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THE INTERNATIONAL SOCIETY FOR OIL PALM BREEDERS
PERSATUAN AHLI-AHLI PEMBIAK BAIK KELAPA SAWIT ANTARA BANGSA

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EDITORIAL

Tan Sri Datuk Dr. Anuwar bin Mahmud was the first president of the International Society of Oil Palm Breeders (ISOPB). It was his stewardship coupled with the tireless efforts of the Secretary, Dr. N. Rajanaidu, that has today made the Society relevant to oil palm breeders throughout the world. This issue of the ISOPB newsletter pays tribute to Tan Sri Datuk Dr. Anuwar bin Mahmud. His biography, written by Mr. Andy Chang of PORIM, is our feature article. Also included is a reproduction of a short speech by the current president of ISOPB, Datuk Dr. Halim bin Hassan, Director General of PORIM, delivered at a tea party in honour of Dr. Anuwar and Mr. E. Rosenquist, two honorary members of the society. Mr. Charles Hartley, our first honorary member, could not attend.

The other feature article in this issue will be of interest to tissue culturists as well as oil palm breeders. Shortly after floral abnormalities were first observed in oil palm clones, Unilevers PLC organised various trials aimed at shedding more light on the phenomenon and possibly inducing a reversal to normal flowering. Most of their early trials were conducted at Pamol Plantations Sdn. Bhd. near Kluang, Malaysia. Mr. Chris Donough reports some observation from one such trial in this issue. This is a welcome contribution. The floral abnormality problem has too large an implication and, one suspects, is of such fundamental nature that more frequent exchange of ideas and observations from careful painstaking work is necessary for progress in understanding what is happening.

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FEATURE ARTICLE I:

TAN SRI DATUK DR. ANUWAR B. MAHMUD

Born in Petaling, Selangor, sixty three years ago, Y.B. Tan Sri Datuk Dr. Anuwar excelled early in education. In the Cambridge School Certificate Examination, he had the distinction of being one of the few students that year to obtain grade one. In 1948, he won the Colombo Plan Scholarship to study veterinary science in India. In the academic examinations he was awarded a Silver Medal for achieving the highest grade. In 1963, he was elected member of the American Honours Society - Phi Kappa Phi - for outstanding performance in the Master of Science Course at the University of Hawaii.

After graduating with G.V. Sc. in 1952 he joined the veterinary service and served in various states in Malaya. His last post in the service was that of deputy veterinary officer in Kluang, Johor.

In 1964 Tan Sri Anuwar joined the Faculty of Agriculture, University of Malaya where he soon rose to become its dean - the first Malaysian to hold the post.

Later Tan Sri Anuwar served MARDI (Malaysian Agric. Res. & Dev. Inst.) as director general for four years before becoming vice-chancellor of the National University of Malaysia (Universiti Kebangsaan) in 1975.

When Tan Sri Anuwar came to PORIM in 1980, he thus brought with him a broad range of experience and skills. Achieving excellent results was therefore no accident to Tan Sri; it was accomplished through years of previous working experience.

On joining PORIM, the Palm Oil Res. Inst. of Malaysia, Tan Sri immediately became absorbed in developing staff and building programmes for the institute. He realized that the availability of well-qualified and dedicated personnel and purpose - built laboratories are necessary for conducive research work. One who visits PORIM headquarters cannot but be impressed with the stimulating environment as well as the sophisticated and latest research facilities. Research personnel of high calibre coupled with high standards of facilities reflect the image of Malaysian palm oil - that of quality.

At the same time, Tan Sri began establishing regional research stations in various parts of the country. He saw the great need for this facility to enable PORIM to carry out biological experiments and trials effectively. As a result, a network of 5 regional stations covering some 2,000 hectares of land has been set up and are in operation and another 3 stations involving 3,200 hectares are being developed.

The rapid progress of PORIM under his stewardship no doubt stems partly from the unanimous support and collaboration of the industry. In fact, it has been said that the close collaboration of PORIM with the industry is one of the most distinguished feathers in its cap. This has been largely due to Tan Sri Anuwar who was able to bring PORIM and the industry into a remarkable partnership.

Tan Sri Anuwar is a true professional who sets high standards in work and ethics. He does not tolerate mediocrity. Honesty, sincerity and devotion to work have been his guiding principles. His deep sense of commitment in his job and ability to observe deadlines with care continue to inspire the staff.

In a lifetime devotion to serving the country, Tan Sri's contributions have not passed unrecognised. In 1960 he was awarded Pingat Ahli Kelantan, Malaysian state and national awards and Johan Mangku Negara in 1974. In 1975 he was conferred the Panglima Gemilang Darjah Kinabalu and in 1977 he was made a Tan Sri upon the conferment of Panglima Setia Mahkota by the Yang Di Pertuan Agong.

From 1977 - 1981 he was the deputy chairman, International Society for the Advancement of Breeding Researchers in Asia and Oceania (SABRAO). He was the founder president of the International society of Oil Palm Breeders. His prestige and standing amongst scientists and agriculturists saw him being awarded the Fellow of Science by the Malaysian Science Association, the Fellowship of the Incorporated Society of Planters and Fellow of Agricultural Institute of Malaysia. In 1983, he was conferred the Honorary Director of Science by Universiti Kebangsaan Malaysia.

Tan Sri Datuk Dr. Anuwar's departure as Director General of PORIM was at his own request which prevailed inspite of the appeal by the Board for him to stay on. However, one cannot imagine Tan Sri sitting back idly in retirement, although he may have originally planned to do so. For this reason and for his love and attachment to PORIM he has agreed to serve as the Chairman of the Programme Advisory Committee, (Biology Subcommittee).

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Speech by
DATO' DR. HJ. ABDUL HALIM BIN HJ. HASSAN
the President of ISOPB in honour
of
TAN SRI DR. ANUWAR BIN MAHMUD
and
MR. E. ROSENQUIST

Date : 12 - 3 - 1990
Time : 6.30 p.m.
Place : PORIM HQ (Garden)

Ladies and Gentleman

This is the first time the International Society for Oil Palm Breeders (ISOPB) is organising an occasion to honour its prominent members who had contributed to the well - being of the Society.

Tan Sri Anuwar bin Mahmud was the first President of the Society and he was instrumental to nurse the new born baby to adulthood. Now, ISOPB is well known among the oil palm workers who look forward to participating in the activities organised by the Society. This is all mainly due to Tan Sri Anuwar.

Mr. Rosenquist is the dozen among oil palm breeders. After 50 years with oil palm, he is still busy travelling and providing consultancy services to leading companies in the world on oil palm breeding. I wish him and Mrs. Rosenquist all the best.

FEATURE ARTICLE II:

SOME OBSERVATIONS ON ABNORMALLY FLOWERING CLONES

Chris Donough

Pamol Plantations Research Department

Introduction

After abnormal flower development in some oil palm clones in Malaysia was reported (Corley *et al*, 1986), various trials were set up to try and understand the cause(s) of the problem. Early results from experiments exploring possible genetical cause(s) for the problem have recently been reported (Rao & Donough, 1990). Many other investigations were initiated at the same time to explore possible non-genetic causes.

This short note reports some of the observations made in a trial at Pamol Estate, Kluang, and briefly discusses the future for clonal oil palms.

Experiment

At Pamol Estate, an experiment was set up in 1986 in a 1983 commercial clonal planting affected by the problem. The trial included application of various treatments to induce stress, as well as application of a range of chemicals, to see if the abnormality could be reversed (see table 1).

The degree of mantling in individual bunches of each palm involved was regularly determined. This was done by taking a random sample of ten spikelets per bunch, and scoring each individual fruit in the sample by the number of supplementary carpels it carried. A weighted mean number of supplementary carpels was then calculated and used as an indication of the degree of mantling for that palm at that point in time.

Observations in this trial, involving some 700 individual palms, went on for over 2 years before the area was replanted in 1989.

Observations

Unfortunately, no clear trends emerged. There were no indications that any of the stress or chemical treatments had caused any change in flowering behaviour of the treated palms. However, certain observations appeared important.

Firstly, the degree of abnormality did not remain stable in many palms. In these palms, the degree of mantling of individual fruits within each bunch went through quite dramatic swings.

Thus at some point in time, it appeared as if such palms were actually "recovering" from the problem, but later the degree of mantling increased again.

This phenomenon was observed in palms over a wide range of treatments, and even the "controls" where no treatments had been applied, thus ruling out any treatment effects.

Secondly, there appeared to be a small number of palms in which the degree of mantling became quite steadily reduced.

Although no complete recovery was observed, the reduction in mantling was such that in the last 2 surveys (25-28 months after the trials started), these palms were producing virtually normal bunches i.e. bunches with only about 1-2% of the fruits having only 1-2 supplementary carpels (see table 2).

These palms tended to be less abnormal to start with i.e. at the time the trials commenced, the average number of supplementary carpels per fruit in bunches from these palms tended to be relatively low.

Recovery ?

When the phenomenon was first reported, the level of abnormal flowering ranged from 88-95% of the palms for the 3 affected clones (Corley et al, 1986). In 1989 when abnormal palms in this area were being replaced, a survey showed over 20% of the palms classified as "normal".

In another field planted several months earlier in 1983 but also affected by the problem to a similar extent, it was found that 38-44% of the palms in clone 90A, 42-49% of those in clone 115E, and 31% of the palms in clone 31A, were normal in 1989.

These observations suggest that reversal towards normality has taken place in some palms between 1986 and 1989.

However, it should be noted that these surveys were based on visual assessments of bunches on the palms, as was the case in the 1986 surveys. Therefore, "normal" may include palms having a very low level of mantling.

Although these observations seem somewhat at odds with the idea of a genetical cause, it has been argued that the hereditary mechanism involved is unlikely to be simple (Rao & Donough, 1990).

A second set of genetical experiments are already underway at Pamol and PORIM Kluang, and hopefully the results from these will clarify the picture.

The future for clones

Although the problem has received much publicity, it should be pointed out that prior to this a large number of clones had been produced and planted in field trials, and flowered normally.

It would be premature to write off the future for clonal oil palm planting material, especially when potential gains can be quite substantial.

Already in the first series of clones from selected mature palm ortets, there are fairly good indications that the best of these Out yield DxP seedling material by 10-20% in terms of oil and kernels (Unilever Plantations Annual Research Review, 1990).

New clones from selected mature palm ortets continue to be field tested in trials each year by Pamol Plantations. By 1992, at least 90 such clones will be in field trials. There is every likelihood that some of these will achieve the much quoted figure of 30% yield increase over DxP seedlings.

In the tissue culture laboratory, quality control measures have already been instituted to give early indications of the potential of clones to produce normal or abnormal flowers. These measures are continuously being reinforced by field records.

Many other trials have been set up since 1986 by Unifield TC Ltd. at various locations around the world, with the aim of understanding the problem and therefore avoiding it in future. The earliest of these trials are now productive and results should be available in the not too distant future.

Eventually, it should be possible to produce elite clones for field planting, with a firm assurance of their ability to flower normally.

Acknowledgements

The experiment was set up with direction from Dr R.H.V. Corley. Dr Bealing at PORIM Kluang contributed chlofibric acid, benzyldichlorophenyl urea, seamac, cobalt sulphate, diaminobutane, multifrop and PP333.

Permission to publish was granted by Unilever Plantations Group and Pamol Plantations Sdn Bhd.

References

CORLEY, R.H.V., LEE, C.H., LAW, I.H. & WONG, C.Y. (1986) Abnormal flower development in oil palm clones. Planter, KL, 62:233-240.

RAO, V. & DONOUGH, C.R. (1990) Preliminary evidence of a genetic cause for the floral abnormalities in some oil palm ramets. Elaeis 2(2):199-207.

ANON. (1990) Unilever Plantations 1990 Research Review. Internal report, Unilever Plantations Group, London.

Table 1 : Stress and chemical treatments

Treatment		Frequency
Complete ablation		once
Complete ablation		for 6 months
Pruning to frond 8		once
Pruning to frond 16		once
Intensive assisted pollination		every 3 days
Root pruning to 1m depth		once
Boron application 225g/palm		once
2,4-D	10,50,250 ppm	once
Chlofibric acid	100,250 ppm	once
Chlofibric acid	0.5,5,50 ppm	for 6 months
Gibberelic acid	10,50,250 ppm	once
Benzylaminopurine	2,10,50 ppm	once
Triodobenzoic acid	10,50,250 ppm	once
Chlorocholine chloride	10,50,250 ppm	once
Ethrel	10,50,250,1000 ppm	once
Mixtalol	1,5,25,100 ppm	once
Benzyldichlorophenyl-urea	0.2,2,20 ppm	for 6 months
Seamac	0.25,1,4 % v/v	for 6 months
Cobalt sulphate	0.03,0.3,3 ppm	for 6 months
Diaminobutane	0.001,0.01,0.1 ml/l	for 6 months
Multifrop	0.0001,0.001,0.01 ml/l	for 6 months
PP 333	2.5,5,10 ml/l	for 6 months

Chemical treatments : if once only, 500ml/palm sprayed onto spear leaves
 if 6 months, 100ml/palm sprayed onto spear leaves per month
 PP 333 applied as 2 litre soil drench

3 clones, 4 palms/clone/treatment, 20 control palms/clone

Table 2 : Recovering palm (?)

Date observed	No. of supplementary carpels/fruit									Wgtd Mean
	0	1	2	3	4	5	6	>6		
	% of fruits in each category									
Nov. 1986	[5]	2	6	11	23	25	12	23	0	3.9
Dec. 1986	[6]	17	27	32	20	4	1	0	0	1.7
Apr. 1987	[10]	24	24	11	29	4	5	2	0	1.9
May 1987	[11]	23	48	23	5	1	0	0	0	1.1
Jun. 1987	[12]	6	21	33	34	4	3	0	0	2.2
Sep. 1987	[15]	77	14	8	1	0	0	0	0	0.3
Dec. 1987	[18]	52	28	11	6	3	0	0	0	0.8
Apr. 1988	[22]	68	8	18	5	0	0	0	0	0.6
Jul. 1988	[25]	98	1	1	0	0	0	0	0	0.0
Oct. 1988	[28]	99	1	0	0	0	0	0	0	0.0

[] = months after treatments commenced

SOCIETY NEWS

1) SYMPOSIUM : GENOTYPE X ENVIRONMENT STUDIES IN PERENNIAL CROPS 12 - 13 September 1991 KL Hilton, Kuala Lumpur

A two-day International Symposium to review genotype x environment (GxE) studies in tropical perennial crops. GxE studies are useful for understanding the adaptability of crops and to realise maximum yield potential in various environments.

OBJECTIVES :

- * To understand GxE interactions in perennial tree crops for exploitation to maximise yields;
- * To review the current status of GxE studies in perennial tropical crops;
- * To collate information for future research and reference.

PROGRAMME :

The tentative programme is as follows:

12th September 1991

Introductory speech by Datuk Dr. Hj. Abdul Halim bin Hassan, President of ISOPB.

Speech and official opening by En. Mohd Said bin Mohd Ali, Chairman of the Palm Oil Research and Development Board of Malaysia.

Tea

- Prof. Peter Caligari, University of Reading** : Keynote address
- Dr. R.H.V. Corley, Unilevers PLC** : Yield of oil palm progenies in Zaire, Cameroons and Malaysia.
- Dr. N. Rajanaidu & Prof. S. Jalani, PORIM** : GxE interactions in oil palm progenies
- Dr. Lee Chong Hee, Golden Hope Plantations** : Performance of oil palm clones in different environments
- Mr. Yong Yit Yuan et. al., Guthrie Research Chemara** : GxE interactions in OXP hybrids.

Lunch

- Dr. Manjit S. Kang, Louisiana State University** : Issues in Genotype - Environment Interactions.
- Dr. Tan Hong, RRIM** : GxE interactions among rubber clones.
- Speaker from Golden Hope Plantations** : GxE interactions in cocoa.

Tea

- Speaker from MARDI** : GxE studies in cocoa.
- Speaker from United Plantations** : GxE studies in coconut

13th September 1991

- Prof. Yamada, Universiti Pertanian Malaysia** : Title to be confirmed.
- Speaker from MARDI** : GxE in papayas.
- Ms Tan Swee Lian, MARDI** : GxE interactions in tapioca.

Tea

- Dr. R.H.V. Corley, Unilevers PLC : Clone x Environment interactions in tea.
- En. Lokman, Forest Res. Inst. of Malaysia : GxE studies in a tropical timber species
- Speaker and paper to be confirmed.
- Prof. Jalani Sukaimi, PORIM : Summing and Closing.

2) SYMPOSIUM : The Science of Oil Palm Breeding
 Montpellier, FRANCE
 1 - 3 July 1992

Organised by
 International Society for Oil Palm Breeders (ISOPB)
 Institut de Recherches pour les Huiles et Oleagineux (IRHO) / CIRAD

Sponsored by
 Palm Oil Research Institute of Malaysia (PORIM)
 Bureau for the Development of Research on Tropical Perennial Oil Crops (BUROTROP)

The scientific programme consists of two-day lectures and one day visit to leading laboratories.
 Papers on the following topics will be reviewed and discussed:

- * Oil Palm Genetic Resources
- * Variation and Inheritance
- * Breeding Techniques
- * Breeding for Yield and Quality
- * Breeding for Resistance (Pest & Diseases)
- * Breeding for Stress and Adaptation
 (Genotype x Environment Interaction, drought tolerance, physiological traits)
- * Planting Material (seeds, clones)
- * Regional Oil Palm Breeding Programmes
 (Asia, Africa, Latin America)
- * Future Prospects

The second announcement will be circulated in September 1991. It will contain information on registration, accommodation and symposium fees.

The symposium, by the way, is planned for the week before the XIII EUCARPIA congress which is from 6 - 11 July at Angers, France. The theme of the EUCARPIA congress "Reproductive Biology and Plant Breeding" suggests that the congress could be useful to oil palm breeders whose concern ranges from floral abnormalities and sterility in E.O. x E.g. hybrids to natural self pollination in some inflorescences. Hence the symposium and congress will be a very useful combination.