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

Vol.2 No. 4 ISSN 0127-6581 P.P 80 /1/85

EDITORIAL

1985 may be known as the year of the big oil palm seed rush. There was a big frantic rush for seeds at the start of the year caused by the low price of rubber and other commodities and a good steady palm oil price; inducing plantation owners to accelerate replanting their existing rubber. Big seed demands from Thailand and Indonesia also aggravated the situation. Both Thailand and Indonesia have embarked on large scale oil palm plantings. Thailand does not have a seed production facility while Indonesia's seed production facilities could not cope with the demand. Although there is a ban of export of oil palm seeds from Malaysia, it is an open secret that some seeds have always been smuggled out. With the high price (up to US50 cents) that the Thais and Indonesians were prepared to pay, smuggling of seeds thus became intensified. Further, market speculators suddenly saw a new way to make quick money by cornering the seeds market with massive prebookings. Seed suppliers suddenly found their books filling up for the next five years with many orders from clients which they had not heard before. Genuine plantation owners and smallholders were caught short without any planting materials secured for their coming replants. A mad scramble ensued.

The blackmarket price in Malaysia also went up to US50 cents. Illegitimate seed producers entered the market complete with depericarpers, germinators and faked labels of legitimate suppliers. Millions of illegitimate seeds were produced.

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Presumably, and perhaps fortunately for Malaysia but unfortunately for Indonesia and Thailand, the bulk of the seeds were exported. Some desperate ignorant local smallholders were unfortunately also conned by these unscrupulous operators claiming to have legitimate seeds or seedlings from the suppliers.

The relevant authorities and the industry became very concerned about these undesirable activities and the subject of consumer protection for the legitimate grower, especially for the smallholders, came to the fore.

There is already an oil palm seed certification and licensing scheme existing in Malaysia since 1973. (For those interested the booklet MS 3.18.1873 : Specification For Oil Palm Seed For Commercial Planting, can be purchased from the Standards and Industrial Research Institute of Malaysia or SIRIM). Specified in this scheme are the required control pollination procedures for the production of DxP seeds and the minimum selection standards for the dura and pisifera parents. This scheme does play an important role in ensuring legitimate seeds of good quality are sold to most growers.

Unfortunately this scheme does not apply to nursery seedlings and it does not empower the authorities to prosecute illegitimate producers of seeds and seedlings.

PORLA or the Malaysian Palm Oil Registration and Licensing Authority, the licensing board for oil palm growers, palm oil millers and those in palm oil business has undertaken to extend its legislative powers to cover the sales and movement of oil palm planting materials. PORLA is empowered to monitor the supply, demand and movement of oil palm planting materials, to license seed producers and nurserymen and to take legal action against illegitimate and fraudulent operators. Most will agree that the powers of prosecution will be useful in cutting down the number

of illegal operators and sale of illegitimate seedlings.

Meanwhile palm oil prices have fallen and this will result in easing off of seed demand which is indeed a welcome relief to the harassed yet happy seed producers.

FEATURE ARTICLES

A. Oil Palm Planting Materials - World Seed Production

There is a great interest to plant oil palm throughout the world. Malaysia, Indonesia, Papua New Guinea, Colombia and Nigeria are the major producers of palm oil and extensive new plantings and replantings are being carried out in these countries. A supply of good quality planting material is essential to realise high yields and profits.

In Malaysia, there are seven seed producers. They are :-

Guthrie
Felda
HMPB
Highlands Research Unit (HRU)
United Plantations (UP)
Department of Agriculture, Sabah (DOA)
PORIM

In addition, Pamol, Dunlop and Sime Darby have started seed production recently on a limited scale. In Malaysia, Guthrie and Felda are the major seeds producers i.e. in excess of 10 mil. seeds per annum each; HRU, HMPB and PORIM each could produce more than 5 mil seeds per year and UP and DOA about 1 mil. seeds. Hence, the seeds producers in Malaysia have the capacity to produce 35 - 40 mil seeds per annum.

The next major seed producer is Indonesia and these agencies ie Marihat Research Stations (MRS), Socfindo and RISPA produce 40 - 45 mil seeds per annum in total.

The other seed producers in the world are:

IRHO at Ivory Coast,
NIFOR in Nigeria
Unilever Group in Cameroons and Zaire,
H & C at Papua New Guinea and
United Brands at Costa Rica.

These organisations are able to produce about 20 mil. seeds yearly.

Hence, the annual production of oil palm seeds is about 100 mil. throughout the world. In near future, Brazil, Colombia, China, India and Thailand will have the capacity to produce a small amount of oil palm seeds.

Rajanaidu, N
PORIM.

B. A MALAYSIAN OIL PALM DIARY

The author wishes to compile a diary of principal dates for the oil palm in various institutions, regions, countries and continents.

Readers are invited to send dates and events as may appear significant for collation and compilation into a brief but comprehensive record of the history of the oil palm. Contributions may be sent to the author or the ISOPB.

To start the oil palm seed rolling, the author has compiled some dates, principally in Malaysia. While the bias has been towards governmental institutions, private institutional records are now being solicited. The records shown may not be completely accurate and stand to be corrected by readers. More information will be added as it becomes available.

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1836	Oil palms known to have been growing in Mauritius and in Calcutta (Botanic Gardens ?)
1848	Four seedlings planted at the Bogor Botanical Gardens, Java. Two came direct from Mauritius and two from Amsterdam.
1870	Oil palm seed brought to Singapore Botanic Gardens, very likely from Java.
1874	Seed sent from the Bogor Gardens to Deli in Sumatra.
1876	Seed sent from Kew to the island of Daat near Labuan, Sabah (East Malaysia). Seven hundred palms were established but replanted with coconuts ten years later. Was poor pollination or lack of processing the cause for replanting this plantation at its prime?.
1884	An ornamental avenue of oil palms was planted on St. Cyr Tobacco estate probably with seed from Deli Maatschappy Estate.
1888 - 1903	Small groups and avenue plantings on Bekalla Estate, St Cyr, Tandjong Morawa and other estates in the vicinity of Deli and along the Sumatran East Coast.
1903	First oil palm planting in Malaysia at the Batu Tiga Experimental Plantation, Selangor. The station was eventually abandoned in 1922. I have no record of the origin of this seed.

1905 — Formation of the Department of Agriculture. Oil palms, possibly Deli origin, grown in the Kuala Lumpur Lake Gardens. Are the few tall palms still existing today part of this planting?

1912 - 1914 — Seed from Batu Tiga, Lake Gardens and Nigeria planted at the new Experimental Plantation of the Department of Agriculture in Kuala Lumpur.

1911 — M. Henri Fauconnier planted part of the arrow shaped avenue of palms leading to the bungalow at Rantau Panjang Rubber Estate, Batang Berjuntai, Kuala Selangor. The seed was purchased (for how much?) from the best palms in the entrance avenue St Cyr Tobacco Estate.

1912 — M. Fauconnier planted more palms at the Rantau Panjang estate entrance with seeds obtained from the Tandjong Morawa Kiri Tobacco Estate near Deli. There M. Adrian Hallet had selected three of the best palms from a large number under observation. The Rantau Panjang bungalow was known as "La Maison des Palmes" and bungalow and palms still exist today.

1917 — After unsuccessful coffee cultivation, oil palms planted at Tennamaram Estate in Selangor with seed from selected palms on an avenue in Tandjong Morawa Kiri Tabocco Estate. This is the first commercial oil palm plantation in Malaysia.

1920	Elmina Estate, planted between 1920 - 3, became the second commercial plantation in Malaysia.
1922	The Department of Agriculture opened a new station at Serdang, Selangor and selected seed from the Kuala Lumpur Experimental Plantation was planted there.
1929	Selections from Elmina Estate including a short, stout (Dumpy) palm were planted at Serdang.
1930 - 1960	Establishment of large oil palm plantations in Malaysia.
1940	The discovery of the inheritance of shell thickness and the introduction of the DxP hybrid. However commercial DxP plantings in Malaysia started only in the '60s.
1950	Introduction of the first Elaeis oleifera into Malaysia. Seed came from Brazaville (Congo). South American origin unknown.
1956	The establishment of the Federal Land Development Authority. This organisation was made responsible for agricultural resettlements. Vast areas of jungle were converted to oil palm settler schemes in the following years until the present.
1960	Gradual conversion of rubber to oil palms from this period. This has continued since, sometimes at a quickened pace.
1967	Collection of E.oleifera germplasm in South and Central America by Martineau. Collections were made in Colombia, Costa

Rica and Panama.

1969 Formation of the Malaysian Agric. Res. and Dev. Institute. The institute took over oil palm research from the Dept. of Agriculture.

1973 MARDI/NIFOR joint prospection and collection of E.guineensis in Nigeria. Seeds were obtained from 45 sites throughout the country.

1976 First tissue culture palms planted (in front of the former OPGL office (Chemara premises) at Layang-Layang.

1979 The establishment of the Palm Oil Res Inst. of Malaysia (PORIM). Inherited all the oil palm trials and most of the plantings from MARDI.

1982 Collection of E.oleifera germplasm in South and Central America by PORIM. Prospection and collections in Panama, Costa Rica, Colombia, Honduras, Nicaragua and Surinam.

1984 Collection of E.guineensis in Cameroons and Zaire by PORIM.

Rao. V.
PORIM.

C. OIL PALM DEVELOPMENT IN THAILAND

The Upper South Development Plan will be launched as part of Thailand's Sixth Five Year Development which will run from 1987 - 1991. In this plan, the main thrust of the agricultural development for the land area bordered by Phuket Island in the Andaman Sea and Surat Thani in the South China Sea will be oil palm cultivation to restore the deforested cover. Oil palm plantation area will be expected to increase from 38,400 ha. with a production of 77,000 tons of oil to 160,000 ha. with a production of 0.5 million tons of oil by year 2000. On non-irrigated soils, yields will be expected to be raised from 11.5 tons FFB/ha to 16.25 tons FFB/ha. Where irrigation is feasible, yields close to Malaysian levels of 21-22 tons FFB/ha may be achieveable.

Significantly, even before JICA (Japan International Cooperation Agency) has completed the plan study, the Thai government had signed up to FAO to undertake an oil palm research and development, project). (Dr. Ooi, Swee Chai, former leading Malaysian oil palm breeder, has been assigned the task to organise this effort). To run for five years from January 1985 at a cost of US$1 million, the project will help tackle many of the technical problems, especially in establishing a palm oil research centre, identification of priority areas, the beginning of adaptive trials and widescale training at all levels. Possibly most important it will also set up a nucleus estate and smallholder system.

JICA estimates that oil palm development will require about US270 million investment between 1985 and 2000. Expected rates of return from model nucleus estates and smallholder operations would be 17 percent for the estates alone and 23 percent for the entire project including smallholder development and a new loan service. Although, until about 1990, all palm oil would be for domestic consumption only, exportable surpluses are expected after that date. For that reason, milling technology and oil quality will be emphasised from the beginning as much as improved planting material and cultivation techniques.

(Extracted from Far Eastern Agriculture. July/Aug 1985)

ABSTRACTS OF PAPERS

A. AGRONOMIC PERFORMANCE AND GENETIC VARIABILITY OF *Elaeis oleifera* x *Elaeis guineensis* HYBRIDS.

ABSTRACT

Thirty-one 3-year old F_1 hybrid (*E. oleifera* x *E. guineensis*) progenies at University Pertanian Malaysia were evaluated for vegetative characters, sex ratio, fruit characters and genetic variability. Non-destructive method of vegetative measurements and strach gel electrophoresis were employed. Supplementation of other chemicals to standard Tris-maleate extraction buffer were necessary to overcome the problems of phenolic compounds in electrophoresis of oil palm leaf extracts. Four enzyme systems were analysed. The genetic control of polymorphic patterns of esterase and indole phenol oxidase were postulated and gene frequencies were calculated. Substantial amounts of genetic variability existed in the population. Some potential genotypes in progenies such as MS 1701 and MS 1705 might be selected for further breeding work.

AHMAD KUSHAIRI DIN
Pegawai Penyelidik
Bahagian Biologi, PORIM

B. Genetic Variation For Fatty Acid Composition in the Oil Palm (Elaeis guineensis Jacq)*

N.T. Arasu[1]

SYNOPSIS

The main objectives of this thesis are :

i) to assess the genetical variation in Nigerian oil palm (Elaeis guineensis Jacq.) populations with respect to the fatty acid composition of their oil; and

ii) to assess the value of the Nigerian material to the breeder in oil palm improvement programmes.

Two hundred families, the progeny of 200 (five from each of 40 populations) individual palms from which seeds were collected in Nigeria were planted in a completely randomised design in two independent blocks of six seedlings per family. A set of fifty families were planted in another experiment at three locations in order to detect the presence of genotype environmental interaction. Data on fatty acid composition from the above experiments is presented and compared with data for current breeding material, the related species (E.oleifera) and the interspecific hybrid (E.oleifera x E.guineensis).

There is substantial phenotypic variation for fatty acid traits in the Nigerian material. Part of the variation observed is genetically determined but heritability estimates are generally low and the populations studied do not differ greatly for these traits. Genotype-environment interaction was not detected with respect to fatty acid composition in the material studied.

The Nigerian material offer much greater scope for breeding high yielding oil palms with modified fatty acid composition than the current breeding material. However, the interspecific hybrids (E.oleifera x

x E.guineensis) offer even better prospects for improvement of fatty acid composition.

* Paper presented at ISOPB (Malaysia) Seminar on Oct. 30, 1985. Taken in part from thesis submitted for the degree of Doctor of Philosophy. University of Birmingham.

1. MARDI, Selangor. Malaysia.

C. Genotype - Environment Interaction and Stability Analysis [1] for Bunch Yield and Its Components, Vegetative Growth and Bunch Characters in the Oil Palm (Elaeis guineensis Jacq)

by

Ong E.C., Lee C.H., Law I.H. and Ling A.H.[2]

ABSTRACT

The development of oil palm planting material ('Dura x Pisifera') with a high level of performance over a wide range of environments is an important objective for most breeding programmes. In Malaysia, four companies cooperated and evaluated seven NIFOR (Nigerian Institute for Oil Palm Research) hybrids and four Malaysian hybrids for five years at four locations in Malaysia. There were significant differences among the hybrids for all the bunch yield and its components (bunch number and bunch weight), some vegetative growth and bunch characters analysed. Significant GxE interactions were observed for the bunch yield and its components, some vegetative growth characters (height, petiole cross section and leaf area) and some of the bunch characters (kernel to fruit, wet mesocarp to fruit and oil to bunch). The significance of these GxE interactions was discussed. In the regression analysis for the yield and the vegetative growth characters, the growth response and stability indices of these traits were also examined.

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1. Paper presented at the 5th International Congress SABRAO, Bangkok, November 25-29th 1985.

2. Plant Breeder (Kumpulan Guthrie Sdn. Bhd), Plant Breeder (Harrisons Malaysia Plantations Bhd), Company Agronomist (Pamol Plantations Sdn. Bhd) and Sn. Agronomist (Dunlop Agro-Management Sdn. Bhd) respectively.

D. Novel Palm Oils from Cloned Palms.
1984. JAOCS 61: 1717 - 1719

L.H. JONES, Unilever Research Laboratory,
Colworth House, Sharnbrook, Bedford,
MK44 1 LQ, United Kingdom.

ABSTRACT

The ability to propagate oil palms vegetatively, using tissue culture techniques, allows us to select unique individuals for clonal propagation. Although yield improvement is the major criterion, there is considerable variation in oil composition among individual palms.

Fatty acid composition is under genetic control although it also is influenced by environmental factors. Nevertheless, it is now possible to select palms for oil quality. Clones also can be propagated from interspecific hybrids, yielding more liquid oils.

Development of commercial clones of oil palm with novel palm oil composition will depend greatly on the availability of long term markets for premium priced oils.

E. Biotechnology and the Fats and Oil Industry
- An Overview.

1984 JAOCS. 61 : 1701 - 1711

JAMES B.M. RATTRAY, Department of Chemistry
and Biochemistry, University of Guelph,
Guelph, Ontario, Canada N1G 2W1.

ABSTRACT

Biotechnology is the application of single or multicellular organisms and of associated or derived enzyme systems to the production of desirable products. Particular discussion has been made of the derivation of fats and oils from animals, plants and microorganisms. General consideration has been given to methods, primarily plant breeding and agronomic practices for the improvement of the quantity and quality of oil produced by soybean, rapeseed, palm and sunflower. The possible importance of yeasts fungi and algae as sources of single cell oil has been examined. A particular role of these systems in the production of specialty oils has been suggested. Enzyme systems, either associated with the intact cell or in isolation, can be used to varying degrees of success in either a free or immobilized form. Particular reference has been made to application of these systems to reactions including specific hydrolysis of triacylglycerols, acylation of glycerol, interesterification of triacylglycerols, wax ester formation and steroid transfromations. Consideration has been given to particular plants and microorganisms as sources of new fats and oils. The major impact of biotechnology on the industry is believed to be associated with the production of high value specialty products including cocoa butter substitutes, biosurfactants, waxes and various prostaglandin derivatives. General consideration has been given to the possible relative importance of plant and microbial systems, engineering and scale-up problems, and overall economics of present biotechnological procedures.

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NEWS

A. ISOPB

ISOPB has drawn up the following tentative programmes for 1986 for its members.

Date	Programme
March 21	Colloquium on Breeding and Selection for Clonal Oil Palms. This forum will involve mainly Malaysian oil palm breeders, tissue-culturists and interested agronomists.
June 21	Recent Advances in Plant and Animal Improvement - Theory and Applications. Prominent speakers are being invited.
October	Quantitative Genetics - Some Theoretical and Applied Considerations. Some competent speakers in this field have been proposed.

In addition to the seminars, visits to the following places have also been proposed.

FRIM (Forest Research Institute of Malaysia)
PUSPATI (Nuclear Research Centre)
MARDI (Malaysian Agricultural Research and Development Institute)
PLANTEK (INTERNATIONAL) Singapore, a biotechnology firm.

ISOPB is also toying with the idea of organising another international workshop, focusing this time on oil palm interspecific hybrids, together with the Annual General Meeting of ISOPB, during the International Oil Palm Conference in 1987 in Kuala Lumpur.

B. SABRAO 5th International Congress

All the Malaysian oil palm breeders were present at the above meeting held in Bangkok in November, 1985. The oil palm crowd dominated the session on plantation crops with Ong, E.C. (Guthrie), Rajanaidu (PORIM) and Soh, A.C. (HRU) presenting papers on oil palm GxE interaction, prospections and ortet selection respectively. Hugh Harris (Papua New Guinea) and Ooi, Swee Chai were also present.

PORIM and Arasu, N.T. were awarded medals by IBPGR during the conference for their roles in plant genetic resources conservation.

The oil palm crowd also dominated International Potash Institutes Colloquium on Nutrition of Tropical Crops which was held in Bangkok at the same time. Hereward Corley, (Unilever) and Adlin Lubis (Marihat), ISOPB members, attended this meeting instead.

C. Palm Oil Disinformation

Below is a sample of the underhand "bad mouthing" that is being mounted, presumably by competing (less competitive?) non-palm oil vegetable oil producers to discredit the palatability and nutritive value of palm oil.

i) "Palm oil by its nautre is not identified as a vegetable oil as soybean oil and it contains 45.1% palmitic acid (twice as much as beef tallow) which is the main cause of atherosclerosis. Also if vegetable oils such as palm oil are excessively taken, they can cause gallstones, brain weakening and muscular atrophy".

--------- Translated from a Korean newspaper advertisement on instant noodles.

ii) "Burger's Link To Cancer, Heart Disease!

..... Howard Johnson's uses palm oil which is worse than beef fat in its cholesterol-promoting ability".

--------- From a Washington newspaper.

People of Iran and some Middle Eastern countries until recently have been led to believe that palm oil is non-edible, and apparently a similar campaign has been conducted in some South American countries. The irony of it is that palm oil has been part of the native diet in some of these countries for ages.

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D. Clonal Performance Update

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The first preliminary results of the first clones from selected adult palms have been published by Guillerme Vallejo Rosero of UNIPALMA S.A. Colombia in Palma (1985) 111 - 117 :-

Clone	FFB(t/ha)	O/B(%)
115E	12.9	23.7
31A	14.3	16.5
54A	14.1	17.7
90A	7.6	12.1
997	9.0	16.6
Elite DxP Control	15.4	18.5
LSD .05	2.8	2.9

These clones from one of the leading tissue culture laboratories have been planted in many parts of the world. Would it not be interesting if the results of these clones planted in other regions are available to observe the environmental and clone x environment interaction effects?.