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 the previous issue of this Newletter, the subject of consumer protection for the oil palm seed buyer cum grower was highlighted. In this issue we should perhaps look at the other side of the coin i.e. variety protection and plant breeders'rights. Commercial oil palm seed is a hybrid seed which explains why the bulk of the seeds produced is in the hands of private companies. If not for the advent of clonal propagation perhaps there would not be even the need to discuss this subject as the private companies possess the built-in biological protection in having the exclusive control of the parental lines of the hybrids. Now that oil palm clones are fast coming into the commercial scene, it may be useful at this juncture to deliberate a bit on this issue of variety protection and breeders' rights with respect to oil palm.

We have been postponing bringing up this issue in the Newsletter with the fervent hope of receiving an article on this subject from Jaap Hardon. He is perhaps the most qualified person to talk on this subject, as he was very actively involved in reviewing the role of variety protection and breeders' rights in Dutch agriculture as part of his job in the Dutch Agricultural Directorate. He is of course very conversant with oil palm breeding and its progress. Perhaps we may be fortunate enough to receive his article in the near future, and in the meanwhile let us deliberate a bit on this subject and study the elements of the systems as practised in some countries.

FEATURE ARTICLE

Plant Variety Protection and Breeders' Rights.

Variety Protection Methods

1. Through Built-In Biological Control

As mentioned earlier, this is the classical situation of hybrid seeds, i.e hybrid corn and also applicable to oil palm. As long as the component parental lines are in the hands of the company or breeder, protection is guaranteed and it is very difficult and time-consuming if not impossible to isolate component lines identical to the original by selection from advanced generations of the hybrid progeny. The method is not foolproof as "pirating", legitimately or otherwise, of the component lines can occur.

2. Through Statutory Provision

a. Plant Patents

Patents generally are of two types; process patents and product patents. Plant patents fall in the latter category; protecting the product of the breeder i.e. the variety. Plant patents have been granted in the U.S.A., France, West Germany, Italy, Belgium and Luxembourg, but have apparently now been superceded by plant breeders'rights. However in 1985 the U.S Board of Patent Appeals and Interferences declared that seeds, plants and plant tissue cultures can be protected by-product patents under the utility patent laws.

b. Trademarks

Trademark is the name or other designation registered and used by a manufacture or merchant to designate the goods he manufactures or sells and to distinguish them from goods manufactured and sold by others. The

commonly accepted name of a product may not serve as a trademark, a trademark may be used by its owner for more than one product at a time, and the owner may change the properties of the product bearing the trademark at any time.

Trademarks are being used in oil palm as exemplarized by the trademarks. i.e. HRU DxP germinated oil palm seeds, used in the Malaysian SIRIM certification and licensing scheme. Trademarks are registered under provisions of a statute and its violations i.e fraudulent or pirate trademarks are liable for prosecution. False trademarks on illegitimate seeds have occured in oil palm.

c. Plant Variety Protection and Breeders' Rights

Most plant variety plant protection acts have the following basic provisions.

- Voluntary participation.
- Granting of rights to be based on royalty.
- No requirement for official performance.
- Defence of breeders rights granted shall be the responsibility of the owner of such rights.
- The system will not interfere with the release and distribution of information and plant material.

Perhaps the first landmark in this area of variety protection was the convention of Paris 1957-1961 where a set of guidelines were drawn up for member states to develop reasonably uniform laws for variety protection.

The convention of Paris was ratified by U.K. in 1965, the Netherlands in 1967 and West Germany in 1968.

Plant Variety and Seeds Act, 1964 (U.K)

The Act had three major provisions. The first is the granting of Plant Breeders' Rights where the breeder or discoverer of a new variety is given the exclusive right for 15-25 years to control by licence the reproduction and sale of seed or vegetative reproduction material of his variety. Plant Breeders' Rights can be granted only to a variety which is new or not previously commercialised and which is shown to be distinct, uniform and stable by variety trials to be conducted by the Plant Variety Rights' Office. Marketing can take place while a variety is under trial or some provisional protection given. The Rights are exercisable in U.K only, and in other countries, a separate grant of rights is required but residents of other countries can apply for the Rights in U.K.

A second provision of the Plant Variety and Seeds Act is the compilation of an Index of Names of Plant Varieties by the Agricultural Departments. The Index is a list of names of distinct varieties, seed of which is used commercially in U.K. Potatoes but no other vegetatively reproduced plants are included. Once the variety has been included in the Index seeds of the variety may be sold only by its variety name. The name of any new variety must be approved and recorded in the Index, after a satisfactory trial for distinctiveness, before seed can be sold in U.K.

The third provision of the Act requires that all new varieties of crops subject to indexing be submitted for Statutory Performance Trials. Normally these trials are carried out for two successive growing seasons. The purpose of the trials is to provide growers with unbiased information or performance of a new variety before it is marketed. Superior merit in these trials is not a prerequisite for variety release.

Normally breeders apply simultaneously for inclusion on the Index and for grant of Rights but the Rights can operate independently of the Index and Statutory Performance Trials and vice-versa.

Variety recommendations in U.K are based on three years of voluntary trials conducted separately by the National Institute of Agricultural Botany and the agricultural colleges. For varieties subject to Statutory Trials this period can be shortened. Other than this the voluntary system of variety recommendation is not affected by the Breeders' Rights legislation.

Plant Variety Protection (PVP) Act of U.S.A

This Act was established as Federal law in 1970. The following is a brief summary of the PVP Act.

1. Applicability: Sexually reproduced pure line varieties can be protected. Hybrids cannot be protected, although inbred parents of hybrids can be protected.

2. Protection period: 18 years.

3. Protection: The law prevents others engaged in the seed business from selling seed of a protected variety without permission of the variety owner(s). A farmer can save and plant his own seed of a protected variety and an exemption permits a farmer to sell seed of a protected variety directly to other producing farmers without assistance of a third party to arrange the sale if such sale complies with all applicable state laws.

4. Basis of protection: A protected variety must meet the following criteria.

   Novelty - Clearly distinct by one or more characteristics from all prior varieties of public knowledge.

   Stability - Sexually reproducible with a reasonable degree of reliability that it will retain its essential and destructive characteristics.

   Uniformity - Variants are describable, predictable and commercially acceptable.

5. Variety description: A technical variety description must be submitted by the applicant. This description can be used to ensure seed buyers are receiving correctly labelled product, a means of consumer protection.

6. Reciprocity: Nationals of other countries which are members of the Union for the Protection of Plant Varieties (UPOV) are afforded the same rights under the PVP Act as U.S citizens. Nationals of a country which has a law similar to the PVP Act but which is not a member of the UPOV are afforded rights under the PVP Act to the same extent as citizens, companies and institutions of U.S.

7. Research Exemption: The use and reproduction of protected varieties for plant, breeding or other bona fide research is not an infringement of the rights of the owner of the variety.

8. Seed Sample: 2,500 viable seeds are submitted to the PVP office with the application for protection and are maintained in the National Seed Storage Laboratory in Fort Collins, Colorado.

9. Protection Fee: US$2,000

10. Labelling: Protected varieties should be labelled to show their protected status.

11. Public Interest: The Secretary of Agriculture may declare a protected variety available to the public at a reasonable royalty if it is necessary to ensure an adequate supply of food, feed or fibre.

12. Seed Certification: The variety owner has the option to have a protected variety sold by variety name only as a class of certified seed under Title V of the Federal Seed Act.

The variety protection acts of The Netherlands and W. Germany are basically similar to the above.

Variety Protection in Oil Palm?

Do we need an equivalent of breeders' rights or variety protection act for the oil palm? As much of the worlds' oil palm seed production is in the hands of commercial companies, and that it is rather time consuming and costly to bring any new oil palm "variety" into the market, commercial breeders especially those with large collections of germplasm or breeding materials would favour protection. Perhaps for DxP hybrids there is no necessity as there is built-in biological protection. What about protecting the parental lines of the DxP hybrid? What about parental lines of varieties developed by public institutions?

For variety protection, each variety must have distinctive characteristics. Unfortunately in oil palm this is rather difficult. Except for a few organisations whose materials have more distinctive characteristics because they are derived from a small number of more inbred parents, the bulk of the seeds produced are more heterogeneous because a wide genetic range of duras and pisifera parents are being used. Breeders in the latter category would perhaps argue against introduction of the act, which will result in planting a few varieties of narrow genetic base which is agronomically undesirable.

In the light of the above, discussions on variety protection for oil palm seeds have never been serious. However this is not necessarily the case with oil palm clones. Firstly good oil palm clones are costly to develop. Secondly clones are supposed to have uniform characteristics for distinguishing purposes. Lastly, oil palm clones are potentially big business with big profits. Nevertheless there are also difficulties in setting up a protection system for clones:

1. How stable and uniform are clones, especially when they have been continously multiplied? Recent evidence has contradicted the earlier pronouncement of the stability and uniformity of oil palm clones.

2. Most of the clones have been derived from rather related DxP materials. As such it may not be easy to distinguish different clones derived from the same DxP source even using enzyme or molecular markers.

3. The statutory evaluation process may be long which will hinder commercialisation. The tissue culture process in oil palm is still an inefficient process and it is very costly to maintain a large stock of clones in culture needing continuous subculturing while awaiting the results of the evaluation, and it takes quite some time to build up large stocks of cultures of proven clones for commercial sales.

4. Seeds farmers are allowed to multiply seeds of protected varieties for their own use. Similarly for rubber and cocoa in Malaysia, plantation owners can multiply clones for their own use. The problem is that some "plantation owners" are large agency houses which not only own plantations but manage others as well and for this purpose regard the latter as their own. As such breeders can sell their clones only once to each client and thus will not derive equitable returns to their clone development effort.

A tissue culture laboratory tried to prevent this by including in their material supply contract an agreement with the purchaser that the latter would not multiply the clone on his own for the next 20 years or so.

The subject of variety protection in the oil palm is rather controversial and has far reaching implications, some of which may have eluded the writer. Nevertheless, it is hoped that enough controversy has been raised for some readers to come forward with their thoughts and stand if any.

Editor

B. URUBU RIVER EXPERIMENTAL STATION - URES

ESTACAO EXPERIMENTAL DO RIO URUBU - EERU

Manaus, Brazil

The Urubu River Experimental Station is located at (2°30'S and 59°25 N) on the right side of the Urubu river, a tributary of the Amazon River, 140 km from Manaus, the capital of Amazon State, and 110 km from the headquarters of the Rubber Tree and Oil Palm National Research Center of EMBRAPA.

The station was established in 1980 as the physical base for breeding and seed production programmes.

The table below shows the present situation of our activities at this station, mainly those related with breeding trials, seed production, and germplasm conservation and evaluation.

Area and year of planting of the genetic material existing at the URES (EMBRAPA-CNPSD). JANUARY 1986

Type of material	Area planted per year (ha)			
	84	85	86*	87*
Breeding - *E. guineensis*	15	38	30	51
- *E. oleifera*	-	10	-	-
- Hybrids	-	9	-	-
Agronomy	25	-	-	15
Seed production - Tenera	-	3	2	10
- Dura	6	20	15	25
Germplasm collection - *E. guineensis*	7	5	1	4
- *E. oleifera*	4	10	-	1
Total	58	95	48	110

* Forecast

The planted materials are mainly from IRHO, since EMBRAPA has an agreement for technical cooperation with the Institute. On the other hand, we have also introduced genetic materials from Unilever (two clones: UF 6 and UF 4), Harrisons and Crossfield (PNG), United Fruit Company (Costa Rica), Plantations Lever (Zaire and Cameroon), to established DxP trials as well as some breeding lines (DxD, TxP and TxT) for seed production.

With regards to the germplasm collection, EMBRAPA has prospected oleifera areas in the Amazon region and collected a very high variable E. oleifera germplasm. At the URES we planted almost 200 lines prospected in 60 natural groves of the Amazon. In addition, we have received genetic materials of Elaeis guineensis, collected in various countries of Africa (Nigeria, Zaire Ivory Coast, Cameroon).

Our staff at the station is presently formed by the following officers:

1. Marcio de Miranda Santos - Agronomist breeder - M.Sc.

2. Edson Barcelos da Silva - Agronomist breeder - M.Sc.

3. Leoncio Gonsalves Dutra - Agronomist Agronomy - Ph.D.

4. Luis Pedro Barrueto Cid - Physiologist. Tissue Culture - M.Sc.

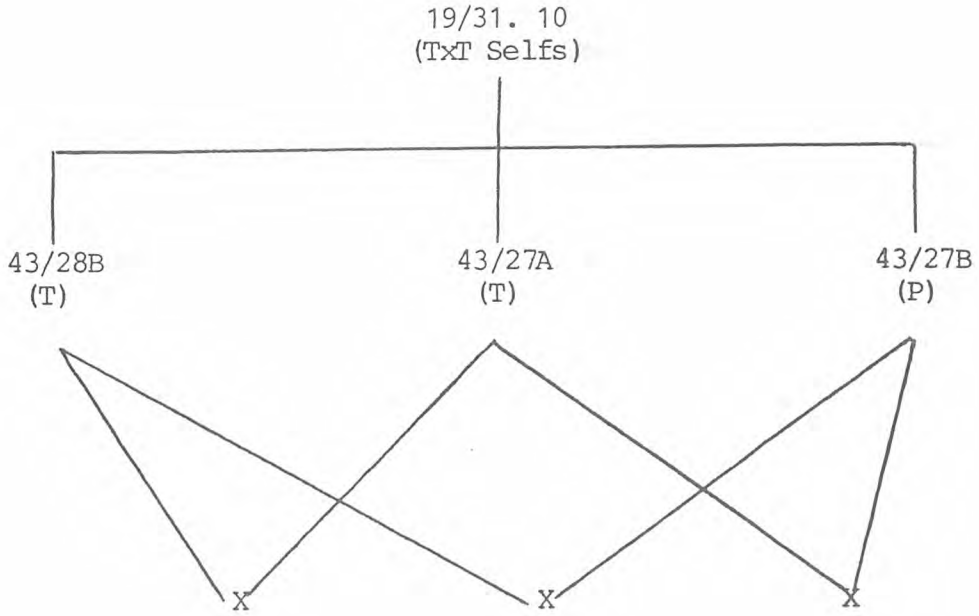
5. Philipp e Amblard - Agronomist breeder - B.Sc.

6. Joaquim Gregorio de Oliveira - Agronomist manager - B.Sc.

Marcio de Mirando Santos
EMBRAPA

C. Pedigree and Sibs of 43/27B i.e. S27B

The fertile Pisifera palm 43/27B is derived from palm 31.10 (Tenera) selfed in Field 19 FES Serdang. Selfs and sibs of 43/27B were carried out in 1968. However, probably due to poor germination rate only sibs are available. Palm 43/27B and progenies S.1421, S. 1209 are standing at FES Serdang.



Progeny	:	S. 1421	S. 1209	S. 1409
Trial No	:	0. 145	0. 143	0. 143
Planted	:	April 1972	June 1972	June 1972

Footnote:

Pisifera S27B was featured in the early breeding programmes of Chemara, H&C, Dept. of Agric, Felda and HRU.

With the discovery of DxP materials for commercial planting, S27B which was the only source of pisifera then, its pollen were treated like gold.

Ahmad Kushairi Din
Rajanaidu N.
PORIM

I. Genetic/Biotechnology News Update

A. Remember the opening gambit of Hereward Corley when delivering his paper on early clonal oil palm performance during the 1981 International Oil Palm Conference? He demonstrated in pictures and words that he did not create monsters out of his tissue culture lab but perfectly normal oil palms. With the explosion of genetic engineering research on crops, livestock and microbes currently going on, and the release or near release of some of the products such as the "ice minus" strain of Pseudomonas syringae which prevents frost damage on treated tomato plants, Pseudomonas fluorescens, possessing the gene of Bacillus thuringensis, and thus able to attack soil borne pests, and herbicide resistant soybean; concerned activists and environmentalist are voicing fears of the release of these 'monsters' or 'genies' and wreaking havoc to the environment endangering human, animal and plant life. Some even went to the extreme of advocating stopping such research because it interferes with God's or Nature's way while the more enlightened critics advocate controlled release of such products.

Genetic engineers have some arguments to their favour. Firstly, Man since the dawn of civilization and agriculture has been manipulating plants, animals and the environment to his favour; and the tools employed i.e conventional plant and animal breeding, are even less precise than current genetic engineering techniques. Secondly, the engineered organism is generally unlikely to persist in the wild because it is less competitive than the natural inhabitants. Thirdly, some of novel genetic manipulations used are not that novel but also occur in nature such as genetic transformations in bacteria and viruses. Lastly, genetic engineers have shown themselves to be very responsible in that very early in the development of the recombinant DNA (rDNA) research, they voluntarily called a moratorium on potentially hazardous rDNA research and drew up strict control guidelines for others. Since then they found that their fears were unfounded.

Nevertheless critics have also pointed out the failures of introducing foreign organisms, such as the prickly pear introduction to

Texas and Florida from Australia, which destroyed the natural pastures. Then there is always the possibility, although an engineered organism may not survive in the wild, the gene concerned may be transferred to an organism which can survive.

So it looks like the debate, which has been going on will continue and regulatory controls will be a definite feature. Hopefully the controls would be not so stringent so as to stifle progress, and the control will be on the product rather than the process.

(Editor: For those interested in this debate refer Oct. 24 and Nov. 14 1985 issues of New Scientist).

B. A "new" twist to conventional tissue culture or organ culture perhaps has been devised by a Lousiana State University scientist, who can grow root culture indefinitely which will produce secondary metabolites useful as drugs. By inoculating the roots of the plant henbane which produces alkaloids such as hyoscyamine and scopolamine (used in sedatives and sea-sickness medication) with Agrobacterium rhizogenes, the roots proliferate exhibiting the "hairy root" disease. Such roots will further proliferate upon subculture, and a potential industrial production of the drugs is thus possible (extracted from New Scientist 14 Nov. 1985).

C. Herbicide Resistant Plants

Glyophosphate ('Round-Up' locally) is an effective and popular herbicide which unfortunately kills crops besides the weeds. It acts by inhibiting the enzyme EPST synthethase thus blocking the synthesis of the essential aminoacids, phenylalamine and tryptophane. Scientists at CALGENE in Davis, California have succeeded in transfering the aroA gene, which produce an enzyme which binds loosely with glyphosphate, from Salmonella to Agrobacterium rhizogenes which was then used to infect cultured tobacco cells. Transformed cells were obtained which subsequently gave rise to resistant plants.

(Extracted from New Scientist 19/26 December 1985)

D. DNA Fingerprinting

Forensic scientists have a new and foolproof tool in pinpointing source of semen and blood stains useful in rape, murder and paternity investigations. A scientist at University of Leicester found sequences of minisatellites in the DNA unique to individuals and have constructed radioactive DNA probes which when used on a persons DNA (RE) preparation will produce a unique banding pattern on X-ray after gel electrophoresis. As the banding pattern are simply inherited, this technique is being used by the British Home Office to check paternity claims for immigration.

On a similar topic closer to "home" i.e oil palm, a British biotechnological firm is offering its services to oil palm tissue culture laboratories to develop a DNA fingerprinting technique to 'protect' their clones as a patent. One method, similar to the above is to compare the banding pattern of a test clone against that of the standard clone, and then determine the probability that the two clones are identical. A probability of error in judgement of less than 1 in 10^{15} for eukaryotes and 1 in 10^{60} for prokaryotes has been claimed.

Another approach is to 'brand' ones' clone by tagging secret unique DNA sequence into the gene, which can be ascertained by a DNA probe.

Any takers? How about ...TATA...TATA...TATA or GAGA...GAGA...GAGA?

II. People

John Eeuwens Unifield Tissue Culture Lab's R&D Manager and formerly of Wye College spent about a month conducting some experiments in Bakasawit Lab and at the same time visited other Tissue Culture laboratories in Malaysia.

Avril Brackpool, formerly of Wye College, and currently with Twyford Plant Lab, has been quietly for 2-3 months in Malaysia setting up a T.C lab in association with Malayan Tobacco Company, a subsidiary of British-American Tobacco Company. No doubt oil palm is a high priority candidate for her tissue culture efforts.

Many of us have been using terelene pollination bags from Duraweld Co of U.K. for umpteen years without any inkling of the company supplying it. It is actually a stationery supply company and the boss's wife, Joanna Senior, suddenly recognised that the supply of pollination bags, particularly to the oil palm boys has been a steady line of side business which could be develop further. Like us she had no inkling of what we did with her bags and decided to fly out east to visit us. Now she knows.

III. Conferences

a) International Oil Palm Conference; 1986 (Nigeria)/ Nov. 9-15, 1986. International Airport Hotel, Port Harcount, Revins State Nigeria.

b) International Oil Palm Conference (ISP/PORIM) June 23 - July 1, 1987. Kuala Lumpur; Malaysia.

c) Malaysian National SABRAO Symposium on Plant and Animal Breeding. November 11-13, Universiti Kebangsaan Malaysia Bangi, Malaysia.