Newsletter BERITA ISOPB

THE INTERNATIONAL SOCIETY FOR OIL PALM BREEDERS

PERSATUAN AHLI-AHLI PEMBIAK BAIK KELAPA SAWIT ANTARA BANGSA

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EDITORIAL

The increasing commercialisation of genetics and plant breeding nowadays sees some unlikely bed fellows spotted sometimes by the bored at plant breeding, genetics and biotechnology meetings. There are scientists at the frontiers of molecular biology and there are the streetwise in the tortuous paths of patent laws. Outside conference halls, but not for long if the 6th International AIDS conference is a measure, are about as many concerned citizens and activists seeking a say in genetics R & D.

In many countries where commercial plant breeding exists legislation is enacted to deal with one or more of the following :

Variety registration
Seed Certification and Seed Testing
Plant Breeders Rights
Biotechnology Patents

The intentions of such legislation, for plant breeding activities at least, are clear i.e. to ensure farmers and ultimately consumers get good seeds of good varieties and to reward the originators of such good seed and good varieties. Existing plant breeders rights legislation is however increasingly inadequate for the biotechnology now moving at such an astonishing pace. Industrial patent laws are sometimes invoked, provoking confusing overlap between PBR legislation and the latter and much debate centres around the legal interpretation of existing laws and regulations.

Though legislation for oil palm seed as exists in the various producer countries is relatively primitive it is not unlikely that this area will receive increased attention in the future. Indeed the near commercialisation of oil palm clones was to herald enhanced legislation, with laboratories already attempting methods of finger printing clones, but for the occurrence of floral abnormalities. This, however, may only be a temporary delay in the need for further legislation and it behooves oil palm breeders to be aware of plant breeding legislation, both current and proposed, elsewhere in the world.

The Standards and Industrial Research Institute of Malaysia (SIRIM) had recently revised its standards for oil palm seeds for commercial planting. This issue of the ISOPB newsletter reproduces excerpts of the new standards showing the substantial changes since the Malaysian standards were first introduced in 1973.

The broader issues of plant breeders rights and biotechnology patents are also discussed by a reproduction of important sections of the UPOV Convention (as revised up to 1978) and significant aspects of the WIPO criteria for biotechnological patents. DR J.J. Hardon, a noted oil palm breeder and geneticist, familiar with the agriculture of both the developed and developing world gives some of his views on some recent proposals and developments in these areas.

Malaysian Standard MS 157 : 1988

SPECIFICATION FOR OIL PALM SEED FOR COMMERCIAL PLANTING
(FIRST REVISION)

1. Scope

1.1 This Malaysian Standard Specification prescribes the quality requirements for oil palm seed for use in commercial planting.

1.2 Production, storage and packing requirements are also included for oil palm seed.

2. Definitions

2.1 For the purpose of this specification, the following definitions shall apply:

2.1.1 *Oil palm seed.* Seed of *Elaeis guineensis* (D x P) produced under controlled conditions for use solely in commercial planting.

2.1.2 *Heat-treated seed.* Seed having undergone a specific heat-treatment to fully satisfy their pre-germination temperature requirements.

2.1.3 *Germinated seed.* Seed which have been allowed to germinate under suitable conditions to a stage where their radicles and plumules are discernible.

2.1.4 *Batch.* A batch shall comprise all seeds of a group of progenies completing heat treatment in any one day.

2.1.5 *Consignment.* Seed in quantity despatched or received at any one time and covered by a particular contract.

2.1.6 *Moisture content.* The moisture content of sample is the loss in weight when it is dried in accordance to *Appendix E.* It shall be expressed as a percentage of the dry weight basis of sample.

3. Requirements for seed selection

3.1 The requirements for selection of seed material for use in commercial planting are as follows:

3.1.1 Seed may only be taken from selected parent of known pedigree.

3.1.2 Seed for commercial planting shall be D x P seeds produced from crosses between selected dura (female) and pisifera (male) parents under controlled conditions of selection, isolation and pollination as given in *Appendix A.*

3.1.3 Selected parents shall have minimum records of the following as outlined in *Appendix B:*

(a) All the pedigree records must be kept.

(b) Obtained under commercial estate management conditions.

4. Preparation and storage of seed

4.1 After removal from the bunch the fruits shall be stripped off the mesocarp, washed clean and air-dried to a suitable moisture content for storage or heat treatment.

4.2 Fresh seed may be stored at 17% to 20% moisture content in well-ventilated rooms at ambient temperature (for short periods of up to 6 months) or alternatively for longer periods in suitable air-conditioned atmosphere (for example 20 months)

4.3 Seed derived from individual bunches shall be identified and stored separately.

5. Seed quality requiments

5.1 Seed for commercial planting shall comply with the requirements of 5.1.1 or 5.1.2 whichever shall apply, unless otherwise agreed upon between contracting parties.

5.1.1 Heat-treated seed

5.1.1.1 Heat-treated seed shall have undergone the treatment outlined in *Appendix C.*

5.1.1.2 In addition, the seed shall meet the requirements listed in *Table 1*, when tested according to the procedures prescribed in the appropriate appendices.

Table 1. Requirements for heat-treated seed

Factor	Requirement	Test Method
(i) Germination, %, min.	80	Appendix D
(ii) Moisture content, % (dry weight basis)	17 to 20	Appendix E

5.1.1.3 There shall be no discernible indication that germination has proceeded to take place in any batch, or consignment of seed sold as heat-treated seed.

5.1.1.4 The seed shall be free from physical defects, pathological infection and infestation by insects.

5.1.2 Germinated seed

5.1.2.1 Seed sold as germinated seed shall have been treated as described in appendix F.

5.1.2.2 The seed and its germinated

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parts shall be free from physical defects, pathological infection and infestation by insects.

5.1.2.3 The emerged embryo of the germinated seed shall be at a stage where the radicle and plumule have differentiated, but the radicle should not exceed 3 cm in length.

Appendix A

Selection, isolation and pollination

A1. The following are considered to be the minimum necessary measures for the production of D x P seed:

A1.1 The female inflorescence selected from the Dura parents must be located and isolated at least 7 days prior to pollen-receptivity.

A1.2 The selected inflorescence should on locating, be cleaned. Surface sterilization, using an appropriate agent such as 2% absolute formalin, should also be carried out to kill any stray or foreign pollen on or in the vicinity of the inflorescence.

A1.3 The inflorescence, must be properly isolated and protected from foreign pollen contamination before, during and at least 4 weeks after controlled pollination.

A1.4 Precautions and measures should be taken that all equipment used in the controlled pollination procedure are not likely to be contaminated *e.g.* by foreign pollen.

A1.5 Male pisifera inflorescence shall be isolated at least 5 days prior to anthesis, and the pollen collected shall be protected from foreign pollen contamination.

Appendix B

Selection and yield recording of parent stock material

B1. Seed production from plams of proven pedigree

B1.1 Requirements

B1.1.1 D x P or D x T progeny test results of a sample of the parents currently used or similar test results (which may be available elsewhere in Malaysia) of the direct ancestors.

(a) Standards for teneras derived from D x P or D x T progeny test

Fresh fruit bunches (FFB)	> 160 kg/palm/yr
Oil/Bunch (O/B)	> 24%
Kernel/Fruit (K/F)	> 3%

B1.1.2 Standards for Dura parents

Fresh fruit bunches (FFB)	> 160 kg/palm/yr
Mesocarp/Fruit (M/F)	> 60%
Shell/Fruit (S/F)	< 30%
Oil/Dry mesocarp (O/DM)	> 70%

B1.1.3 FFB values for parents may be ignored if the material is inbred. Yield records are to be collected for 4 years starting from 37 months after field planting. Bunch component figures shall be derived from a minimum of five analyses.

B2. Seed production from palms of non-proven pedigree

B2.1 Requirements

B2.1.1 D x P or D x T progeny test results.

(a) Standards for teneras derived from D x P or D x T progeny test.

Fresh fruit bunches (FFB)	> 160 kg/palm/yr
Oil/Bunch (O/B)	> 24%
Kernel/Fruit (K/F)	> 3%

B2.1.2 Standards for Dura parents

Fresh fruit bunches (FFB)	> 160 kg/palm/yr
Mesocarp/Fruit (M/F)	> 60%
Shell/Fruit (S/F)	< 30%
Oil/Dry Mesocarp (O/DM)	> 70%

B2.1.3 Standards for Pisifera parents

B2.1.3.1 The Pisifera parents must be progeny tested.

B2.1.4 FFB values for parents may be ignored if the material is inbred. Yield records are to be collected for 4 years starting from 37 months after field planting. Bunch component figures shall be derived from a minimum of five analyses.

Appendix C

Heat treatment of seed

C1. Seeds for and during heat treatment shall have 17% to 20% moisture content.

C2. Seeds from individual bunches shall be contained in a moisture-proof or tightly closed polythene bag.

C3. Heat-treatment shall be at a temperature of 38°C for a period of forty to sixty days.

C4. Each bag of seed during heat-treatment must be properly labeled for identification.

International Convention for the Protection of New Varieties of Plants, of December 2, 1961

The following 17 States were party to this Convention of January 1, 1987:

Belgium, Denmark, France, Germany (Federal Republic of), Hungary, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, South Africa, Spain, Sweden, Switzerland, United Kingdom, United States of America.

The Convention concluded in Paris in 1961, was revised at Geneva in 1972 and 1978. The Convention, as revised in 1978, may be ratified accepted or approved by any State which has signed it and may be acceded to by any State which has not signed it if the Council of UPOV finds that its laws are in conformity with the Convention. The corresponding instruments must be deposited with the Secretary-General of UPOV.

The Convention establishes a system of international protection to breeders of new plant varieties.

The substantive provisions of the Convention fall into three main categories: national treatment, right of priority, common rules as to substance.

(1) Under the provision on national treatment, the Convention provides that any natural or legal person resident or having his or its registered Office in a contracting State enjoys in all the other contracting States the same treatment - as far as the recognition and protection of the right of the breeder of a new plant variety is concerned - as is accorded by those States to their own nationals, provided that the said person complies with the conditions and formalities imposed on such nationals. However, national treatment may be denied in respect of a genus or species not protected in the State of the foreign breeder (principle of reciprocity).

(2) Under the provisions on the right of priority, any application (the later application) filed in respect of a given new variety in a contracting State claiming that right on the basis of an earlier application (and if there were several applications, the first application) filed in another contracting State in respect of the same variety will be immune to any objection (as to its novelty) on the grounds that another person has filed an application for the protection of, or used, the said variety at any time between the filing of the earlier (first) application and the later application, provided that the later application has been filed not later than within 12 months computed from the date of the filing of the earlier (first) application.

(3) The most important of the common rules as to substance are the following:

(i) Protection may be granted either in the form of a special title (for example, plant variety protection certificate) or a patent, but for the same botanical genus or species only one form of protection may be provided.

(ii) Protection must be granted to the largest possible number of botanical genera and species. The minimum number is live when a State becomes bound by the Convention and must reach at least 24 within eight years. In fact, in most contracting States protection is available for scores or hundreds of genera or species. Their list is published, and the publication is kept up to date whenever protection is extended by any contracting State to genera or species for which hitherto no protection was available.

(iii) The protection consists of recognizing that the breeder's prior authorization is required for doing any of the following three acts in respect of the reproductive or vegetative propagating material: production for the purposes of commercial marketing of that material as such offering for sale and marketing. It is to be noted that the breeder's authorization is not required for the use of his (otherwise) protected variety as an initial source of variation for the purpose of creating other varieties (and for the marketing of the thus created other varieties); in other words, anybody can freely use a new protected variety to create further new varieties. It is to be noted also that, for reasons of public interest, the breeder's exclusive right of authorization may be restricted.

(iv) Protection may be granted to a variety only where it is clearly distinguishable from any other commonly known variety, where it has not yet been commercialized at the date of the application, where it is sufficiently homogeneous, and where it is stable in its essential characteristics. The Convention contains refinements and qualifications in respect of each of those four conditions. Compliance with these conditions must be the subject of an official examination by the competent authority (Plant Breeders Right Office, Patent Office, or the like) of the contracting State Examination, grant or refusal takes place on the basis of the breeder's application - accompanied by samples of the reproductive or propagating material. The applicant may file his first application in any of the contracting States.

(v) The protection must last (provided the owner asks for renewal, where the law requires (annual) renewal) at least 15 years - or, in the case of vines and trees, 18 years - computed from the date of issue of the title of protection (certificate, patent or other).

(vi) Protection is accorded only if the variety has been designated by an appropriate denomination. The denomination, destined to be the generic designation of the variety, must enable the variety to be identified. It must not be misleading. It must be different from pre-existing designations of varieties of the same or related species. Generally, it must be the same in all contracting States. It is registered by the same authority that grants the title of protection.

(vii) The right to protection, and any protection granted in any contracting State in respect of a given variety is independent of the existence, refusal or non-existence of protection in any other contracting State in respect of the said variety.

(viii) The right to protection, and any protection granted, in any contracting State in respect of any given variety is independent of the measures, if any, taken by that State to regulate the production, certification and marketing of seeds and propagating material of that variety.

The Convention provides that the contracting States constitute a "Union for the Protection of New Varieties of Plants." That Union is commonly referred to as "UPOV".

UPOV is an independent intergovernmental organization having legal personality. Its headquarters are in Geneva, Switzerland. It has a secretariat, called "office." The Office is in the same building as are the headquarters of WIPO. Pursuant to an agreement concluded between WIPO and UPOV, the Director General of WIPO is the Secretary-General of UPOV. The Secretary-General directs the Office of UPOV. The governing body of UPOV is called the Council. The Council consists of representatives of the member States of UPOV. There is one representative and one alternate per member State.

WIPO Criteria for Biological Inventions

The World Industrial Property Organisation (WIPO) recognises three categories of inventions

a. Inventions relating to an organism or material per se (products).
b. Inventions relating to a process for the creation of a living organism or the production of other biological material.
c. Inventions relating to the use of an organism or material.

Two basic criteria have to be satisfied for something to be eligible for patent protection. It has to be an "invention" and not a "discovery" and it has to be "non-obvious". Most objective biologists would argue that these criteria alone would make it exceedingly for patent protection. Indeed the European Patent Convention (EPC) of 1973 specifically excluded plant or animal varieties or essentially biological processes for the production of plants or animals. Microbiological processes were however not excluded and the problem is that through modern biotechnolocal methods the dividing line between micro and macrobiological methods has become less well defined.

Patent, plant breeders right and genetic resources

With industrial patents, protection seeks to provide investment incentives often from a viewpoint of national economies and their industrial development. Similar type of legislation for biotechnology and plant breeding and hence food production investments must however consider wider consequences.

The free availability of genetic resources (which according to an FAO definition include wild and weed species, primitive cultivars (land races, obsolete varieties, modern varieties in current use and various special genetic stocks (research material), has been a cornerstone of plant breeding, even when conduted for purely commercial gain. For instance, free availability is upheld without restriction under current Plant Breeding Rights legislation in all countries with such legislation.

This freedom is further emphasised by the FAO Undertaking on Genetic Resources with 86 signatory countries including most of industrial Western Europe. This agreement was itself reached with great difficulty with the appeal that genetic resources should be classified as "heritage of mankind" and be freely available in the interests of further breeding.

In industrial countries with market economies private industry plays a major role in plant breeding and biotechnology. Consequently proprietorship and profit from the results of such activities are major issues. With the increasing interlink between plant breeding and biotechnology a powerful industry is now dissatisfied with the existing restrictions on patenting "living material" and is especially critical of the broad based research exemption of PBR which includes free use of protected varieties for further breeding.

The latter is an explicit stipulation in plant breeders rights legislation (to allow for continued progress in plant breeding) but no such stipulation exists in Industrial in plant legislation. A related issue is when is a manipulated and newly inserted modified gene or character patentable and what the scope of the patent will be. This is an important question given that centres of diversity of cultivated crops are often in developing countries. Any form of patenting which includes (natural) genes or parts there of will seriously undermine the spirit of the FAO agreement.

It is obvious that neither BPR nor Industrial Patent Legislation provides as yet clear guide lines on these matters. Meanwhile decisions are made in courts of law and a variety of patent disputes have erupted.

If a patent is awarded for a genetic manipulation process, this process may be widely applicable. Claims normally include all plants and tissue produced by such methods and all biological material (bacterial strains, plasmids and vectors) useful for execution of this invention. It is assumed that such a process patent will not extend to subsequent generations of the transformed organism, which may hence be used for further breeding without restrictions. If awarded such a patent may cover subsequent generations and derived cultivars. The inability of the product patent holder or subsequent user to selectively remove the responsible gene from the rest of the genome means that the whole genotype is not directly available for further breeding. Clearly PBR and patent protection overlap.

To avoid such an overlap a patent claim may contain a disclaimer specifically excluding certain uses. The pressure from industry not to accept such restrictions is formidable and appears to have an affect on the rulings of both the US Board of Patent and Trademark and the European Patent Office. Similar bias appears in European Consission directives and various WIPO reports.

An extreme example of far reaching consequences of a product patent is already by the Hibbard case in the U. S. It concerns a specific character (a gene coding for high level of tryptophane) and covers all plants containing this character and consequently prevent others using such plants for further breeding. In fact, as formulated the patent may cover any cultivar with an "excess" of the protein irrespective of the genes involved.

The Paris Convention for the protection of Industrial Property allows member countries to exclude certain technological fields from protection. Many nations make use of this facility mainly in areas affecting basic human needs such as methods of treatment of human and animal body, animal and plant varieties, food products, biological processes. These reservations are however under serious criticism. The US has proposed an Intellectual Property Agreement on the basis of GATT specifically mentioning biotechnology.

2. Congress

Unlike previous Eucarpia congresses which were usually held in June/July the 12th Congress was held in February since European plant breeders are fully occupied during the summer growing season. The theme of the 12th Congress was "Science for Plant Breeding".

A total of 1206 participants from 49 countries attended, about 50% of them being plant breeding, 25% from natural sciences, about 10% from other agricultural disciplines, about 10% from administrative and economic disciplines and 5% from other professions (*e.g.*exhibiting industry *etc.*)

The Congress programme presented two main activities eight scientific symposia and poster demonstrations. Each symposium consisted of 4 *review* lectures chaired by a German scientist and a foreign cochairman. There was a field visit on the last day of the Congress.

3. Symposia

The list of papers and speakers at each of the eight symposia is given in *Appendix I.* Letters in parenthesis indicate concurrent symposia and as happens participants moved to and from between halls whenever papers of interest to them were in the other symposium.

Abstracts of papers which I felt would be of particular interest to oil palm scientists are given in *Appendix II.*

4. Poster Demonstrations

There were 432 posters presented, divided into 34 groups based on crop species or subject matter *Appendix II.* The paper from PORIM for example was the first paper presented in group 15 - Industry Crop Breeding. Abstracts from posters were published in a two volume Book of Poster Abstracts.

5. Field Visits

Participants had a choice of four places to visit:

a. Kleinwanzlebener Saatzucht (KWS) Einbeck - a private plant breeding company specialising in European cereal crops

b. Federal Institute of Agronomy and Plant Breeding (FAL), Braunschweig - to visit their gene banks

c. Institute of Applied Genetics, Faculty of Horticulture, University Hannover (genetic research)

d. Federal Office of Plant Varieties (Bundessortenamt), Hannover to see variety testing.

Marker-based selection for quantitative traits

C.W. Stuber

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ABSTRACT

Effective utilization of marker-based procedures for manipulating and improving quantitative traits requires detailed knowledge of the inheritance of these traits. Mapped genetic markers (such as isozyme loci and RFLPs) now pro-

vide the plant breeder/geneticist with a powerful tool for developing a better understanding of the genetic bases underlying quantitative trait variation. Recent evidence in maize shows that these markers also should be useful for manipulating these complexly inherited traits. In several plant taxa, extensive sets of mapped molecular loci have been compiled and documented. Significant associations of these marker loci with quantitatively inherited traits have been demonstrated in several different plant populations. Extensive marker-facilitated studies in maize have shown that isozyme and RFLP markers were effective for identifying and locating quantitative trait loci (QTLs). For most of the maize traits studied, QTLs were distributed throughout the genome, and magnitudes of the effects associated with individual QTLs varied greatly.

Lines versus hybrids. - The choice of the optimum type of variety. Contribution of quantitative genetics and selection theory.

A. Gallais

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ABSTRACT

The choice between lines and hybrids depends on the genetic basis of heterosis. Due to dominance, it will be theoretically possible to develop lines as good as or better than hybrids. With a significant contribution of overdominance, the best variety will always be a hybrid. From the point of view of the breeder, several experimental studies tend to show that the role of overdominance would be minor in comparison to the role of dominance. Assuming this situation it is shown that in self-fertilized species like wheat, it is possible to derive, in short term, lines better than hybrids. This appears quite impossible for a species with strong inbreeding depression, like maize. The consideration through selection theory and simulation studies of the effect of recurrent selection for varietal ability does not change fundamentally the conclusion. Recurrent selection adapted for each type of variety leads to a genetic advance greater for lines than for hybrids. So with a strong inbreeding depression the difference between hybrids and lines will decrease but it will always be difficult to derive lines better than hybrids. However , it is clear that at a long term, it would be possible to derive lines close to the best hybrids. Some consequences for the improvement of combining ability are discussed.

Genomic Genetics in Plant Breeding.

Jacques S. Beckmann and Morris Soller +*

ABSTRACT

It seems fair to state that genomic genetics offers the promise of becoming an intrinsic component of modern breeding methodologies. It is the ability to generate complete genetic maps that contains within it the capacity to evaluate the entire genome (hence the term 'genomic genetics'), to dissect complex genetic traits into their individual Mendelian entities, and to channel all this information into breeding programs that renders marker-based methodologies so powerful. The progress to date will be reviewed and the limitations outlined.

Mapping techniques can yet be further refined. Wehrhahn and Allard (1965) presented an elegant design for the genetic analysis of quantitative trait differences between two inbred lines, based on repeated backcrosses followed by selfing. This design turns out to have remarkable qualities both for the identification and evaluation of single Economic Trait Loci (ETL), and for precise ordering of loci on the chromosome map. This will enable markers to be placed within realistic "chromosome" walking distances of the ETL, allowing for the molecular cloning of these loci by means of reverse genetics.

Thus, genomic markers, besides serving as specific "tags" to monitor for the presence of ETL in breeding programs, can also serve as reference points towards the cloning of genes of interest. In this way, genomic genetics can provide a solution to two seemingly unrelated problems: the molecular cloning of genes of agricultural interest, and the more effective utilization, by classical breeding techniques, of existing genetic variation within a species.

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Facets of the Barley Genome

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ABSTRACT

Following a brief overview of the components of the nuclear genome of barley, the present state of map construction and knowledge of gene loci structure are highlighted with selected examples. Thereafter, the complementation groups available for exploring other facets of the genome are surveyed and a compilation of the genes already cloned presented. Interlaced among these items is a comprehensive review of the multifunctional gene *cercqu*. This has been done to illustrate the type of knowledge necessary for dissecting, isolating and understanding other genes - necessary prerequisites if our goal is to manipulate the barley genome.

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SOCIETY NEWS: INTERNATIONAL SOCIETY FOR OIL PALM BREEDERS (ISOPB) GENERAL MEETING ON 9TH SEPTEMBER, 1989

1. President's Report

It gives me great pleasure to submit this report to the members. Though our Society was only registered recently, it has been extremely active for the past five years due to the cooperation of ISOPB Executive Committee and the members. The Society was registered on 11th October 1983 and the registration number is 171/82. During my tenure as the President, the Society carried out a number of projects which are listed below:-

1.1 Workshop, seminars, colloquium and courses

a) International Workshop on "Oil Palm Germplasm and Utilization".

Organised by the ISOPB, PORIM and the International Board for Plant Genetic Resources (IBPGR) on 25 - 27 March 1985.

The Workshop was declared open by YB Minister of Primary Industries, Malaysia. Sixty six participants attended the Workshop, three of whom were sponsored by the IBPGR while one guest speaker by the British Council.

b) Colloquium on "Breeding and Selection for clonal oil palms".

It was held on 21 March 1986 and chaired by Mr. B. J. Wood.

About 70 participants attended the meeting.

c) Seminar on "Recent Advances in Plant and Animal Improvement" by Prof. Ho Coy Choke, Prof. Yap Thoo Chai and Prof. T.K. Mukerjee on 21.6.1986.

d) Seminar on "Prospects of F1 hybrids - *Elaeis oleifera Elaeis guineensis*" on 27.6.1987.

e) Workshop on "Progress in Oil Palm Breeding Populations" in November 1988 in Indonesia with the cooperation of Marihat Research Station.

f) Symposium on "Application of Statistics to Perennial Tree Crops Research" 8 - 9 Sept 1989.

g) Course on "Application of Statistics to Perennial Crop Experiments" 11 - 15 Sept 1989.

1.2 Publication of proceedings

ISOPB and PORIM have jointly published a number of proceedings of workshops, symposium and colloquia. They are:-

a) Proceeding of "Oil palm germplasm and utilization" in 1986.

b) Colloquium on "Breeding and Selection for clonal oil palm"in 1987.

c) Seminar on "Prospects of F1 hybrids - *Elaeis oleifera x E. guineensis*" in 1989.

d) Workshop on "Progress in oil palm breeding populations" (in press).

1.3 Visits

ISOPB organised the following visits to acquaint members to recent developments in oil palm breeding. They are:-

a) Visit to PAMOL, Kluang and Plantek, Singapore.

b) Visit to PPP Tun Razak, Sg. Tekam, Pahang. (Felda Research Station).

c) Visit to Bah Lias Research Station, Marihat Research Station, Socfindo and RISPA, Indonesia.

1.4 ISOPB Newsletter

Since July 1984 till December 1988, 18 issues of the ISOPB Newsletter had been published and distributed to the members.

1.5 Honorary Member

Mr. C.W.S. Hartley was invited to be the Honorary Member of ISOPB for the contribution he had made to oil palm breeding and he has accepted the invitation with thanks.

It is proposed that Mr. E.A. Rosenquist and Tan Sri Dr. Anuwar Mahmud be appointed as honorary members also in recognition of their contributions to oil palm breeding and the ISOPB.

1.6 Membership

Until end of 1988, the membership of ISOPB was 66. In future, the Society has to strive harder to increase the number of members. (editor's note: membership to June 1990 was 90).

2. Office bearers for the term 1989 - 1991

President	: Dato' Dr. Hj. Abdul Halim Hassan, Director General, PORIM.
Vice-President	: Prof. Dr. Jalani Sukaimi, PORIM
Secretary	: Dr. N. Rajanaidu, PORIM.
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