Newsletter BERITA ISOPB

THE INTERNATIONAL SOCIETY FOR OIL PALM BREEDERS

PERSATUAN AHLI-AHLI PEMBIAK BAIK KELAPA SAWIT ANTARA BANGSA

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EDITORIAL

In a world that is increasingly shrinking in more than one way the erosion of crop genes is a silent irreplaceable loss, mutations and genetic transformation notwithstanding.

The near term solution is gene banks and a number, at least for the more important crops, are maintained world wide principally under the auspices of the International Board of Plant Genetic Resources.

Most oil palm breeding fields are reservoirs of diversity some more so than the others depending on the needs and resources of that particular station or center.

In Malaysia a well organised systematic effort has been in progress to maintain a useful collection of oil palms genes. This effort is arguably the most systematic and scientific for a tropical crop and indeed has world standing for perennial tree crops. This is as should be for the tree in question happens to be the most productive edible oil bearer on the globe.

The latest expedition and collection has been from Angola. Dr. Rajanaidu *et al.*'s brief report on this collection is the feature article in this issue, the full scientific paper no doubt being presented in due course. The author himself, needless to say, is a foremost expert on oil palm germplasm prospections and collections.

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COLLECTION OF OIL PALM *(ELAEIS GUINEENSIS)* GERMPLASM IN ANGOLA

by

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INTRODUCTION

The oil palm (*Elaeis guineensis Jacq.*) is native to West Africa, spreading from Senegal to Angola. The Palm Oil Research Institute of Malaysia (PORIM) has been collecting oil palm germplasm in Africa for the past twenty years. So far, collections have been made in Nigeria, Cameroons, Zaire, Tanzania and Madagascar.

The objectives of the present study is to sample a cross - section of oil palm germplasm that is available in Angola for future conservation and utilization. This material will also act as an oil palm genetic collection to start a breeding programme for oil palm in Angola.

MATERIALS AND METHODS

Oil palm germplasm was sampled at 8 sites. At each site 2 - 14 samples were collected. A total of 54 (42 *duras* and 12 *teneras*) bunches were collected in Angola (*Table 1*).

TABLE 1. SUMMARY OF MATERIAL COLLECTED IN ANGOLA

Site No	Site Name	No of Samples	*Duras*	*Teneras*
2	Caxito	3 (6-8)	1	2
3	Funda	10 (9-18)	8	2
4	Sumbe 1	8 (19-26)	7	1
5	Sumbe 2	2 (27-28)	1	1
6	Benguela/Lobito	7 (29-35)	7	0
7	Cabinda North)	5 (36-40)	4	1
8	Cabinda (South)	14 (41-54)	11	4
Total Number of samples		54	42	12

During this trip due to security reasons only the coastal areas were sampled. The interior areas were not covered. Any future prospection team should cover the latter areas.

In the field data on bunch weight, bunch length, width, depth, spine characters, fruit weight, nut weight, mesocarp (%), fruit length, fruit diameter, nut diameter and shell thickness were collected.

The palm groves at Cabinda were dense and actively exploited by the farmers. The natural palm groves at Sumbe, and Benguela were sparse. The palms at Caxito and Funda were moderate in density.

RESULTS AND DISCUSSION

The general characteristics of Angolan genetic material is given in *Table 2* and it has been compared with the wild material collected in Ivory Coast, Nigeria, Cameroons and Zaire. For *duras*, the bunch weight and mesocarp / fruit (%) are the highest in Angolan material. The single fruit weight is similar to Zaire. In the case of *teneras*, mesocarp/fruit (%) is at the same level as in the Nigerian materials but in general bunch weight and single fruit weight are on the higher side when compared to Ivory Coast and Nigerian populations. It has been speculated that *Deli dura* population could have had its roots in Angola. The present data supports the hypothesis. At present biochemical methods such as isoenzyme analysis and RFLP analysis are being used to screen these populations to understand their genetical relationships at molecular levels.

TABLE 2 : A COMPARISON OF BUNCH AND FRUIT CHARACTERS OF IVORY COAST, NIGERIA, CAMEROONS, ZAIRE AND ANGOLA GENETIC MATERIAL

Country	Bunch wt[1]	single fruit wt[2]	Mesocarp (%)	Bunch wt	single fruit wt	mesocarp (%)
Ivory coast	10.9	6.9	41.8	9.8	5.8	61.2
Nigeria	11.8	9.0	47.3	10.9	6.5	70.9
Cameroons	16.8	10.3	39.7	17.3	8.6	62.4
Zaire	17.6	14.2	43.9	17.4	12.6	64.1
Angola	21.4	14.2	48.9	16.0	11.7	70.9

1 - bunch weight in kg

2 - single fruit wt in g

Society News

Symposium on "SCIENCE OF OIL PALM BREEDING"

Date : 1 - 3 July 1992

Venue : Montpellier, France

Introduction :The organisation of this Symposium is well underway with more than 45 participants registered todate, and that does not include participants from Europe, Africa and South America. As members may be aware the XIII EUCARPIA Congress is also in France, at Angers, from 6 - 11 July 1992. The theme of the Congress is "Reproductive Biology and Plant Breeding". Participants of the Symposium may consider attending the latter as well.

Sponsors : IRHO, BUROTROP and ISOPB

Objectives : to review all aspects of oil palm breeding as it moves into the 21st century

The following topics will be discussed (authors who have been identified and or have agreed to present the papers are also indicated)

Taxonomy and classification	
History of oil palm and oil palm breeding populations	E. Rosenquist
Oil palm genetic resources	N. Rajanaidu
Laboratory methods in oil palm breeding	Chin Cheuk Weng
Variation and Inheritance	V. Rao
Breeding designs and plans	J. Meunier
Experimental designs	Soh Aik Chin
Genotype x Environment interaction studies in oil palm	
Breeding for disease and drought resistance	IRHO
Seed production	Marihat RCEC
Oil palm clones	Unilevers/IRHO
Applications of Biotechnology in Oil Palm Breeding	IRHO

Oil palm breeding in :

Benin	Mr. Houssou M.
Cameroons	Mr. Potier
Colombia	Unilevers/ICA
Costa Rica	D.L. Richardson
Ghana	
Indonesia	A.U. Lubis
Ivory Coast	Mr. Jacquemard

Malaysia	
Nigeria	C. Okwuagwu
Papua New Guinea	Dr. Nelson
Thailand	Unilevers
Zaire	Unilevers

Field Visits:

There will be a pre-symposium visit to the IRHO research stations at La Me and Dabou in the Ivory Coast on the 26th and 27th of June. Participants have to stay for at least three nights at Abidjan.

The symposium itself includes visits to IRHO / CIRAD laboratories at Montpellier.

Information and late registration :

Contact ISOPB Secretariat at PORIM (Dr. Rajanaidu) or IRHO office in France.

NEW PUBLICATION

"PROCEEDINGS OF THE INTERNATIONAL WORKSHOP ON YIELD POTENTIAL IN THE OIL PALM"

containing : - 254 pages
- 18 papers, 6 country reports and 2 field visit notes

- selected abstracts and excerpts are given below.

PERFORMANCE OF D X P AND D X T CROSSES FROM VARIOUS ORIGINS ON INLAND AREAS OF PENINSULAR MALAYSIA
By Chin Cheuk Weng

The FELDA agricultural services corporation has evaluated the performance of various D x P and D x T progenies of Yangambi, La Me, AVROS, NIFOR and fertile pisifera origins in Sungai Tekam, which is located in the interior of Pahang state in Peninsular Malaysia. The mean FFB yield for these groups of progenies ranged from 163.7 to 177.2 kg/palm/year (equivalent to 22.10 to 23.92 t ha^{-1} when calculated at 135 productive palms per hectare). The highest yielding progenies from the various groups gave between 185.3 to 202.0 kg/palm/year (equivalent to between 25.02 to 27.27 t ha^{-1}).

The D x P (fertile pisifera) group was characterised by thicker shells and bigger kernels. This has resulted in a low oil yield of 4.38 t ha^{-1}. The best oil extraction rates were from the D x P / D x T (NIFOR) and D x P / D x T (Yangambi) groups were 24.4 % and 23.6 % respectively, with oil yields of 5.39 and 5.28 t ha^{-1} respectively. The D x P (AVROS) gave 5.29 t ha^{-1} of oil yield, whereas D x P / D x T (La Me) gave 5.17 t ha^{-1} due to a lower oil extraction rate. The best individual progenies have oil yields ranging from 5.83 to 7.07 t ha^{-1} with great differences in height increment between them.

The D x P / D x T (La Me) and D x P / D x T (Yangambi) groups were considerably slower in height increment at 0.52 m/year and 0.53 m/year respectively when compared with the D x P (AVROS), D x P / D x T (NIFOR), and D x P (fertile pisifera) groups, which grew at 0.69, 0.62, and 0.57 m/year respectively. For unsaturated fatty acid composition, the D x P / D x T (La Me) group gave the highest iodine value of 54 %.

YIELD POTENTIAL OF D X P OIL PALM IN INDONESIA
By Adlin U. Lubis

The breeding of oil palm and production of planting materials in Indonesia started at Marihat Baris in 1915, and were later developed by other companies. The unprofitable situation from World War II up to 1970 had, however, severely influenced the breeding programme. Following various changes subsequently, there are at present three oil palm breeding centers in Indonesia which at the same time function as central sources for plant materials. They are Research Centre for Estate Crop - Marihat (RCEC-Marihat), Research Centre for Estate Crop - Medan (RCEC-Medan) and SOCFINDO.
D x P crosses were already being tested since 1949 and have shown good results, and all estates have planted 100% D x P since 1971. Deli *duras* are used as mother palms for the D x P. For *pisiferas*, EX_5, H_5, SP_{540}, M_{424},

M_{968}, *etc.* and introductions between 1973-1975 by RCEC-Marihat and SOCFINDO, for example descendants of La Me, Yangambi, NIFOR *etc.*, are used.

Depending on land suitability, the D x P crosses can give an average yield of about 5-6 tons of oil/ha/year, and at peak yields (8-12 years old) between 6.5 to 7.7 tons. Because of several problems in most parts of most estates, this yield potential has not been achieved yet, although some were able to achieve that yield. The Reciprocal Recurrent Selection II (RRS II) programme, that is still in progress at RCEC-Marihat could increase the yield potential by 15-20%. It is known that in the best D x P cross, the variation for yield is still very high. Hence it is possible to select ortets for tissue culture. To reach this high yield potential in the field, optimum field conditions have to be attained, for example, by reducing the effects of dry seasons, eliminating diseases and pests, proper balanced manuring, accurate harvesting, proper administration etc.

DENSITY EFFECTS IN THE OIL PALM
By V. Rao, N. Rajanaidu, A.Kushairi and S. Jalani

The first and most obvious effect of close spacing the oil palm to a point where mutual shading occurs is an increase in frond length. This is followed by a drop in the rate of frond production. The size of leaflets may increase especially their width but their number in each frond is unchanged. Similarly petiole width and depth are not influenced. Closely spaced palms are etiolated. There is drastic reduction in ffb yield with increasing density due to reduced bunch number, because of lower production of female inflorescences and their preferential abortion and, at high densities, reduced bunch weight from fewer, smaller spikelets. There is a slight increase in male inflorescence production. Pollination is better at higher densities giving higher oil and especially kernel content in the bunch. There is an increase in linoleic acid at the expense of oleic acid in the oil from palms at high densities.

ANALYSIS OF YIELD TRENDS IN TWO CULTIVAR TRIALS IN INDONESIA
By W. Gerritsma, M.J. Redshaw, F.X. Soebagyo

Ten and a half years growth data from two cultivar density trials in North Sumatra were studied to examine trends in TDMC (the carbohydrate incorporated into above ground dry matter), and its components VDMc (vegetative aboveground carbohydrate production) and Yc (carbohydrate equivalent for bunch yield). VDMc reached a maximum value at about 4 to 5 years after planting, and remained stable. Yc and TDMc reached a peak at about the same time that the leaf area index (LAI) approached its maximum, 6-7 years after planting. From this stage, light interception remained high and did not further change appreciably. After declining to a trough some 2-3 years later, both TDMc and Yc recovered to a plateau level. These observed trends are discussed in the light of results reported by other workers.

The trends in LAI, TDMc and VDMc did not satisfactorily explain the observed decline in yield. It is suggested that yield in this period is limited by the bunch sink as a result of a decreased sex ratio following the yield peak.

It is predicted that, following the canopy closure, photosynthetic production and yields should remain stable and that the optimum planting density for current economic yield does not change.

PRELIMINARY RESULTS OF D X P AND DY X P PROGENY TRIALS IN SUMATRA
By Chairul Muluk, K. Pamin, Tri Hutomo and B. Taniputra

Progeny trials were conducted at various locations in Sumatra to assess the distinctiveness, uniformity and stability of D x P and Dy x P hybrids released by RISPA Medan.

Preliminary results showed that there was no significant difference between D x P and Dy x P for several vegetative characters, except height and trunk girth. At Kerasaan and Perlabian Dy x P showed better flowering behaviour than D x P.

The FFB yields of D x P and Dy x P in different locations were not uniform due to significant environment influences. The average FFB yields of D x P and Dy x P in the first harvesting year were 10.78 and 10.38 tons/ha respectively. At Aek Pancur, the FFB yield and average bunch weight of Dy x P of the second cycle are 52.4 % and 30.0 % higher than that of the first cycle.

The stability of certain distinct crosses is still being assessed.

OIL PALM PRODUCTION IN PAPUA NEW GUINEA
By H.L. Foster and J. Barr

Six oil palm developments have been established in Papua New Guinea. However yield information is only available from three areas since the remaining projects are only just coming into production.

In the areas having soils derived mainly from alluvially redeposited volcanic material (Kimbe and Popondetta), initial FFB yields after opening from bush are high, but soon fall off to below 20 t/ha/yr if fertilizer is not applied. However it appears that with current material FFB yields in the region of 30 t/ha/yr can be maintained in both areas, mainly by the regular application of N fertilizer. The natural availability of chlorine in these soils is poor and the application of a chloride containing fertilizer is also often necessary, particularly in drier areas. Regular N fertilizer application tends to depress Mg levels, which results in an additional need for Mg in the Kimbe area. Whilst neither P nor K fertilizer appears necessary in these two areas at present, K deficiencies may develop with time.

Phosphate fertilizer is the major requirement on the ash soils at Bialla. Although initial yields in this particular area are high and fall off only slowly, fertilizers do not seem able to prevent a gradual decline in nutrient levels, particu-

larly Mg, and yields even in the presence of fertilizers drop to 20 t/ha/yr in later years.
The source of most planting material in Papua New Guinea is seed from Dami Research Station, near Kimbe in West New Britain, where initial breeding material was imported from Malaysia in 1967. Early progeny trials indicated that most progress could be made by phenotypic selection for secondary characters, mainly leaf area ratio and leaf Mg level, plus additional selection for high oil extraction ratio. Parental material is currently being tested in a large area of progeny trials planted in West New Britain. The early results indicate the high yields which can be achieved when both parents have high general combining abilities. Such parents will be used for clonal seed production in the future.

DISCUSSION

Md. Nazeeb C	Instead of comparing breeding trial yields with estate commercial yields, breeders should look at agronomy experimental yields for fairer comparison as these are also actual yields of commercial planting materials. Agronomists too always find a huge difference between agronomy trial yields and estate yields.
Hew C.K. Q	We have heard of very high yields of over 40 tons/ha of ffb. I would like to ask the authors what do they think of these yields. Are you able to, maintain these, say for the next 5 years given a very good package of agronomic conditions? What is your own expectation because you normally expect a drop. After a bumper year. What is the margin, given the present planting materials and satisfactory maintenance.
Lee C.H. A	The fields with very high yields did not receive any special inputs, just normal estate practice and good manuring. A drop in yields in subsequent years is to be expected .
Toh P.Y. A	I think a field which can yield 40 tons/ha/yr can in the next five years yield an average of 28-30, possibly 32, tons. A decline is expected after the very high yield year but over a 5 year period 28-32 tons is possible. In a coastal environment we expect an average of about 33-35 tons/ha.
Corley R.H.V. Q	Any explanation as to why yields were so high in 1989. It was fairly general through out peninsular Malaysia that yields were high in 1989. Any suggestions as to why that might have been.
Foster H.L. C	In Papua New Guinea 1989 was also a particularly good year. The reason seems to be that 1988 was a particularly poor year and perhaps in 1989 the palms were recovering from 1988. So we should perhaps be looking at why 1988 was a poor year.

In Press

"PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON G X E STUDIES IN PERENNIAL TREE CROPS"

The papers presented at the above symposium , held on 12th and 13th September 1991 at the K.L. Hilton, are presently being edited and prepared for publication. Abstracts of selected papers are given below :

GXE STUDIES IN PERENNIAL TREE CROPS : OLD, FAMILIAR FRIEND OR AWKWARD, UNWANTED NUISANCE?

By P.D.S. Caligari **(Keynote Paper)**

Genotype environment interactions (GxE) have been recognized as existing for quite a long time, but their importance in particular circumstances and the ways of handling them are still matters of discussion. I would like to highlight four main aspects and make brief comments about each. The aspects are: Assessment, Biology, Genetics and Exploitation. I will not try to provide a balanced view of all these aspects but instead to highlight particular points concerning them in the hope that they will stimulate thought and discussion within the whole subject area of GxE. Any discussion about assessment obviously includes the statistical and analytical aspects, while under the heading of biology I will try to indicate our need to look more closely into the underlying responses, including physiological, to environmental factors. I will also try to point out the need and benefit from considering the genetical control of environmental response if we are to manipulate it efficiently and successfully. Lastly I will briefly mention the possibilities to exploit GxE, particularly in breeding programmes and suggest a way of incorporating selection for environmental response into such programmes.
I must start by confessing that I have no really clear, general views about GxE in the context of plant breeding, either in terms of how it should be handled or viewed. I suspect this reflects somewhat loose thinking on my part but also simply the state of the subject at present. There are, therefore, no complete answers in this presentation in terms of how GxE should be handled in a plant breeding context nor is there any attempt to give a view of an idealised breeding scheme. More accurately it will simply contain a few thoughts concerning GxE interactions which might help stimulate active thought and debate.

YIELD OF OIL PALM PROGENIES IN ZAIRE, CAMEROUN AND MALAYSIA
By R.H.V. Corley, Tan Y.P, I.N. Timti and W.de Greef

If genotype x environment interactions occur, then performance in one environment will not be reliable predictor of performance in other environments. For a perennial crop, this is a serious problem, as it is not practicable to test each new genotype in more than a very limited range of environments. Therefore it is important to try to understand why interactions occur, so that performance becomes predictable.
We have studied the yield of DxP oil palm progenies planted at Binga (Zaire), Lobe (Cameroun) and Jenderata (Malaysia), in 1974. Our objective was to use data from Lobe to predict yield, and to identify the best crosses, at the other two sites.

There was little relationship between yield at Binga and at Lobe ($r = 0.28^{*}$, 54 d.f.), indicating that G x E effects are important. Losses to vascular wilt, caused by *Fusarium oxysporum,* were heavy in Zaire, and if the most susceptible crosses were excluded, then the correlation between yield at Binga and Lobe was much improved ($r = 0.73^{***}$, 39 d.f.). There was also a tendency for progenies with above average bunch weight at Lobe to yield relatively poorly at Binga; if those progenies with the heaviest bunches were excluded, then the correlation between Lobe and Binga was further improved, to a level allowing fairly reliable prediction ($r = 0.81^{***}$, 27 d.f.).
The correlation between Lobe and Jenderata was reasonable ($r = 0.54^{***}$, 54 d.f.), but the best progenies at Lobe, which yielded 20% above the mean, averaged only 3% above the mean at Jenderata. The correlation was not improved by excluding wilt susceptible progenies, as expected, since wilt does not occur at either station. In contrast to Lobe and Binga, where the progenies with the heaviest bunches yielded less than the mean, at Jenderata such progenies yielded more than average, while progenies with high bunch numbers yielded relatively poorly. To combine both components, progenies with a weight/number ratio less than 1.0 at Lobe were excluded; this improved the correlation between Lobe and Jenderata ($r = 0.68^{***}$, 32 d.f.). Most of the lowest yielding progenies at Jenderata are shorter than average, and have small leaf area. Exclusion of all short progenies did not improve the correlation, but exclusion of those with below average leaf area gave a higher correlation ($r = 0.76^{***}$, 15 d.f.).

Selection of the best 10% of progenies, based on Lobe data, gave a yield increase at Binga within 10% of that achievable by direct selection *in situ* but at Jenderata the best that could be achieved was only 60% of that from direct selection.

GENOTYPE X ENVIRONMENT STUDIES ON PAPAYA AND PINEAPPLE
by Chan, Y.K.

Genotype x environment trials of papaya and pineapple were carried out at MARDI following the breeding and selection of two new varieties, the Eksotika papaya and the Johor pineapple. These were tested with contemporary popular varieties over several localities to evaluate their performance and stability using linear regressions.

Unlike most GxE trials where yield stability is of prime consideration, the characters evaluated for fruits were different, with emphasis given for fruit quality and other traits. For Eksotika papaya and Johor pineapple, the characters given priority were also different because the former was bred for desert fruit while the latter was bred for canning. Yield stability was evaluated for both crops but total soluble solids % reflecting the sugar content was emphasized for papaya while vegetative growth which determined earliness was given priority in pineapple.

Although stability estimates gave useful information with regards the genotypic responses to environmental changes, high means for yield and fruit qualities have also to be considered before final selections. This is perhaps true for many fruit types where cosmetic appearance, storage life, and eating qualities may sometimes override stabilities for yield alone.

In the choice of locations for evaluation, it seems that diverse environments encompassing infertile, low yielding sites would be inappropriate for fruit trials. This is because it does not reflect the true situation in which fruits are usually given the best environment and management to obtain high production of premium quality produce.

The choice of varieties for the two trials was constrained by the unavailability of *bona-fide* cultivars. This problem would also be expected in GxE trials of other lesser known tropical fruit species where breeding and selection has not been extensively carried out.

CLONE X ENVIRONMENT INTERACTIONS IN TEA
By J.K. Arap Rono, J. Kenduyiwa, R.H.V. Corley

Two trials with tea clones were planted at two different altitudes at Kericho, in Kenya. Shoot growth rate, and hence yield, of tea is known to be sensitive to temperature. The difference in altitude between sites leads to a difference in temperature, and, as expected, mean yields were greater at the lower and warmer site. There were highly significant clone x site interactions, with some clones showing a greater decrease in yield with altitude than others.

GENOTYPE - ENVIRONMENT (GE) STUDIES IN OIL PALM *(ELAEIS GUINEENSIS)* PROGENIES
By Rajanaidu N., Jalani S., Rao V. and Kushairi A.

This paper describes the results of genotype-environment studies in two experiments. Experiment 1 consisted of 33 bips tested at 6 sites and in the second experiment 50 Nigerian open-pollinated families were evaluated at 3 sites. In experiment 1, the mean yield (FFB) ranged from 85 kg palm/yr at Kudat to 184.4 kg at Carey Island. The pooled data over the sites showed significant genotype-environment interaction for yield, bunch number and average bunch weight. The stability of the progenies was studied by regression analysis and coefficient of variation (C.V.). Progeny x year interaction was also investigated but it was largely absent. Heritability estimates for yield (FFB), bunch number (BNo) and average bunch weight (ABWt) were 0.04, 0.10 and 0.04 respectively.

In experiment 2, the mean yield (FFB) ranged from 148 kg palm/yr at Kluang to 173 kg at Klang. The analysis of data pooled over sites showed significant GxE interaction for FFB and bunch number but not for average bunch weight. The h^2 estimates for FFB, bunch number and average bunch weight were 0.66, 0.40 and 0.86. These were much higher than those estimated in experiment 1. The contribution of GxE interaction towards the total genetic variation was rather low in both the experiments.

ANALYSES OF GENOTYPE X ENVIRONMENT INTERACTIONS - an illustrative example in cassava
By S.L. Tan and C. Mak

Studies to detect genotype x environment interactions have practical value in the selection of stable genotypes. However, the breeder has still to decide on whether a genotype may be recommended for general planting because of wide adaptability, or only for specific environments. Combined analyses of variance provide the means of determining if genotype x environment effects exist in the expression of a particular trait.

The joint regression analysis is often used to study genotype x environment interactions in individual genotypes. Variations in the use of parameters arising from the joint regression analyses give rise to different definitions of a stable genotype. Data from *Cercospora* disease scores at six and 12 months in 15 cassava clones tested in six locations over two seasons per location were used to show these differences, and implications on the final selection of clones which are less susceptible to *Cercospora* brown leaf spot.

GENOTYPE AND ENVIRONMENT INTERACTION IN *ACACIA MANGIUM*
By Mohamad Lokmal Ngah, Darus Ahmad and Ernest Chai Oi Khun

Provenance trial of *Acacia mangium* was established at five sites in the state of Sarawak. Five provenances were planted at each site. Individual site analysis for all traits indicated significant differences between provenance at all sites except for diameter at breast height and girth at site 5. Interaction between provenances and sites was found to be highly significant for all traits under study.

Other News

ERRATA

In the bibliography of feature articles in the previous issue, Vol 8 (1), the write-up on Marihat RCEC was wrongly credited to Chin Cheuk Weng. It should be credited to Adlin U. Lubis. Our apologies to both authors and Marihat RCEC.

In a lighter vein

The following advice was sent in by Chung Gait Fee of Ebor Research, Sime Darby sourced with acknowledgements from ASUS NEWSLETTER. VOL,. 7(6), JUNE 1991 and to the author Jay D Mann.

How Real Scientists Give Talks

Jay D Mann
32 Champion Street, St Albans,
Christchurch, New Zealand

1. Real Scientists don't have to rehearse their talk. Spontaneity is more important than fitting into the allocated time slot. Imagine the air of excitement in the audience when a talk has reachedd the 15-min mark without getting past the introduction. Real Scientists are not dissuaded from thorough exploitation of their data and their implications by the antics of the moderator, the fidgeting of later speakers, and the stomach rumbles of the audience.

2. Real Scientists don't give introductions. If the audience knows about the field of research, it doesn't need any introduction. If it doesn't know the field, the speaker should not waste his or her time informing it.

3. Real Scientists keep the blackboard well-informed. Facing the screen or the board helps the speaker remember what he or she did. There is no need to raise one's voice or turn around——the board is close and has no difficulty in hearing the speaker. Some Real Scientists prefer to talk to their manuscript. This is risky, because acute listeners in the front row might catch a few words.

4. Real Scientists don't label the axes of their slides. It is perfectly obvious what can be given verbally. Remember to use the terms "abscissa" and "mantissa" instead of "x-axis" and 'y-axis."

5. Real Scientists don;t label any lines on their slides. They put four or five curves onto one slide, and wave one hand vaguely at the screen while stating , "This shows the effects of each of the treatments on a Type 3 test preparation."

6. Real scientist don't have to summarize their results. The cosmic significance of a 12.8% response was covered in the introduction. The time saved by not summarizing can be used more profitably in describing the precise composition of the buffers.

7. Real scientists have at least 30 slides for a 15-min talk. The audience has traveled all this way and deserves full value for its money.

8. Real Scientists have no slides at all, and draw everything freehand on the blackborad. This way no reasonable person could expect them to label either axes or lines.

9. Real Scientists know that the audience recalls everything from last year's meeting. It's pointless to repeat slides or summaries already given 12 months ago. "You will immediately note how different this result is from the data I presented in Fig. 18 of last year's talk."

10. Real Scientists present all their data. To ensure that no one misses anything, they both point to and read off every line in every table in every slide. Merely to indicate the most important bitss would be an insult to the audience.

The following clippings are from C.R. Donough of Pamol Plantations and sourced from *New Biologist 38(4)* with acknowledgements.

No comment

‘... breeding females [of North Sea cod] are maturing younger and at smaller sizes than before in an effort to reproduce before being caught.’
Science Correspondent, *Guardian*, 1 June 1991

‘Owners could claim the dog was a cross with some other species, and therefore outside the law.’
Science Editor, *The Times*, 21 May 1991

‘... dogs, apparently, don't have DNA – there isn't sort of defined breeds as such and it's rather too easy to cross breed them and so on, ...’
Edwina Currie MP, speaking on BBC Radio 'Any questions', 24 May 1991

‘– first make sure they are in fact flies. When real flies fly they use their back wings only. Their front ones are just for balance.’
David Bellamy *Sunday Express*, 14 April 1991

‘The rate of Terminal Bonus is influenced by financial conditions at the end of the term or on your previous death and can be expected to fluctuate.’
BMA/Sun Life life assurance brochure

‘*Ingredients:* Pork, beef, salt, dextrose, spices, garlic antioxidant: sodium ascorbate, preservative: sodium nitrite. *Not less than 100% meat.*’
Label from a packet of Herta sliced meat