

NOTES

DIAMETER INCREMENT OF
ACACIA MANGIUM WILLD.
FOLLOWING FIRST THINNING

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A crown thinning trial was established in August 1988 in a 3 y 10 mth old, pure even aged *Acacia mangium* stand at Kemasul Forest Reserve, Pahang, Peninsular Malaysia. Altogether three thinning treatments with three replications each were carried out. They were: (i) no thinning (control); (ii) moderate thinning (removal of 25% of the basal area based on the control plot); and (iii) heavy thinning (removal of 50% of the basal area based on the control plot).

The stands were established at a spacing of 3 x 3 m. The plots are 0.5 ha each consisting of an assessment plot of 0.25 ha surrounded by a buffer zone.

After three months of undisturbed growth (August - November 1988), thinning was carried out with the removal of a predetermined basal area from the plots. The thinning which resembles the first steps of the Queensland Selection System (Evans 1982) was carried out as follows: (i) selection of potential crop trees (PCT) of best quality (stem straightness, no forks below 6 m, and free from diseases); the number of selected trees varied between plots; (ii) determination of the trees to be removed (trees which compete with the potential crop

trees and/or are going to damage them); and (iii) removal of other non-selected individuals down to the predetermined basal area level.

Current annual increment, diameter following thinning and increment percent were calculated for the mean stem of the following populations/subpopulations: (i) total stand; (ii) 300 biggest PCT ha⁻¹; and (iii) 300 biggest trees ha⁻¹ (Table 1). The current annual increment (November 1988 - November 1989) of the three mean stems was distinctly higher in the treatment plots than in the control plots and highest in the heavily thinned plots (Table 1). Within the treatments the differences in the average diameter increment between the three populations/subpopulations was less distinct. A current annual growth rate of at least 3 cm was achieved only by the PCT's and the subpopulation of the 300 biggest trees for the heavily thinned plots.

Table 1. Current annual diameter increment (cm) of an evenaged pure *Acacia mangium* stand in Kemasul, Peninsular Malaysia; commencement of trial at stand age of 3 y 10 mth, thinning at 4 y 1 mth

	Thinning treatment		
	Control	Moderate	Heavy
	(average of three plots each treatment)		
Mean stem of stand:			
Diameter	14.2 (13.7-14.6)	13.8 (13.3-14.4)	14.2 (14.0-14.6)
Increment	1.3 (1.3-1.4)	1.9 (1.8-1.9)	2.9 (2.8-2.9)
Increment (%)	9.4 (9.0-9.6)	13.5 (12.5-14.3)	20.2 (19.8-21.3)
Mean stem of 300 biggest potential crop trees (PCT) ha ⁻¹ :			
Diameter	15.5 (15.2-15.8)	14.4 (13.6-15.4)	15.0 (14.9-15.7)
Increment	1.6 (1.5-1.6)	2.1 (2.0-2.2)	3.0 (2.8-3.1)
Increment (%)	10.1 (9.9-10.3)	14.8 (13.0-16.2)	19.8 (18.7-20.1)
Mean stem of 300 biggest trees ha ⁻¹ :			
Diameter	17.1 (16.6-17.4)	16.3 (16.3-16.4)	15.7 (15.4-15.9)
Increment	1.8 (1.7-1.9)	2.4 (2.1-2.6)	20.4 (3.1-3.3)
Increment (%)	10.5 (10.3-10.8)	14.7 (12.8-16.1)	20.4 (19.9-20.7)

[Figures in parentheses represent range of averages; Diameter of mean stem calculated as mean square; Increment per cent = (increment/diameter) x 100]

By inference (Johari Baharuddin 1987, Anonymous 1989) *A. mangium* plantations in Peninsular Malaysia are supposed to produce 300 crop trees of diameter size of 45 cm in a rotation of 15 years. This means that the crop trees have to grow at a mean annual diameter growth rate of 3 cm over the whole rotation period. Consequently current annual growth rates of the PCT's in the young stand have to be considerably above 3 cm to achieve the goal.

It is unlikely that with the initial experimental conditions of this trial an annual diameter increment of 3 cm for the PCT's can be maintained for the whole rotation period. Higher growth rates for the crop trees might be achieved, if quality of the biggest and most vigorously growing trees can be improved so that the majority of them can be selected as crop trees (singling, pruning, early commencement of thinning, tree improvement). However, margins for improvement might be small. James (1979), for example, observed for *Pinus radiata* that the trees most likely to be chosen as PCT are the good form codominants and dominants.

Therefore, all silvicultural measures have to be taken to prevent the most vigorously growing individuals from deteriorating in quality.

References

- ANONYMOUS. 1989. *Panduan penubuhan ladang spesies cepal tumbuh*. Forestry Department Kuala Lumpur, Malaysia. 28 pp. in Malay.
- EVANS, J. 1982. *Plantation Forestry in the Tropics*. Clarendon Press, Oxford. 472 pp.
- JAMES, R. N. 1979. The influence of tree breeding and stocking quality on tree crop quality. *New Zealand Journal of Forestry* 24(2): 230-240.
- JOHARI BAHARUDDIN. 1987. An appraisal of the compensatory plantation programme in Peninsular Malaysia. *Seminar on the future role in the national economy and incentives required to encourage investments in forest plantation development. Proceedings of Session number. 4, paper number 11*. November 30 - December 4, 1987. Kota Kinabalu. 31 pp.

BOOK REVIEWS

BROWN, J. W. 1990. *In the U.S. interest. Resources, growth and security in the developing world*. World Resources Institute and Westfield Press, Boulder, U.S.A. and London, U.K. xii, 1 - 228 pages. ISBN 0-8133-1053-9.

This book seeks to answer the questions: How important are the developing countries to broad U.S. interests, and how important are resource management and population growth to these nations' economic and political futures? This is approached by case studies of four countries - Egypt, Kenya, Mexico and the Philippines. Chapter 1 sets the scene with the

question "Why should we care?", chapters 2 - 5 present the case studies and the last chapter makes suggestions about U.S. policy in the decade ahead.

The nations chosen for examination are all of considerable importance to the U.S. and all face daunting developmental problems. Consider some facts about those three with tropical forest resources. Kenya's population growth is perhaps the highest in world, at 4.1% per year, thus doubling in only 18 years. Per capita food production has declined by 38% since 1952, and fuelwood demand will double between 1988 and the end of the century; local forests can supply only a third of this demand on a sustainable basis. Mexico, "so far from God, so near United States", had a population of about 25 million in

1950, the same as it had been in 1519 before the coming of the Europeans; it is now 86 million (with 19 million in Mexico City) and growing at 2.6% per year to reach 200 million by the year 2010. The Philippines with a similar population growth rate, 2.8%, had a population of 19 million in 1948 and of 63 million 40 years later. Over this period, the country has seen the fastest rate of forest destruction in world history. This derives from two causes linked to grossly unequal distribution of wealth, the enthusiasm of the land owning ruling class for logging and the massive movement of landless workers into the uplands.

The changes needed within developing nations to combat the enormous pressures on natural resources and the environment are massive, and are often directly opposed to the interests of the ruling elite and the military. As the Cold War fades, it is essential both for the poor of the planet and for the planet itself that the Western democracies start to consider more fully attitudes to development, rather than the attitudes to communism and capitalism, of the nations with which they do business. Changes that promote the interests of the poor and not the elite, that consider the sustainability of the nation's resource base and not just immediate profit, must be encouraged and financed. This thought-provoking book makes clear why environmental problems in developing nations must no longer be ignored by developed ones. Although obviously written for a U.S. audience, it can be read with profit by anyone by any nation who believes that the serious problems humankind faces can only be resolved through cooperative action by all the world community.

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ANNOUNCEMENTS

CONFERENCE: "THE SCIENCE OF WATER RESOURCES: 1990 AND BEYOND"

DATE: NOVEMBER 4 - 9, 1990

VENUE: DENVER, COLORADO, U.S.A.

Oral, poster and student papers will be presented on topics dealing with:

- hydrological trends
- legal issues
- water resources development
- emerging issues.

Requests for information and abstracts for the conference should be sent to :

Jim Loftis
Colorado State University
Room 100, Engineering South
Fort Collins, Colorado 80523
United States of America
Tel: (303) 491-7923

AN INTERNATIONAL COURSE ON FODDER TREE LEGUMES - MULTIPURPOSE SPECIES FOR AGRICULTURE

DATE: NOVEMBER/DECEMBER 1990

VENUE: QUEENSLAND, AUSTRALIA

This course will comprise a programme of lectures and field visits to commercial properties and experimental stations in tropical and sub-tropical Australia. Objectives of the course are to present the range of fodder trees available to agriculture, to review their environmental adaptations, and to examine their role in animal production, soil fertility improvement and erosion control.

All enquiries to :
Fodder Tree Legumes Course
Secretariat
Uniquest Ltd.
University of Queensland
St. Lucia, Queensland,
Australia, 4067

**THIRD TROPICAL WEED
SCIENCE CONFERENCE**

DATE: DECEMBER 4 - 6, 1990

VENUE: KUALA LUMPUR, MALAYSIA

The diversity, dynamics and complexity of weed populations, particularly in the tropics, is a major challenge to global efforts to increase food production and enhance crop productivity. This conference will present recent developments in tropical weed science under a wide range of topics such as :

- weed biology and ecology; crop losses and loss assessment, weed management; herbicide physiology; herbicide resistance; genetic engineering; toxicology; weed use *et cetera*.

All enquiries to :
The Secretary,
Third Tropical Weed Science
Conference,
c/o Central Research Lab., MARDI,
G.P.O. Box 12301
50774 Kuala Lumpur, Malaysia.

**SEMINAR ON OIL PALM
TRUNK & OTHER PALMWOOD
UTILIZATION**

DATE: MARCH 4 - 5, 1991

VENUE: KUALA LUMPUR, MALAYSIA

This seminar will focus on recent research findings and technologies

related to the use of the oil palm trunk as the main subject but a session will be devoted to other palmwood as well. The seminar will cover the following topics :

- availability and economics of harvesting, processing and manufacture;
- anatomical, physical and chemical properties;
- processing;
- protection and preservation;
- usage and prospects of manufacture.

For further information, contact:

The Secretariat
Seminar on Oil Palm Trunk & Other
Palmwood Utilization
c/o Chemistry Division
Forest Research Institute Malaysia
Kepong, 52109 Kuala Lumpur
Malaysia
(Attn: Dr. M.P. Koh / En. Rahim Sudin)
Fax: 603 - 6367753
Tel: 03 - 6342633

**REGIONAL CONFERENCE:
MEDICINAL PRODUCTS
FROM TROPICAL RAIN
FORESTS**

DATE: MAY 13 - 15, 1991

VENUE: FOREST RESEARCH
INSTITUTE MALAYSIA,
KUALA LUMPUR,
MALAYSIA

The Conference will comprise lectures, oral and poster presentations dealing with :

- use of medicinal materials from tropical rain forests;
- pharmacological, phytochemical and socio-anthropological aspects of traditional southeast Asian medicines;
- commercial aspects of traditional southeast Asian medicines;

- up-to-date findings from plant-extractives biotechnology and drug development.

All enquiries to :

The Executive Secretary
Malaysian Institute of Chemistry
129B, Jalan Aminuddin Baki
Taman Tun Dr. Ismail
60000 Kuala Lumpur
Malaysia.
Tel: 03-7189909 or

Prof. S.H. Goh / W.H. Wong
Department of Chemistry
University of Malaya
59100 Kuala Lumpur
Malaysia
Fax: 03 - 7573661
Telex: UNIMAL MA 39845

XVII PACIFIC SCIENCE CONGRESS

Towards The Pacific Century : The Challenge of Change

DATE: MAY 27 - JUNE 4, 1991

VENUE: HONOLULU, HAWAII, U.S.A

This Congress will, in addition to the traditional focus on research, address policy issues and the application of science to regional problems. The six themes of the Congress are :

- Global Environmental Change - Pacific Aspects
- Population, Health and Social Change
- Science and Culture
- Biological Diversity
- Technologies for Development: Perspectives for the 21st Century
- Dynamics of the Earth and the Heavens : The Pacific Arena

Among the 19 Scientific Committees of the Pacific Science Association invited

to develop sessions are Agricultural Sciences; Botany; Ecology, Conservation and Environmental Protection; Forestry; and Freshwater Sciences.

For further information contact :
XVII Pacific Science Congress
Secretariat
2424 Maile Way, Fourth Floor
Honolulu, HI 96822 U.S.A.
Tel: (808) 948-7551
Fax: (808) 942-9008
Telex: 6504047720

SEMINAR: "HISTORY OF THE TIMBER ECONOMY OF THE PACIFIC BASIN"

DATE: MAY 27 - JUNE 4, 1991

VENUE: HONOLULU, HAWAII, U.S.A.

This seminar, to be held during the Pacific Science Congress, will address the international trade in timber and forest products around the Pacific Basin through history, and its impact on forest ecosystems and their cultures. It is organised by the Tropical Forest History Project of the International Union of Forest Research Organizations.

Enquiries should be addressed to :

Prof. Richard Tucker
School of Natural Resources
University of Michigan
Ann Arbor, MI 48109 - 1115
U.S.A or
Dr. John Dargavel
Centre for Resource and
Environmental Studies
Australian National University
GPO Box 4
Canberra ACT 2601.

NEWS

THE TROPICAL FORESTRY WORKSHOP

In October 1989, a number of the world's foremost authorities on tropical forestry management practices and the environment gathered at the Smithsonian Institution in Washington D.C., U.S.A. to discuss the causes of tropical deforestation and actions that can be taken to preserve these natural resources. The group, called together by the Smithsonian Institution and the International Hardwood Products Association, was carefully balanced to include disciplines with interests related to tropical forestry and representatives from major tropical regions of the world.

Abstracts of consensus statements made during the Workshop included the following:

1. Tropical forests will be preserved only if they are accorded economic value.
2. Blanket bans and embargoes on tropical hardwoods will tend to depress the value of these hardwoods and the forests that contain them. Such constraints generally diminish the economic incentives to conserve and manage these forests in the face of alternative land uses which lead to their destruction.
3. In areas where prices received for timber do not fully cover the cost of forest management, there is a lack of incentives and commitment to these practices.
4. Funds obtained from products of the tropical forests must be rechanneled into managing and regenerating these forests.
5. The international tropical timber industry should encourage

the continued establishment of conservation areas solely dedicated to forest preservation.

The working group concluded that the key component in preserving and maintaining the tropical forests is to ensure these resources maintain their economic value. This objective can be met only by a commitment of human and financial resources and the continued cooperation between governments and international organisations.

Among those who attended the Workshop were Thomas Lovejoy (Assistant Secretary for External Affairs, Smithsonian Institution), Robert Buschbacher (Director, Tropical Forestry Programme, WWF, Washington D.C.), Marc Dourojeanni (Senior Environmental Specialist, World Bank, Washington D.C.), Stephen Hubbell (Princeton University, Princeton, New Jersey), Theodore Panayotou (Institute for International Development, Harvard University), Frank Wadsworth (U.S. Forest Service, Institute of Tropical Forestry, University of Puerto Rico) and Timothy Whitmore (Department of Geography, University of Cambridge).

RESOLUTIONS OF THE WORKSHOP ON THE UNITED STATES TROPICAL TIMBER TRADE

The workshop was held in New York on April 14-15, 1989. It was attended by representatives from the U.S. timber industry, conservation organisations and academia, and by those concerned with forest conservation and sustainable supply of tropical timber.

Resolutions drawn up during the workshop are as follows:-

1. A boycott of tropical timber products, in general, would not promo-

te sustainable forestry in producing countries.

2. ITTO, FAO and other relevant agencies should devise and promote an internationally-agreed-upon system for rating and documenting tropical timber production according to sustainability.
3. All countries should recognise ITTO as a key international forum for promoting improved forest management practices and should provide meaningful funding to support the work of ITTO.
4. All relevant agencies should encourage pricing policies that assign to standing timber its correct stumpage value.
5. All relevant agencies should devise strategies to determine, assign and capture the real value of non-timber goods and services.
6. The rights of native forest dwellers should be recognised in forest land use planning processes.
7. All concerned parties increase their support for model projects on sustainable forestry.

Among the experts on tropical forest management and conservation at the workshop were Peter Ashton (Professor of Dendrology, Harvard University), Bob Bushbacher (Director, Tropical Forestry Program, WWF), Thomas Lovejoy (Assistant Secretary for External Affairs, Smithsonian Institution), Frank Wadsworth (U.S. Forest Service, Institute of Tropical Forestry, University of Puerto Rico), Barbara Bramble (Director, International Programmes, National Wildlife Federation) and L.S. Botero (Chief, Forest and Wildlands Conservation Branch, FAO).

PUBLICATIONS

The International Union of Forestry Research Organisations (IUFRO) has launched a new publication series entitled "IUFRO World Series". To date, two volumes have been published:

(1) VOCABULARY OF FOREST MANAGEMENT

Editor: P. Schmid-Haas

Multilingual, comprising 312 pages with 1800 terms in English, German, French, Spanish, Italian and Russian.

Price: US\$ 75.00

ISSN: 1016-3236

(2) FOREST DECIMAL CLASSIFICATION - TRILINGUAL SHORT VERSION

**Editors: R. Schenker, M. Zorn,
D. Voshmgir &
M.-J. Lionnet**

An updated manual of the former Oxford System of Decimal Classification of Forestry. The appendices have been updated too, including the UDC form and geographical number in English, German and French. 140 pages.

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