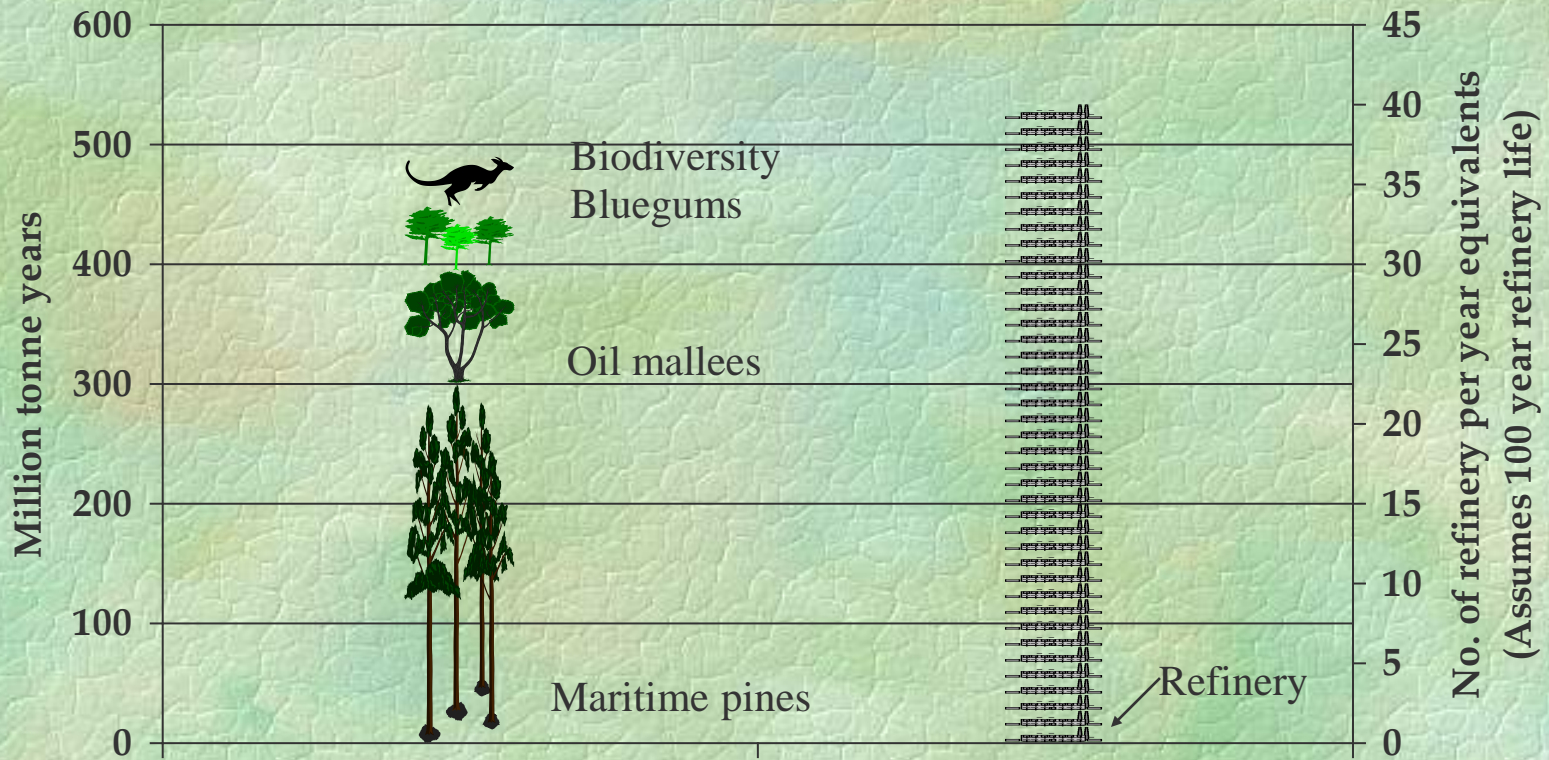




“It’s great! You just tell him how much pollution your company is responsible for and he tells you how many trees you have to plant to atone for it.”

Ed Fisher © 1989 The New Yorker Magazine

Optimistic scenario

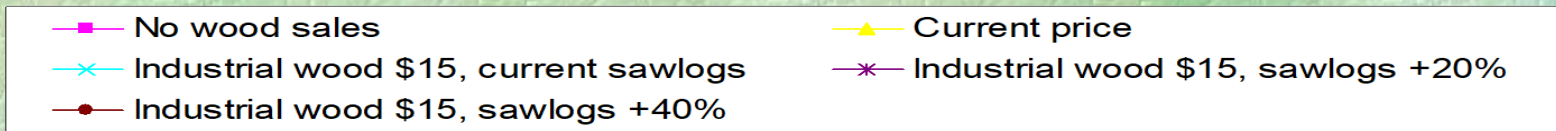
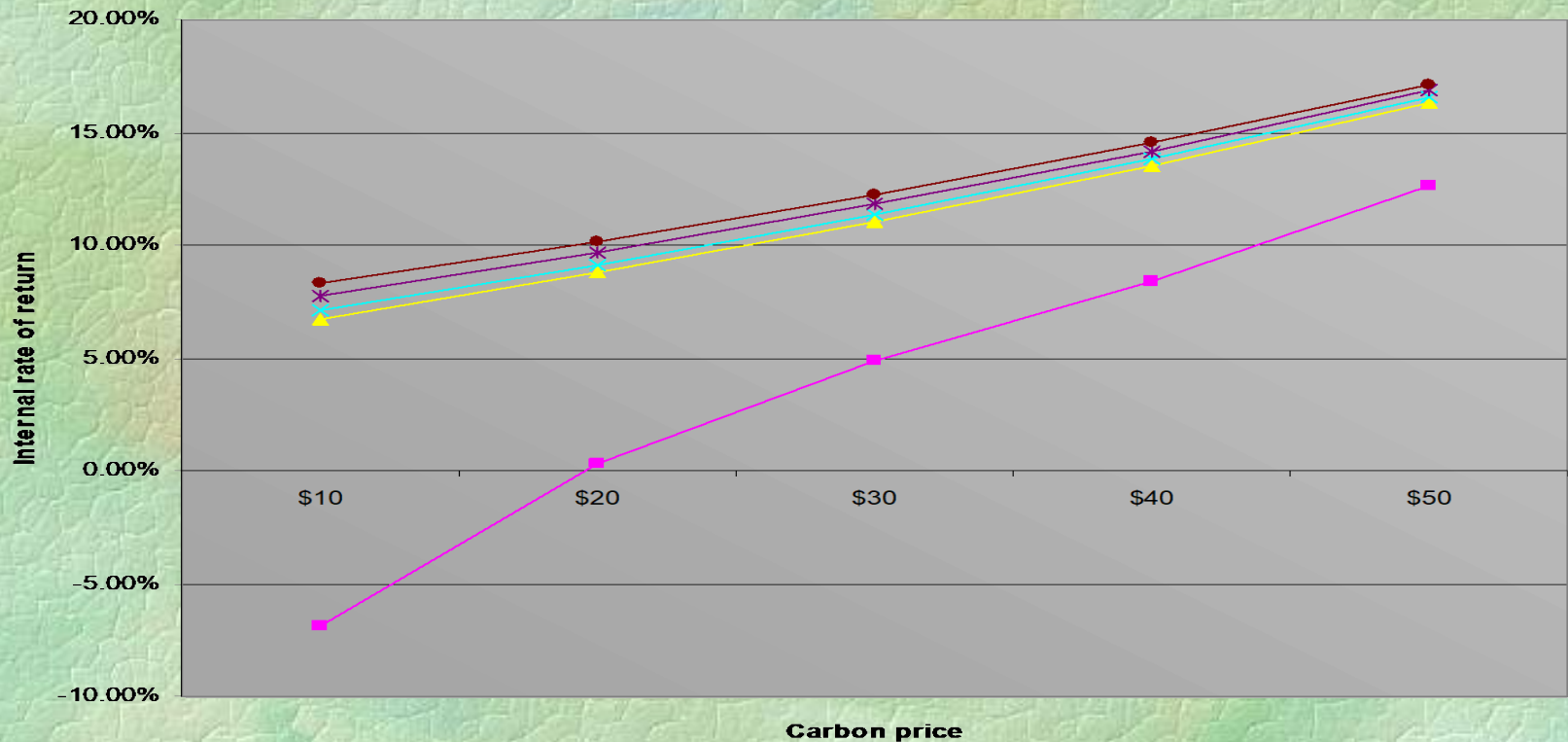


Assumptions

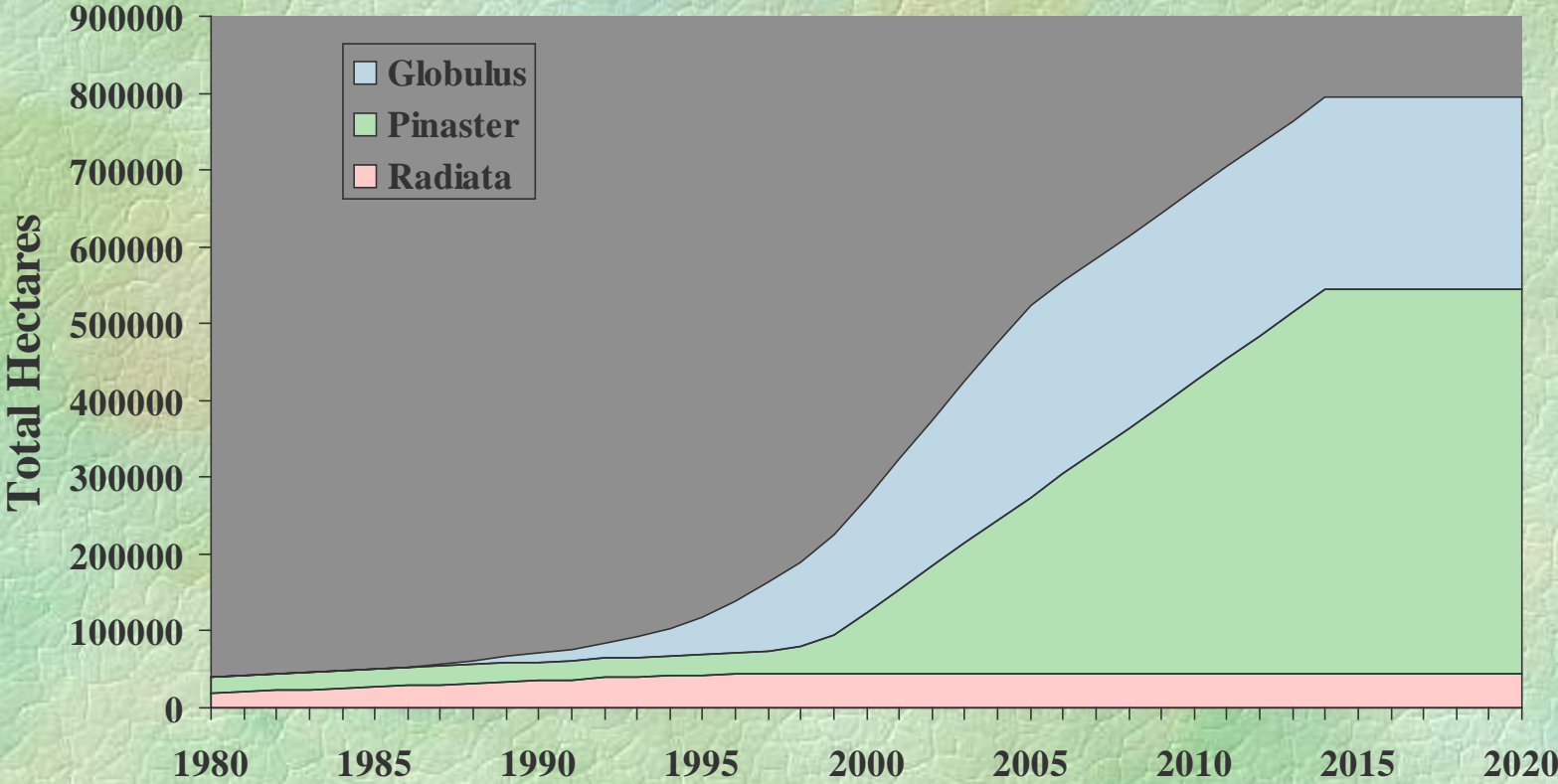
Half life of refinery.

double carbon storage times for pine, bluegum and biodiversity plantings

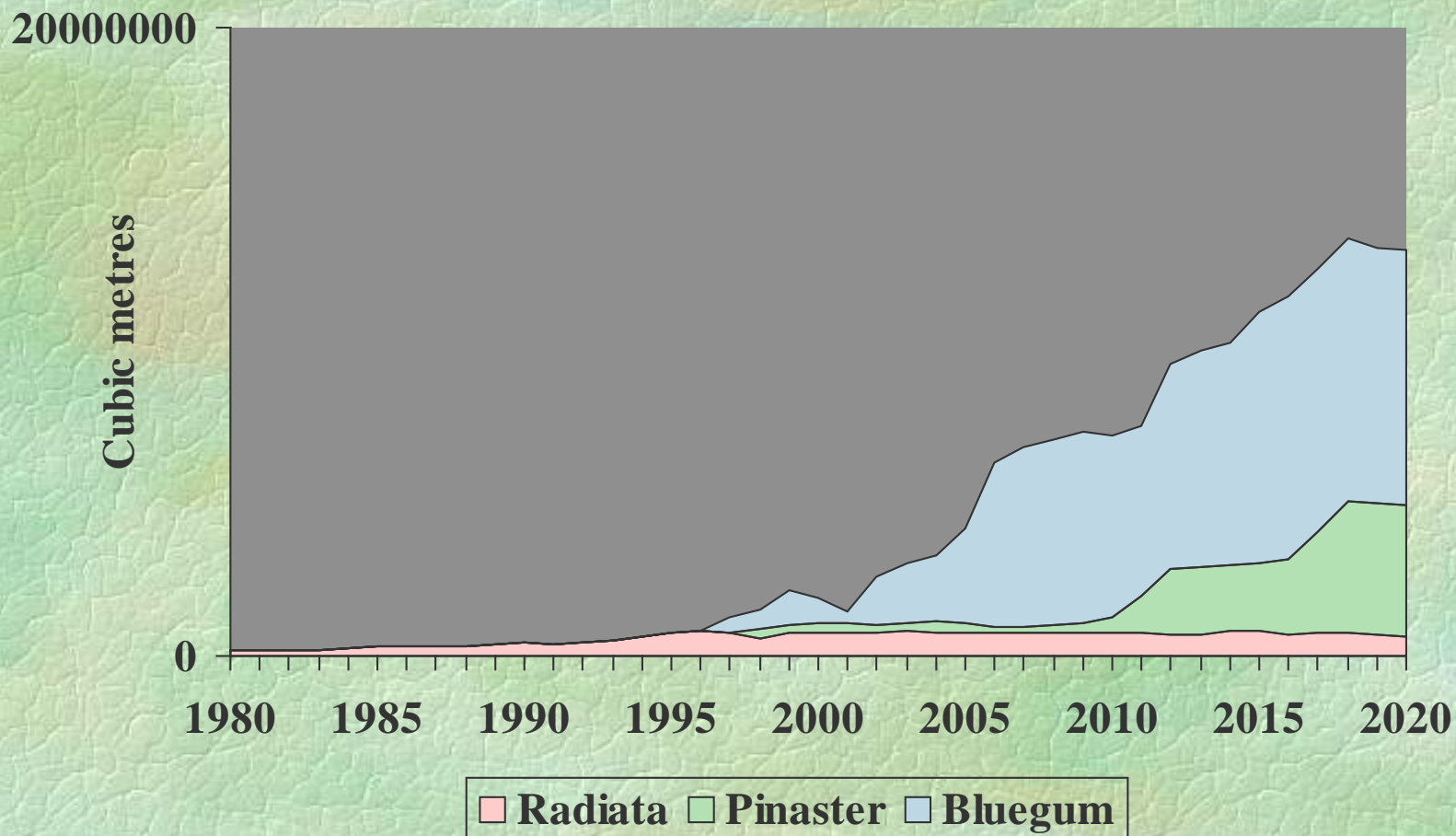
Effect of varying wood and carbon price on internal rate of return for 30 year rotation



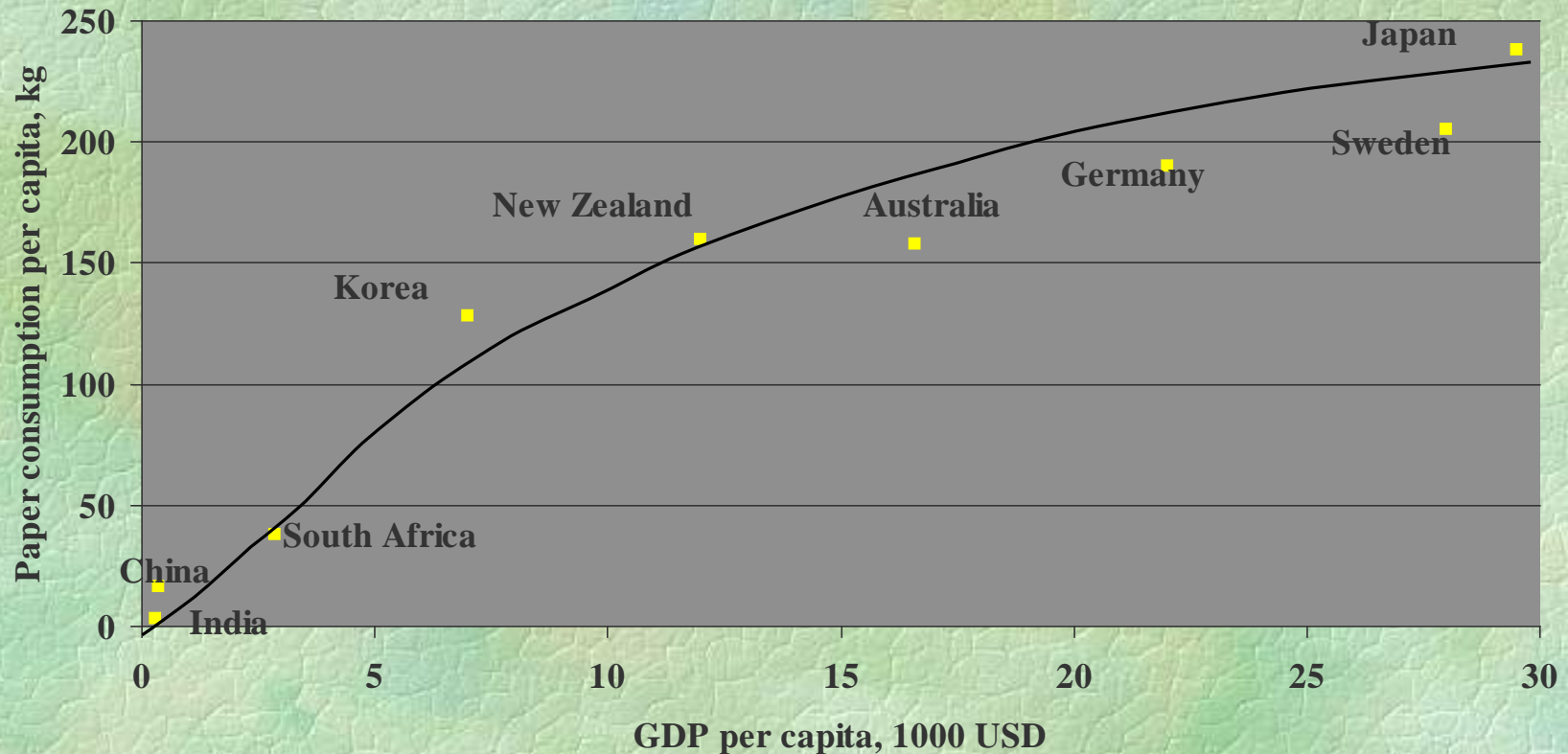
Predicted growth of tree crop plantings in Western Australia



Current and predicted wood fibre production from tree crops and plantations in Western Australia



GDP and paper consumption (for selected countries in 1992)



If growth 1990-96 (12% pa) continues, China will use the current world paper demand (279 million Mt) by 2015

Source: Jaakko Poyry
Dana Ltd

Hydrograph showing groundwater response to alley farming system (after Short and Skinner, 1996)

