AA RESEARCH NEWS

May '92

Editorial

Sometime in the early 70's, the Malaysian Government slapped a ban of the export of oil palm seeds of any form i.e. commercial or genetic materials. The rationale then was to ensure enough planting materials to support the rapidly expanding oil palm industry. This was understandable. Since then, with the expanded seed production capabilities of existing groups and the establishment of new groups, there has been more than enough seeds for the local Industry except for intermittent periods of chronic shortages brought about by speculatory demands. Despite repeated approaches by seed-producers the Government has not been prepared to rescind the Act. This time, the prevailing argument is that Malaysia has the best planting and breeding materials. As such they should not be made available to others so as to enable them to become our competitors.

As the ensuing report on the ISOPB (International Society of Oil Palm Breeders) Seminar in Phuket will reveal this argument cannot be more wrong. Our oil palm breeding materials were derived from a small sample of genetic materials obtained from the breeding programmes of Indonesia and West Africa. As such these countries will not only have the same good genetic materials as we have but also wider source of potentially better materials for them to make further breeding progress! Breeding progress is founded on availability of genetic variability. In fact, many countries besides Indonesia and W. Africa eg. Papua New Guinea, Costa Rica already can produce materials equivalent to our best planting materials. Continuation of the ban or discouragement on genetic material exchange will only lead to the detriment of the Industry in Malaysia.

Malaysia has often prided itself on its good agroecological conditions and management skills for high oil palm yields. Again as evident from the ensuing report, many countries have also the agroecological conditions for high oil palm yields and will soon catch up with us in management skills. To remain ahead, Malaysia must invest more in breeding and agronomic research. Lifting the ban will allow seed companies to derive more revenue from external seed sales and channel them to breeding and agronomic research. It will also allow companies to acquire more genetic materials for further breeding progress and concommitant agronomic progress.

Soh, A.C.

HIGHLIGHTS on ISOP International Workshop on Yield Potential in the Oil Palm

(held on 29-30th October, 1990 in Phuket, Thailand)

INTRODUCTION

The International Society of Oil Palm Breeders (ISOPB) headquartered in Malaysia has held regularly symposia in Malaysia on various aspects on oil palm breeding. Lately with a number of countries particularly Indonesia and Thailand coming strongly into palm oil production, ISOPB began to hold symposia in other countries as well. The aims are firstly to attract more active participation from foreign members being an international society and secondly to study the breeding programmes of these countries and their agroecological and management conditions.

The first foreign based symposium was in Sumatra in 1988. This second meeting was appropriately held in S. Thailand, which is the centre of oil palm development in Thailand and was followed by visits to oil palm research stations and plantations. The meeting attracted a number of agronomists besides the breeders. AAR's breeder and two agronomists attended the meeting.

The full and informative proceedings of the meeting and field visits are available. This report highlights some of the relevant points from the presentations and observations.

HIGHLIGHTS

- ISOPB INTERNATIONAL WORKSHOP p1-6
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- GENERAL NEWS - IN-HOUSE p6-8

A. PLANT BREEDING

YIeld Potential of Breeding Materials

This session concentrated on the achievable yield potentials of various planting materials.

Indonesia

There are four established plant breeding stations in Sumatra producing oil palm seeds.

RISPA reported that Dumpy DxP (SP 540) was as capable as Deli DxP (SP 540) in achieving yields of 30 t/ha. FFB and 7.2 t/ha. oil but were 20-30% shorter.

Table 1 shows the average yield potential of existing materials produced by Marihat with their different pisifera sources while Table 2 would illustrate the potential of the next generation of improved seeds and Table 3, the average yield potential of the prospective clonal seeds i.e. produced from clones of parents of the best cross,and probably also the average of the prospective commercial clones.

Indonesia as evident is capable of achieving high oil palm yields, and with their large genetic base and breeding programmes, higher yields can be further realised.

Malaysia

Felda

From their evaluation of various DxP/T progenies of Yangambi (Yb), La Me (LM), AVROS (Av), NIFOR (NF) and fertile pisifera (FP) in Sg. Tekam, Pahang they reported:-

+ Average FFB yield = 22-24 t/ha/yr
  Best progenies ' FFB yield = 25-27 t/ha/yr
  . Oil extraction = 27.6-32.1%
+ DxP (FP) had lowest oil yield of 4.38 t/ha because of thicker shells and bigger kernels and hence lower extrac tion or oil to bunch (O/B = 21.4%)
+ DxP of NF(28.5%), Yb(27.6%) and Av (26.0%) gave better O/B than LM (25.0%) and consequently oil yields of 5.39, 5.28, 5.29 and 5.17 t/ha respectively.
+ DxP LM and Yb had lower height increments of 0.52 and 0.53 cm/yr as compared to Av (0.69), NF(0.62) and FP (0.57)
+ DxP LM gave the highest iodine value (percent unsatur ated oil) of 54% as compared to 49-52% for the others.

Although the comparisons were not strictly fair as not the same duras were used throughout, nevertheless they serve as indications.

Golden Hope

The yield potential of Golden Hope's DxP i.e. Deli DxP (AVROS or BM119) will be discussed in the Agronomy Section.

It is interesting to note that they reported their Deli D x P (Dumpy AVROS) was as high oil yielding as Deli DxP (AVROS) i.e. 8.6 vs 8.9 t/ha with a slightly shorter trunk on average. GH's Dumpy-AVROS pisifera differs from AAR/HRU Dumpy-AVROS pisifera in that the former has SP29/36 while the latter, SP27B, in their lineage and that in the former crossing to AVROS was only once while it was twice in the latter. AAR's Deli D x P Dumpy AVROS is also comparable to Deli D x P AVROS in oil yield ability but has a 20% height reduction. Selected pisiferas of GH's Dumpy-AVROS are used in the DxP seeds for their own use and they also intend to clone the parents of the outstanding progenies for biclonal seed production.

Breeding Materials			
Organisation	Dura source	Pisifera source	Commercial seed production
RISPA	Marihat Deli Bogor Deli Dumpy Deli	SP540 SP540xPol. 3184 (=BM119 of Golden Hope) SP540xPol.	3-5 million (1/2 are Dumpy dura based)
Marihat	Marihat Deli Bah Jambi Deli Tinjowan	Bah Jambi Dolok Sinnambah Deli RISPA LA ME Yangambi NIFOR	30 million Marihat (EX-SP540)
Bah Lias (London-Sumatra)	Dami (ex-Ulu Remis) Gunung Melayu	Yocoboue Dami (75 % & 50% BM 119)	^11/2-2 million
Socfindo	Socfindo Socfin Dabou	Socfindo Yangambi LA ME NIFOR	2-3 million

TABLE 1. YIELD OF DXP UNSELECTED CROSSES OF DIFFERENT TENERA ORIGINS

Yield	Tenera Origin [1]							
	BJ	DS	MA	LM	YA	SP	NI	YO
Numbers of crosses	75	96	123	40	15	54	8	8
3 to 5 years FFB /ha (ton)	22.3	20.2	21.0	24.4	21.5	25.6	20.7	20.3
oil /ha (ton)	5.1	4.6	4.6	5.5	5.1	5.9	4.9	4.5
After 6 years FFB /ha (ton)	23.2	23.7	23.5	27.9	25.6	25.8	22.8	25.4
Oil/ha (ton)	5.3	5.4	5.2	6.3	6.1	5.9	5.4	5.7
Oil/bunch (%)	23.1	22.9	22.1	22.7	23.7	230	23.9	22.1
Growth rate (cm /year)	82.9	76.6	71.9	67.7	73.2	78.1	65.7	66.2

1- BJ = Bah Jambi, DS = Dolok Sinumbah
MA = Marihat, LM = La Me, YA= Yangambi
NI = Nigeria (NIFOR), YO= Yocoboue
SP = Sungai Pancur

TABLE 2. YIELD OF THE BEST 10% DXP CROSSES OF DIFFERENT TENERA ORIGINS

Best 10% Yield	Tenera Origin [1]							
	BJ	DS	MA	LM	YA	SP	NI	YO
Numbers of crosses	8	10	12	4	2	5	1	1
3 to 5 years FFB /ha (ton)	22.6	22.9	24.4	23.4	21.4	26.4	22.1	19.9
oil /ha (ton)	5.3	5.6	5.8	5.7	5.2	6.6	5.3	5.1
After 6 years FFB /ha (ton)	27.2	26.7	27.2	29.3	27.9	28.9	27.4	26.8
Oil/ha (ton)	6.4	6.5	6.3	7.2	6.7	7.2	6.5	6.9
Oil/bunch (%)	23.9	24.4	23.6	24.6	24.0	25.0	23.9	25.9
Growth rate (cm /year)	80.9	83.4	71.8	60.3	75.4	76.1	59.3	54.9

1- BJ = Bah Jambi, DS = Dolok Sinumbah
MA = Marihat, LM = La Me, YA= Yangambi
NI = Nigeria (NIFOR), YO= Yocoboue
SP = Sungai Pancur

TABLE 3. YIELD OF THE BEST DXP CROSSES OF DIFFERENT TENERA ORIGINS

Best 10% Yield	Tenera Origin [1]							
	BJ	DS	MA	LM	YA	SP	NI	YO
3 to 5 years FFB /ha (ton)	24.1	25.3	26.1	23.1	21.1	26.	22.1	19.9
oil /ha (ton)	5.6	6.7	6.4	5.9	5.2	6.6	5.3	5.1
After 6 years FFB /ha (ton)	28.6	27.6	30.0	29.7	27.3	29.5	27.4	26.8
Oil/ha (ton)	6.6	7.4	7.4	7.6	6.7	7.4	6.5	6.9
Oil/bunch (%)	23.0	26.6	24.7	25.7	24.6	25.2	23.9	25.9
Growth rate (cm /year)	77.9	88.2	62.7	54.5	71.4	82.5	59.3	54.9

1- BJ = Bah Jambi, DS = Dolok Sinumbah
MA = Marihat, LM = La Me, YA= Yangambi
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Guthrie

Guthrie has always emphasised the high yielding ability of their dura mother palms per se as the basis of the expected performance of their DxP materials. In their paper, they revealed that this rationale was highly suspect. When they crossed their selected dura mother palms to one pisifera (AVROS) they found that the difference in the DxP progenies attributable to dura family differences, to dura individuals within family differences and to dura individuals across family differences were about 10%, 20% and 30% respectively. In hybrid seed production, to obtain the best hybrid, the parents must be most inbred which usually are lower yielding. The true genetic worth of the inbred can only be shown in the DxP hybrid. Choosing a good performing individual in a inbred parent family is not likely to result in a good performing hybrid.

The yield potential of Guthrie DxP materials will also be discussed in the Agronomy Section.

West Africa

Oil palm yields in W. Africa are generally low and at best are half of the best yields achievable in Malaysia and Indonesia. This is because of the pronounced dry season which may last up to 6 months and short sunshine hours of 4-5 hrs (to as low as 2-3 hrs) per day. As such materials which do well in W. Africa tend to be high bunch number than high bunch weight based. High bunch numbered palms tend to be more buffered against environment stress which leads to bunch abortion. Deli duras, with low bunch number,generally perform less well in W. Africa unless crossed with high bunch numbered pisiferas.

Both the breeding programmes in Ivory Coast (IRHO, French initiated) and Nigeria (NIFOR, Anglo-Dutch initiated) have broad genetic bases and are comprehensive. They tend to produce more uniform materials (especially IRHO's) because of the use of inbred parents as in hybrid maize production. IRHO's breeding programmes have been well publicised and they have exported their materials and technology to Indonesia, and to some extent to Malaysia and S. Amercia. IRHO materials have been shown to be very high oil yielding in Indonesia and also Malaysia yet slower in height growth.

There are also many interesting materials in NIFOR's breeding programme. Unfortunately political/bureaucratic barriers are hampering exchange efforts.

Costa Rica & Honduras

These two countries are capable of high oil palm yields of over 30 t/ha FFB. Their plantations and breeding programmes were initiated by Chiquita Brands Inc., the multinational banana fruit company. They have assembled advanced breeding materials from all available sources and are offering for sale seeds of various types e.g. DxP(AVROS), DxP(Cameroon), DxP(LaMe). Their production is about 5-6 million seeds per year with S. & C. American countries as their main clientele.

Very recently they have signed a contract to supply 20 million seeds and some clonal dura mother palm plantlets to a large plantation development company in Indonesia.

Thailand

Thailand's oil palm growing area is confined to a small area in S. Thailand with about 130,000 ha. planted. Because of the 2-3 months dry season and poor planting materials and management , yields were generally low and at best 18t/ha./yr. FFB.

Breeding programmes have been initiated in Univanich, a Unilever plantationn group, and hence forms part of the Unilever-Harrison and Crosfields Combined Breeding Programme network, and in Surat Thani Horticulture Research Centre, who purchased breeding materials from Costa Rica at a substantial cost.

Papua New Guinea

PNG Dami's breeding programme has been based on the Ulu Remis Deli duras and in AVROS pisiferas. Being part of H&C, they now participate in the Unilever– H&C Combine Breeding Programme. They sell about 5-6 million seeds. Of interest, is their recent proposed programme to large-scale progeny - test pisifera parents to identify good general combining parents for clonal seed production.

B. PHYSIOLOGY

Two papers , presented by Rao et al (1990) and Henson (1990) were of interest.

Rao et al. (1990) showed that close spacing increased interpalm competition for light. This affected the vegetative and reporductive processes of the oil palm.

Vegetatively, increased palm density would increase frond length, reduce frond production , increase height and decrease trunk diameter. Reproductively, it reduced sex ratio through a marked increase in a male inflorescence as shown in Table 4. Bunch weight also decreased with higher density resulting in lower yield.

Henson (1990) used a physiological model to indicate that the yield potential of oil palm was 14 t oil per hectare. This was 3 t/ha less than Corley 's (1985) prediction. He showed that further work is required on how to alleviate environmental constraints and improve management efficiency as indicated in Table 5 below:-

Table 4: Effect of palm density on sex ratio of oil palm

	Density (palm /ha)		
Inflorescence	125	175	225
Male (per year)	12.51	13.63	15.19
Female (per year)	14.16	11.53	8.82
Total (per year)	26.67	25.16	24.01
Sex ratio (%)	63.66	46.43	37.45

Table 5: Comparison of oil ields in different conditions

Situation	Oil (t/ha/yr)	Reference
1. Physiological yield potential	14.0	Henson (1990)
2. Best progency yield	12.2	Rajanaidu (1990)
3. Best plot yield	8.6	Corley (1976)
4. Best commercial yield	7.5	Lee et al. (1990)
5. Good commercial yield	6.0	Corley (1983)
6. Average commercial yield	3.7	Porim (1990)
7. Best KLK yield (46 ha)	7.5	AAR (1989)
8. Best BEA yield (56 ha)	7.6	AAR (1989)
9. Best KLK estate yield (2727 ha)	5.5	AAR (1989)
10. Best BEA estate yield (3455 ha)	4.9	AA (1989)

Note : For KLK and BEA, oil to bunch is assumed to be 20%

AGRONOMY

Lee et al. (1990) from Golden Hope Plantations Sdn. Bhd. showed that there was a gradual increase in oil yield per hectare from 1966 to 1989 through improved FFB per hectare and oil to bunch ratio.

They also indicated that during the peak yielding period of 8 to 12 years, oil palm could yield 28 to 30 t/ha.and 22 to 28 t/ha. on coastal and inland soils respectively. These yields were averaged from their best 9 and 6 estates on coastal and inland soils respectively.

However, during the best yielding year of 1989, similar yields were obtained from palms on coastal and inland soils as shown in Table 6 below.

Table 6 : High yielding fields on coastal ans inland plantings in 1989.

Coastal estates	Year planted	Age (year)	Hectares	FFB Yield (tonnes /ha)
1. Sg. Sedu	1982	7	52.11	40.45
2. K. Selangor	1975	14	32.75	40.33
3. D. Durian	1982	7	31.16	38.64
4. K. Selangor	1980	9	32.27	38.08
5. K. Selangor	1979	10	34.66	38.04
6. West	1979	10	63.65	38.00
7. Jin Seng	1979	10	25.36	37.98
8. K. Selangor	1978	11	31.38	37.68
9. K. Selangor	1976	13	30.07	37.49
10. East	1981	8	67.90	37.35
			Mean	38.40
Inland estates				
1. D. Jubilee	1976	13	44.52	41.68
2. D. Jubilee	1977	12	58.68	38.61
3. Kundong	1977	12	39.40	38.14
4. D. Jubilee	1976	13	74.46	37.34
5. Kundong	1974	15	47.34	36.11
6. D. Jublee	1971	18	82.15	36.11
7. Sepang	1972	17	84.98	35.70
8. D. Jubliee	1975	14	109.67	35.24
9. D. Jubliee	1979	10	163.49	35.04
10. Kundong	1979	10	43.49	34.70
			Mean	36.87

In contrast, Guthrie Bhd. reported much lower yields on their inland soils (Yong and Chan, 1990). Their average yield over 24 sites with various soil types and climates was only 23 t/ha/year. The authors showed that soil types strongly influenced their oil palm yield potentials as given in Table 7 above.

Table 7: Commercial oil palm yields on different soil types

Soil order	Soil series	Yield (t/ha/yr)
Ultisorls	Bungor	22
	Tavy	20-26
	Durian	22-31
	Asahan	16
Oxisols	Malacca	14-20
	Munchong	23-26
	Prang	25
	Segamat	21

Note: Palms were 15 years old at the time of yield recording.

Surprisingly, palms on Durian series soil in favourable climate gave the highest yield of 31 t/ha./year. The authors did not provide an insight into the above phenomenon.

PORIM presented their estimations of K fertiliser efficiency as recovered by FFB only (Tarmizi et al., 1990). However, their estimates were similar to those reported by Teoh and Chew (1987).

Chow, C.S. from PORIM presented his model to predict oil palm yield on field or estate basis. The model is :

$$Y = YT \times S \times R \times C \times E$$

where
- Y = yield of estate
- YT = predicted yield for each palm age (yield profile)
- S = seasonal effect
- R = rainfall
- C = physiological yield cycle
- E = error

The yield profile could be estimated by

$$YT = Kt + Ab^t + C$$

where K,A,B and C are constants and t is time (year)

He further showed that palm age and yield cycle accounted for 68% of the explained variation.

COUNTRY REPORTS

Six papers reported the commercial oil palm yields of nine countries and these are presented in Table 8.

The best yielding fields in most countries with favourable rainfalls exceeded 30 t/ha./year. However, where moisture stress was severe as in Thailand, Nigeria, Honduras, Republic of Benin and Zaire, their commercial yields during the peak cropping ages (8 to 12 years) were less than 16 t/ha./year.

Of interest were the yields achieved in Indonesia at 28.5 t/ha.year in commercial fields and 40 t/ha./yr for selected progenies. The results indicated that the oil palm yield potential in Indonesia is similar to Malaysia.

Table 8: Commercial yield of oil palm in various countries

Country	Age of planting	Annual rainfall (mm)	Estimated deficit (mm)	Yield (t/ha/yr)	Other problems/ Remarks
Thailand	4-6	1400-2400	300-700	12.5	
	Better areas	2395	360	24.0	
Indonesia	NA	NA	0	28.5	
	Best yield	NA	0	40.0(OER> 30% giving 10 to 11 oil/ha/yrs)	
Papua New Guinea	NA	>5000	0	20.4	Location - Kimbe
	NA	>5000	0	27.5	Popondetta
	NA	>5000	0	14.4	Bieulla
	Best field	>500	0	>30	
Nigeria	13	3000-4000	700	16-17	
	13	2000-300	NA	130-14	
Costa Rica	8	3200-400	40 to 300	22-24	
	9-18	4000	40	28-33	
Honduras	8	2800	150	15-16 (Best field)	
Benin	NA	1101	442-1000	4-11	
	Best field	1101	442-1000	15	
Zaire	7	1700	49-368	19	
	7	1700	49-368	14 Yaligimba,high Fusarium wilt.	
Columbia	6	2500	0-330	20.9	

NOTE: NA NOT AVAILABLE

Table 9 : Effect of moisture stress on oil palm yield

Country	Location	Year of planting	Annual rainfall (mm)	Estimated deficit (mm)	Year irrigation Started	Rate of irrigation (mm/day)	Yield (t/ha/yr)	% yields increase over no irrigation
Thailand	Rung Reong Chumpong	1978	1400 to 2000 > 700	 o	0 1984	0 5	15-16 28-30	 87
	Univanich Surat Thani	1983	1500	 84-105	400-500 1988	0 3.95	0 22.7	17.5 30
Indonesia	Clone- 216T x D8D LIOT x D8D	1974 1974	NA NA	0 0	0 0	0 0	30.7 32.2 Ivory Coast)	96 53 (Compared with
Ivory Coast	Clone- 216T x D8D	1966 1974	NA NA	250 250	0 0	0 0	15.7 21.0	
Colombia	NA	1983	2500	130	0 1980's	0 NA	20.9 26.7	 28
Zaire	NA	1983	1700	186	0 1980's	0 NA	19.0 23.0	 21
Rep. Benin	NA	1980's	1101	1000 <600 442-1000 NA Best yield	Bad year Normal Best yield NA	0 0 0 24-30	4.2 10.8 15.0 164-200	

NOTE : NA - NOT AVAILABLE

The effect of major stress is further illustrated by the use of irrigation in various countries. For example, yields could be increased by 87% to 200% in Thailand and Republic of Benin where moisture stresses were severe and irrigation was carried out (Table 9).

A general relationship between percent yield increase over no irrigation (Y) and estimated moisture stress (X) is

$$Y = 8.32 + 0.15X$$
with n = 6,
$r^2 = 0.92$
Sy.x = 20.84

Hence on the average, a decline of 15% yield can occur with every moisture stress of 100 mm per year.

FIELD TRIPS

Three places were visited, Univanich, Surat Thani; Surat Thani Horticulture Research Centre and Rung Reong Plantation, Chumpong.

Currently, Thailand produces 200,000 t palm oil and its average yield is 3 t//ha./year oil. Thailand palm oil supply can now meet their demand. It also accounted for 60% of its edible oil market. Thailand also unofficially sold palm oil to Kampuchea, Laos, Burma and Vietnam.

The main reasons for low yield in Thailand were:

a) 4 months of distinct drought with moisture stress exceeding 350 mm per year
b) Planting materials were of inferior quality, mainly duras due to illegitimate seeds
c) Marginal soil types and
d) Inefficient management system

Univanich is a joint venture company between Chean Vanich and Unilever and started in 1983. Chean Vanich commenced oil palm planting in the late 1950's. Univanich has 6,000 ha.with 5,600 ha. of mature oil palm. They currently produce 29,000 t palm oil and 5,000 t kernel oil. However 50% of their crops come from the smallholders. They sold their oil to six refineries in Bangkok (they have only one refinery).

Univanich is currently irrigating its oil palm using pond-furrow system. Rate of water application was 3.95 mm per day and this continued for 4 to 5 months per year. The furrow size at every alternate row was 30 cm wide and 23 cm deep.

Average yield increase was 5 t/ha./year FFB or 25% yield improvement over no irrigation. They were currently irrigating 2,000 ha. of oil palm with plan to increase another 1,400 ha.by 1991. Capital expenditure was US$645 per ha. and operating cost was reported to be US$56/ha./yr.

Univanich main research activities are breeding and underplanting trials. They planned to carry out thinning x fertiliser trials soon.

Their underplanting trial started in October, 1989 and had the following treatments:-

1) Main plots :- various intensities of thining/pruning and time of thinning after underplanting.

2) Sub plots :- a) 20 months old seedlings
b) 30 months old seedlings

The subplot treatments were imposed recently (October, 1990)

SURAT THANI HORTICULTURE RESEARCH CENTRE

Director - Dr. Chai

The research centre is under the Department of Agriculture, Thailand and one of six such centres in Thailand. They have a total of 500 ha. with another satellite research station in Trang.

The staff composition was 33 Government officers consisting of:

i)	Director	- (1)
ii)	Research Officers	- (25)
iii)	Administrative Officers	- (5)
iv)	Research Officers(rice)	- (2)

They also had 14 permanent staff, 20 technicians and 200 to 300 labourers.

Their major activities are:

a) Extension
b) Research on
   i) Yield improvement
   ii) Soil and nutrition
   iii) Plant protection
   iv) Production system
   v) Post harvest
   vi) Chemistry

The main research crops are:

a) Oil palm - 80% of trial works
b) Fruit crops, such as Lansium, durian and rambutan
c) Vegetables
d) Herbs
e) Ornamentals

The current oil palm research projects were strongly geared towards breeding and tissue culture. This was done with the help of FAO (Dr. Escobar).

The major agronomic research programmes were:

a) water requirement of oil palm us ing drip irrigation
b) intercropping trial
c) demonstration plots with the fol lowing treatments:-
   i) cover crops)
   ii) ablation) with) and without)
   iii) mulching)
   iv) fertiliser (2 rates)
d) One trial on leaf eating caterpillars, studying their effects on yield, the causes and factors affecting their distribution and chemical and bio logical controls.

RUNG REONG OIL PALM PLANTATIONS

We were shown the effect of typhoon and figures on irrigation effect on oil palm. The tissue culture clones were also viewed in the nursery. A total of 27,000 plantlets from 30 plus clones and ranging from 2 to 4 months old had been planted.

So far only 300 plantlets had died while 700 plantlets had no or very poor root system. Clone 77 had high B deficiency, while some clones suffered Mg deficiency and weak cell wall structures. Clone 67 was reported to have the best yielding potential.

Plantlets were first hardened for 3 to 4 weeks using sand medium. They were then transferred to small polybags of size 15 cm x 23 cm with 500 gauge.

The soil was mainly sandy clay loam to sandy clay in textures.

They applied one piece of Nursery Ace (7 g) fertiliser buried at 5 to 7.5 cm below the plantlets. However plantlets which were 4 months old showed N deficiency.

Shade was 50% for 1 to 4 months old seedling. However, older seedlings showed slight etiolation.

Watering was carried out twice a day with overhead sprinkler.

Pest and disease sprays were conducted at fortnightly intervals or whenever required, e.g. against red spider mites.

Soh, A.C.
Goh, K.J.

1. Univanich - Irrigated palms. Note flooding.

2. Surat Thani - Research Station -Severe moisture stress. No bunches

Congratulations!

Charles Fernandez on his marriage to Threasa Fernandez, on May 9, 1992.

Supermaniam on his marriage to Guna Sundari on September 6,1992

Teo C.B. and Nancy on birth of their son in August, 1992.

Krishnan, K. and Nagamah, S. on birth of their baby girl Renuka, K. on July 8, 1992.

Mashita, A. and Jamaluddin , A on birth of their son Ahmad, Hafizi.

Reflections , ramblings & rantings of one "Mina Salleh Peranchis"

Name	: Sophie Leroy de la Briere
Born	: May, 25, 1970
Previous domicile	: Niger, Benin, Togo, Chad, Cameroon, France
Previous ramblings	: Denmark, Norway, Morocco and Korea
Current Status	: University student in France Visiting student in AAR
Hobbies	: Sailing, mountaineering, playing saxophone

IMPRESSIONS ON A.A.R.

This is probably the only place around where the water supply is really a problem and the electrical system goes on strike every so often!

Never mind, lah, the inhabitants are always smiling and friendly.

Minum? Makan? Let's go to the canteen. Pity the food's always the same! Never mind, lah, it tastes good and well prepared.

Thanks a lot to all AAR staff for your smiles and help and especially to those in Balau who had been working and singing with including the 'royal bird' and his friends.

So, now if you got the time and money (no problem, lah can manage, lah) do come and visit me in France at 36 rue Louis Thevenet, 69004, Lyon, France.

Don't worry, if I get married, I'll tell you!

NATURE PARK

Discover the sea eagles, kingfishers and storks in the mangrove park. Walk along the trail to observe the mudskippers and crabs between the pneumatophores (breathing roots), before crossing the mangrove forest (beware of mosquitoes!) where the monkeys will jump on you and ending by a rope bridge to test your balance.

COLISEUM CAFE

To feel the old planter's atmosphere! Really? Well, after the "pasar malam" and its smell, noise and crowd, it's weird to see a bunch of people absorbed into their chairs drinking beer or whisky under a slow moving creaking fan in a smoky room. I guess this is the place to see all kinds of crazy Mat Sallehs!

"Fascinating Malaysia"

Kampung Kuantan Firelies

Its' something you should see! Imagine thousands of fireflies illuminating the trees over the river flashing like a X' mas tree in a dark night. There's no noise..... just the oars sliding into the water..... and the brilliant spectacle!

KUALA SELANGOR

Samsuddin's Wedding

.....As the sounds of the kompang increase, Samsuddin appears before a procession of all his family and friends. **His face looks serious, very serious!..... She wears a white veil and also looks very serious.** This seems strange to me! French weddlings are always full of smiles and laughs even from the bride and groom.....Now they're married, the serious time is off. They come to speak to everybody.

.....

Samsuddin and Wan Azizah got married. A new life starts.

Pudu Wet Market

Dirtiest market I've ever seen, where they sell turtles, snakes, lizards, frogs and bats to be made into a soup for some miraculous cure! Don't wear slippers there!

Professional Societies and Committees : Positions Held by AAR Research Officers

Name	Society/Committee	Position
Chan, W.H.	Malaysian Rubber Producers Council (MRPC)	Member
Chew, P.S.	Malaysian Oil Palm Growers Council Agric. Research Committee (MOPGC-ARC)	Convenor (1988,1989,1992)
	PORIM Technical Advisory Committee (TAC)	Member
	Governments' Intensification of Research Into Priority Areas (IRPA) Review Panel	Member (1991)
	Malaysian Soil Science Society (MSSS)	President (1979,1980)
	Other Plantation Industry Committee's.	Member.
Goh, K.J.	MSSS Committee	Member (1990-1991)
	MSSS 1991 Conference Committee	Treasurer
	MSSS's Soil Tech. Committee	Member
Mohd., M.M.	SIRIM's Technical Committee On Pesticides, Growth Regulants And Related Products	Member
Ooi,L.H.	Malaysian Cocoa Growers Council Agric. Research Committee (MCGC-ARC)	Convenor
	MCGC-ARC - Plant Breeding Sub-committee	Member
Ong, T.S.	MRPC-ARC	Member
Samsudin, A.	MOPGC-ARC Sub-committee On Rat Infestation	Member
Soh, A.C.	MOPGC-ARC Sub-committee On Oil Palm Tissue Culture	Chairman
	PORIM Oil Palm Breeder's Committee	Member
	International Society Of Oil Palm Breeder's Committee	Member, Editor (1985-1990)
	Society For Advancement Of Breeding Researches in Asia and Oceanic (SABRAO)	Ass. Editor (1989)
	SIRIM's Technical Committee on Propagation Materials	Member (1990)
Tan., C.C.	MOPGC-ARCs' Sub-committee on Oil Palm Tissue Culture	Member
Wong, G.	MOPGC-ARCs' Sub-committee on Oil Palm Tissue Culture	Member

Papers published / Presented by AAR Research Officers, May-Sept, 1992.

Titles	Author
Development in oil palm planting materials. (Presented at ISP (Lahad Datu) Seminar on Advances in Cocoa & Oil Palm in Meeting Future Challenges, 16 & 17/6/92)	Soh, A.C.
Breeding plans & selection methods in oil palm. (Presented at ISOPB - Symposium on Science of Oil Palm Breeding in Montpellier, France, 1-3/7/92)	Soh, A.C.
Comparision of soil available P determination using manual shaking and shaking in an orbital shaker. (Presented at the 11th Seminar On Standardisation of Soil and Plant Analysis in Malaysia 4-6/8/92, Kundasang, Sabab)	Chan, K.S.
Fertiliser analysis cross-checks in Malaysia 1990-91. (Presented at the 11th Seminar On Standardisation of Soil and Plant Analysis In Malaysia 4-6/8/92 Kundasang, Sabah)	Chan, K.S.
Fertiliser Management in Oil Palm. (Presented at MSSS FERTROPS Conference 24-27/8/92)	Chew, P.S. Kee, K.K,Goh, K.J. Quah, Y.T.,Tey, S.H.