Newsletter BERITA ISOPB

THE INTERNATIONAL SOCIETY FOR OIL PALM BREEDERS

PERSATUAN AHLI-AHLI PEMBIAK BAIK KELAPA SAWIT ANTARA BANGSA

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Editorial

This issue is the last issue of the year 1986 and marks the 10th issue since the inaugural issue in July 1984. It is amazing how we still manage to find things to talk about in the Newsletter despite the fact that support in the form of article and news contributions has not been too euthusiastic or encouraging; particularly from members outside Malaysia. In this respect, Breure, K, must be complimented for constantly sending us reprints of his latest papers, abstracts of which were featured in the Newsletter. In the main the contributions were local (sometimes the consequence of some arm-twisting efforts) and inevitably, the Newsletter had a Malaysian bias and flavour; which was unsatisfactory for a Newsletter of an international society. We appeal to our members from overseas to send us contributions regularly in the form of articles, abstracts of papers published or presented, news etc., to make our Newsletter more rounded. We sincerely hope that our representatives in the various regions will do their bit by helping us in this respect.

This issue also marks the start of perhaps a new format, where crop statistics, e.g. prices, supply demand and other items e.g. end use, technological developments are regularly featured in the Newsletter. Every member of ISOPB Committee has a role and contribution to each issue of the Newsletter. In essence ISOPB Committee members constitute the Editorial Committee. And hopefully with supporting contributions from our members overseas, this Newsletter will become more and more professional in outlook instead of letting it degenerate into a gossip column.

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Feature Article

Collection of oil palm (Elaeis guineensis) genetic material in Tanzania and Madagascar

In the past collections had been made in the major oil palm belt of West Africa and in this paper we describe the recent collections in Tanzania and Madagascar which were basically fringe populations.

MATERIAL AND METHODS

The collections in Tanzania and Madagascar were carried out with the cooperation of Ministries of Agriculture in Tanzania and Madagascar and with a partial financial support from the International Board for Plant Genetic Resources (IBPGR), Rome. Duplicate samples of the collections were deposited at the Ministry of Agriculture, Kigoma, Tanzania and Ministry of Agriculture, Antananarivo, Madagascar.

In Tanzania, samples were collected at 13 sites (see Figs. 1 & 2) located near Kigoma along the Lake Tanganika. At each site, 1-7 palms were sampled per site. A total of 60 (42 Duras and 18 teneras) palms were collected in Tanzania. The sites and palms were randomly sampled so that the samples collected will provide information reflecting the variation found in the country. Table 1 shows the sites and the sampling size of dura and tenera at each site. One bunch was harvested from each of the sampled palms and the fruits from each bunch were kept separate. Data on ecology, bunch and fruit characters were recorded in the field in a special record sheet.

In Madagascar, palms were sampled at 4 sites and 17 samples were collected. At each site 1-6 palms were sampled (Fig. 3). The method of collection of data was similar to that of Tanzania. Table 2 gives the location names and the sample size at each site.

RESULTS AND DISCUSSION

During this expedition dense groves were found at Ujiji, Mwandiga, Kiganza and Simbo in Tanzania. Farmers harvested these palms regularly for oil extraction and also for manufacturing of soap at the village level. The groves in Tanzania were not as dense as those found in South-East Nigeria. The frequency of duras was about 90% and tenera 10% and the virescens was about 10% and the nigrescens was 90%.

ANOVA was carried out to study the differences between sites (populations) for characters such as bunch wt, bunch length, bunch breadth, bunch depth, stalk wt, mean fruit wt, mean nut wt, mesocarp/fruit (%), fruit length, fruit diameter, nut diameter, kernel diameter and shell thickness.

There were no significant differences between populations for the traits scored in the field except for stalk wt and mesocarp/fruit (%) for teneras (Tables 3 & 4). The lack of differences between populations could be due to the small sample size of populations.

The quality of material collected in Tanzania is given in Table 5 for duras and tenera. For duras the mean bunch wt is 18.4 kg, mean fruit wt 16.9g, mean nut wt 8.9g, mesocarp/fruit (%) 46.7, fruit length 4.3 cm, fruit diameter 2.7 cm, nut diameter 2.0 cm kernel diameter 1.3 cm and stalk wt .35 kg. The corresponding figures for teneras are: bunch wt 13.69 kg, mean fruit wt 15.5g, mean nut wt 8.5g, mesocarp/fruit (%) 70.63, fruit length 4.41 cm, fruit diameter 2.69 cm, nut diameter 1.71 cm, kernel diameter 1.38 cm and stalk wt .16 kg.

The distribution of natural oil palms in Madagascar was recorded by Jumelle *et al* in 1911 and palms were found on a stretch of the west coast from south Cap St. Andre to Manambola and Tsiribihina rivers. During this expedition, a few palms were found in the above region. Most of the oil palm groves were to be seen along the road from Miandrivazo to Malaimbandy. The palms were confined to sandy river valleys; intermingled with forest trees. The palms were very poor in growth as compared to the palms found in Nigeria, Cameroons, Zaire and Tanzania. The local farmers were not familiar with the use of oil palm bunches, and harvesting technique.

In the case of Madagascar, limited data were scored in the field for the samples collected except for nut weight and ecological information. We could not identify the fruit forms because the fruits collected had very little mesocarp; mostly eaten by birds. The mean nut weight of 17 samples is 1.76g as compared to 8.5g and 8.9g for tenera and duras collected in the Tanzania. In general, the palm growth, bunch, and fruit traits were poor as compared to material found in other countries. This could be due to poor environment especially the low rainfall. However, the palms in Madagascar were not very short and distinct so as to elevate them to a separate species level e.g. *Elaeis madagascarensis* (Beccari, 1914). Having studied the palms in the field, there seems to be no justification for this classification.

In Table 6, a general comparison of the populations studied in Ivory Coast, Nigeria, Cameroons, Zaire and Tanzania is given. The material collected in Tanzania seems to be comparable to those collected in Ivory Coast, Nigeria, Cameroons and Zaire. For instance, the M/F (%) of duras is close to that of Nigeria and similarly tenera M/F (%) is also comparable to Nigerian material. The Tanzanian material, even though from a fringe population, showed that the quality of the material is comparable to the material so far collected in the main oil palm belt. Richardson *et al*. (1986) describe the value of Tanzanian material collected by Blaak and their performance at Costa Rica.

ACKNOWLEDGEMENT

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PALM NOTES

Oil Palms of Guinea-Bissau

The oil palm represents a common element of the vegetation landscape of Guinea-Bissau. Oil palms are abundant in the littoral zone, on the offshore islands and in the river valleys and arise subspontaneously e.g may be associated with human activities. The palms are of the dura type with large kernels and low to medium mesocarp content. The estimated total area under oil palm is about 100,000 ha. This figure is however for natural stands, formal plantations do not exist. The oil palm provides kernels for export and palm oil, palm wine and other products for local consumption.

(Extracted from "Notes on the palms of Guinea-Bissau" D.V. Johnson 1984 Principes 28: 155-162)

Barcella odora

In 1874, the Scottish botanist James Trail, collected a palm on a tributory of the Rio Negro in Brazil. He thought that this palm was a species of the genus Elaeis, the oil palm and in 1877 described it as Elaeis (subgenus Barcella) odora. Actually Trail's palm is quite distinct from Elaeis in its vegetative and floral morphology, which persuaded Drude in his treatment of the Palmae for Flora Brasiliensis in 1881 to recognise this palm as a distinct genus and so it became Barcella odora (Trail) Drude.

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(Extracted from Palm Brief:
Barcella odora. A Henderson 1986.
Principes 30: 74-76)

Editor's note:

Surprisingly, Barcella odora has been referred to as a species of Elaeis in recent literature.

PALM OIL NEWS

Statistics

Selected oils	World Production (tonnes)	World Consumption	Average monthly price (US$/ tonne)
Palm oil	7,807,000	7,590,000	340.0 (olein)
			290.0 (crude)
Palm kernel oil	1,061,000	1,056,000	380.0
Soybean oil	14,150,000	13,989,000	346.3
Coconut oil	3,080,000	3,207,000	295.7
Sunflower oil	7,196,000	7,116,000	330.7
Rapeseed oil	6,342,000	6,325,000	301.0
Cotton seed oil	3,490,000	3,547,000	495.9
Groundnut	3,260,000	3,018,000	525.0

Malaysia

Malaysia produced about 4½ million tonnes of crude palm oil in 1986, with exports of palm oil totalling about the same amount, which was an increase of 32.6% over the previous year. However total revenue generated fell by 25.2% to M$4,142 million (÷ 2.5 ≃ US41,657 million) due to a drop of export price to M$679.98/tonne from M$1,206.16/tonne last year. The local crude palm oil price reached a low of M$446/tonne (= US$178), below the cost of production of many plantation companies, and a high of only M$725.50/ tonne (= US$290/tonne). In the European Market, the corresponding low and high prices were US$212/tonne and US$340/tonne respectively.

The low prices of 1986 has resulted in an air of cautious optimism if not pessimism about the future of palm oil in the industry.

Malaysia became the first country to introduce a futures contract in laurics with the launching of the palm kernel contract on the Kuala Lumpur Commodity Exchange in December 1, 1986. Palm kernel oil, a lauric oil, has similar technical and chemical properties as coconut oil, and competes with it in both the edible and non-edible markets. As an edible oil, palm kernel oil is used in margarines, ice-cream, coffee whitener, biscuit creams and as a cocoa butter substitute, while its non-edible use is in the manufacture of soap and oleochemicals. Malaysia is the world's largest producer of palm kernel with the 1986 export of palm kernel oil totalling about ½ million tonnes. Palm kernel cake has an increasing importance as a prime feed ingredient.

Ghana

Ghana has exceeded her domestic demand for both edible and industrial palm oil and is now gearing the industry for export. The country has achieved the 1986 target of 750,000 tonnes following the revamping of the major state-owned plantations under the management of the Ghana Oil Palm Development Committee. The projected production capacity for 1987 is 1 million tonnes.

Forecasting Palm Oil Prices

According to Mr. R.C. Duncan of World Bank at a recent international conference on commodities held in Kuala Lumpur, prices of vegetable oils and fats were expected to stay depressed in the short term due to increasing supplies of soyabean oil and palm oil. The World Bank forecast that world palm oil production would increase from 9.57 million tonnes in 1990 to 13.98 million tonnes in 2000. The price of palm oil was likely to average about US$270/tonne in 1987, US$350/tonne in 1988 and US$430/tonne in 1990 and would even rise to US$872/tonne by year 2 000. If one believes in forecasts, the future for palm oil is indeed bright!

The Bank's corresponding forecast for soyabean oil was US$375 for 1987, US$430 for 1988, US$500 for 1989 and US$913 by year 2 000.

1) Palm oil is soyabean oil's main competitor. Palm Oil is imported into U.S.A. duty-free to about 700,000 tonnes for this year. The U.S. soyabean industry is lobbying to the Government to classify palm oil as a saturated oil.

2) The American Soybean Association has a promotional budget of US$17 million and maintains 11 overseas offices e.g Brussels, Hamburg, Vienna, Madrid, Seoul, Taipei, Tokyo, Singapore, Beijing, Mexico City and Caracas, of which the Singapore office is given a budget of US$2 million.

NEWS

Wong Choon Yew, formerly tissue culturist at Bakasawit has joined Eastern Plantation Agency, also as a tissue culturist but with responsibilities on other crops besides oil palm.

Wooi Kheng Choo, also formerly tissue-culturist and research and production manager of Bakasawit has joined Ebor Research, Sime Darby to strengthen their oil palm tissue efforts.

Ho Yuk Wah, formerly with Bakasawit is presently tissue-culturist at United Plantations brand new oil palm tissue culture lab.

Lim Young Kuang, now mans Bakasawit lab.

Harun Abdul Aziz, a recent graduate from Wisconsin joined Guthrie Research, Chemara and has been seconded to run HRU's tissue culture lab.

Law In Hock, senior agronomist at PAMOL Plantations is also now the Acting General Manager of PAMOL Plantations.

Ismail Hamzah, formerly associate professor at the Agricultural University of Malaya, joined Harrison's Malaysia Plantations in early 1986 as Deputy Director of Research in charge of the Oil Palm Research Station, Banting.

Working Groups

The abnormal clonal oil palm phenomenon has generated a lot of interest and concern in the industry, resulting in much discussions among scientists and top management personnel and the formation of working groups. There are now three working groups undertaking basic and applied research to understand and solve the abnormalities in oil palm clones. The U.K. group is spearheaded by Unilever with commissioned assistance from Leicester Polytechnic and International Plant Research Institute of California. In Malaysia, PORIM is cooperating with UKM or the National University, and the UPM while an independent team at University of Malaya is led by Professor Ho Coy Choke who is also cooperating with Professor Malmberg of University of Georgia.

Meetings

The Malaysian branch of SABRAO (Society for Breeding Researches in Asia and Oceania) held a national symposium on Genetics and Breeding of Crops and Animals on November 11-13, 1986 at the National University. Rajanaidu, N. and Soh, A.C. presented papers on "Effective Use of Oil Palm Genetic Resources" and "Current Issues in Oil Palm Breeding" respectively while Paranjothy, K, reviewed the status of oil palm tissue culture.

Professor K.C. Short of Trent Polytechnic, U.K. gave a guest lecture on "Biotechnology in Plant Improvement", and conducted a workshop on tissue culture techniques in crop improvement which was biased towards exploitation of some clonal variations. The workshop was well attended by oil palm tissue culturists and breeders. Professor Short was given a first introduction to the abnormal clonal oil palm problem at PORIM and Bakasawit.

ANNOUNCEMENT

ISOPB Workshop on Prospects of Interspecific (Elaeis oleifera x Elaeis guineensis hybrids)

Date : Saturday 27 June, 1987
(Immediately after the 1987 International Oil Palm Conference)

Venue : Conference Hall, PORIM, Bangi

Leading scientists from IRHO, NIFOR, United Plantations, Marihat Research Station and PORIM will be presenting papers.

Below is the summary of an interesting paper to be presented by Marihat Research Station.

Performance of E. oleifera x E. guineensis Hybrids in North Sumatra.

SUMMARY

The performance of three different hybrids E. oleifera x E. guineensis in North Sumatra conditions are presented. In general the hybrids of E. oleifera from Suriname had the lowest height increment and the smallest leaf area compared with the ones from Colombia and Brazil. However the F.F.B. yield and oil extraction rate of the Brazilian origin were the highest followed by the other two. There is no difference in iodine values among the three hybrids.

Letters to the Editor

Dear Sir,

I refer to your feature article "Whither the prospects of the fertile pisiferas" in Volume 3(3) September 1986. I can see the virtue in aiming for fertile pisiferas in terms of increasing oil to bunch, but I can see no way that we are going to be able to process them, even if the plant breeders did produce a viable option. How can we deal with them, when there is no shell resistance to keep kernels intact until separated?

Palm oil is degraded by more than a trace of lauric fatty acid from the kernels, whilst lauric oils are rendered increasingly unsatisfactory if their iodine value is increased by contamination by palm oil. I know of no use for a mixed oil. I do not usually consider that the existence of a future problem should prevent reflection on a possible development, but there ought to be some idea how that problem might be solved, at least on general terms. In this case, I can see no possibilities, and it would be interesting to know if any of your readers have any thoughts on this.

Yours faithfully,

(B.J. WOOD)
Ebor Research

Responses from readers are welcome.

Editor

Table 1 : Collection sites and sample size in Tanzania

Site No	Location	No Samples	D	T
1	Ujiji	6	3	3
2	Mwandiga	5	5	-
3	Kiganza	7	4	3
4	Ilagala	7	4	3
5	Kwitanga	6	1	5
6	Bitale	5	3	2
7	Chankabwimba	5	5	-
8	Kinazi	1	-	1
9	Simbo Village	3	3	-
10	Kagongo Village	3	3	-
11	Mgaranganza	5	4	1
12	Mahembe	5	5	-
13	Luiche	2	2	-
			42	18

Table 2 : Collection sites and sample size in Madagascar

Site No	Location	No Samples	D*
1	Malaimbandy (6km)	6	6
2	Tuler	1	1
3	Malaimbandy (35km)	6	6
4	Malaimbandandy (85km)	4	4
			17

* Difficult to determine the fruit forms.

Table 3 : ANOVA for population differences (Dura)

	Characters	Mean Square	
		Between Pop (df 11)	Within Pop (df=30)
1.	Bunch wt (kg)	162.7 (NS)	191.04
2.	Bunch Length (cm)	26.3 (NS)	44.3
3.	Bunch breadth (cm)	22.12 (NS)	24.49
4.	Bunch depth (cm)	21.43 (NS)	27.50
5.	Stalk wt (kg)	0.05 (NS)	0.06
6.	Stalk/bunch (%)	12.63 (NS)	14.34
7.	Mesocarp/fruit (%)	101.69 (NS)	101.62
8.	Single fruit wt (g)	23.30 (NS)	14.96
9.	Single nut wt (g)	6.62 (NS)	7.65
10.	Fruit Length (cm)	0.20 (NS)	0.23
11.	Fruit diameter (cm)	0.22 (NS)	0.23
12.	Nut diameter (cm)	0.06 (NS)	0.11
13.	Kernel diameter (cm)	0.08 (NS)	0.09
14.	Shell thickness (cm)	0.01 (NS)	0.01

Table 4 : ANOVA for population difference (Tenera)

	Characters	Mean Squares	
		Between Pop. (df=6)	Within Pop (df=10)
1.	Bunch wt (kg)	52.10 (NS)	36.68
2.	Bunch length (cm)	45.13 (NS)	32.52
3.	Bunch breadth (cm)	30.65 (NS)	30.90
4.	Bunch depth (cm)	172.00 (NS)	12.44
5.	Stalk wt (kg)	0.0080 (NS)	0.0042
6.	Stalk wt/bunch wt (%)	59.25 *	10.67
7.	Mean fruit wt (g)	45.42 (NS)	16.90
8.	Mean nut wt (g)	3.65 (NS)	3.80
9.	Mesocarp/fruit (%)	148.17*	36.32
10.	Fruit length (cm)	0.39	0.47
11.	Fruit Diameter (cm)	0.33 (NS)	0.13
12.	Nut Diameter (cm)	0.03 (NS)	0.05
13.	Kernel Diameter (cm)	0.01 (NS)	0.04
14.	Shell thickness (cm)	0.0031 (NS)	0.0056

Table 5 : Variation of the bunch and of characters Tanzania and Madagascar prospected materials

Fruit Form	Statistics	B.Wt	MFW	MNW	M/F(%)	LF	DF	DN	DK	ST
Dura	$\bar{X}$	18.4	16.9	8.9	46.7	4.3	2.7	2.0	1.3	.35
Tanzania	SD	13.54	4.1	2.70	10.08	.46	.47	.31	.29	.09
	n	42	42	42	42	42	42	42	42	42
	Max	90	25.5	16.6	64.9	5.2	3.8	2.8	2.1	.55
	Min	6.4	9.1	4.28	18.5	3.3	1.9	1.3	.8	.10
	CV	73.6	24.4	30.13	21.55	10.87	17.57	15.34	22.3	26.0
Tenera	$\bar{X}$	13.69	15.5	8.50	70.63	4.41	2.69	1.71	1.38	.16
Tanzania	SD	6.51	5.24	1.94	8.84	.63	.44	.12	.10	.04
	n	17	17	17	17	16	16	16	16	16
	Max	27.0	30.39	12.32	82.84	5.8	3.9	2.0	1.70	.30
	Min	5.0	6.74	5.71	50.0	3.1	2.1	1.4	1.10	.05
	CV	47.5	33.87	22.82	12.52	14.46	16.6	7.1	7.36	25.58
Madagascar	$\bar{X}$			1.76						
	SD			.98						
	n			17						
	Max			5.11						
	Min			.99						
	CV			56.0						

Key : $\bar{X}$ = mean
SD = Standard deriation
n = Sample size
Max = Maximum
Min = Minimum
CV = Coefficient of variation
B. Wt = Bunch Wt (kg)
MFW = Mean fruit wt (g)
M/F(%) = Mesocarp/fruit
MNW = Mean nut wt (g)
LF = Length of fruit
DF = Diameter of fruit
DN = Diameter of nut
DK = Diameter of kernel
ST = Stalk weight (kg)

Table 6 : A comparison of bunch characters of Ivory Coast, Nigeria, Cameroons, Zaire and Tanzanian genetic material.

Country	Dura			Tenera		
	Bunch Wt (kg)	Single fruit wt (g)	Mesocarp (%)	Bunch wt (kg)	Single fruit wt (g)	Mesocarp (%)
Ivory Coast	10.9 (37.0)	6.9 (28.87)	41.8 (12.92)	9.8 (40.72)	5.8 (27.99)	61.2 (10.46)
Nigeria	11.8 (51.86)	7.98 (34.34)	47.3 (16.38)	10.9 (47.09)	6.5 (30.00)	70.9 (13.78)
Cameroons	16.8 (53.9)	10.3 (32.04)	39.7 (19.32)	17.3 (45.37)	8.6 (33.17)	62.4 (12.20)
Zaire	17.6 (41.14)	14.2 (29.95)	43.9 (16.39)	17.4 (48.73)	12.6 (38.03)	64.1 (20.41)
Tanzania	18.4 (73.60)	16.9 (24.40)	46.7 (21.55)	13.7 (47.50)	15.5 (33.87)	70.6 (12.52)

Note : Figures in the parenthesis are coefficient of variation.

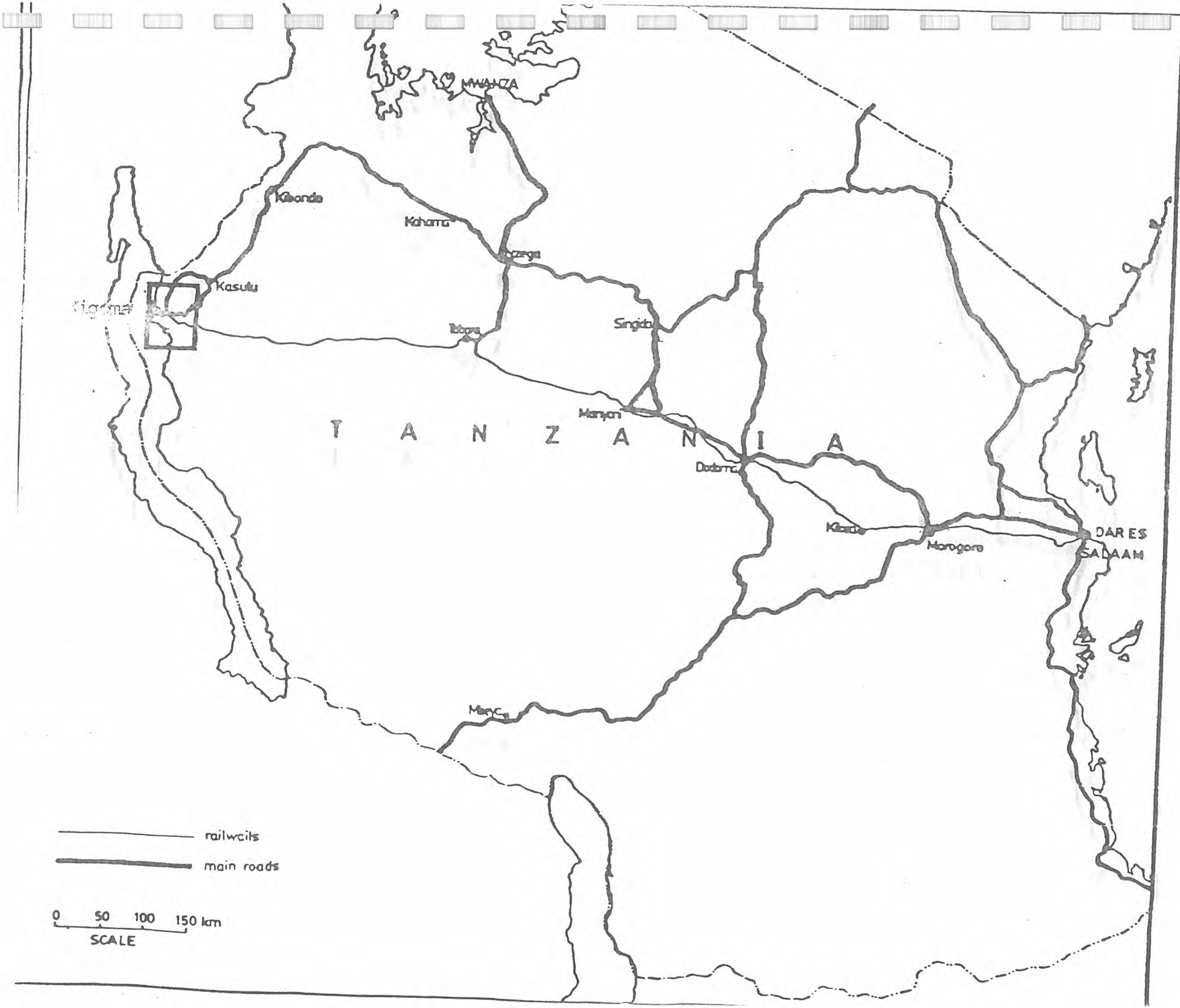

Figure 1: Location of Kigoma regi(in Tanzania

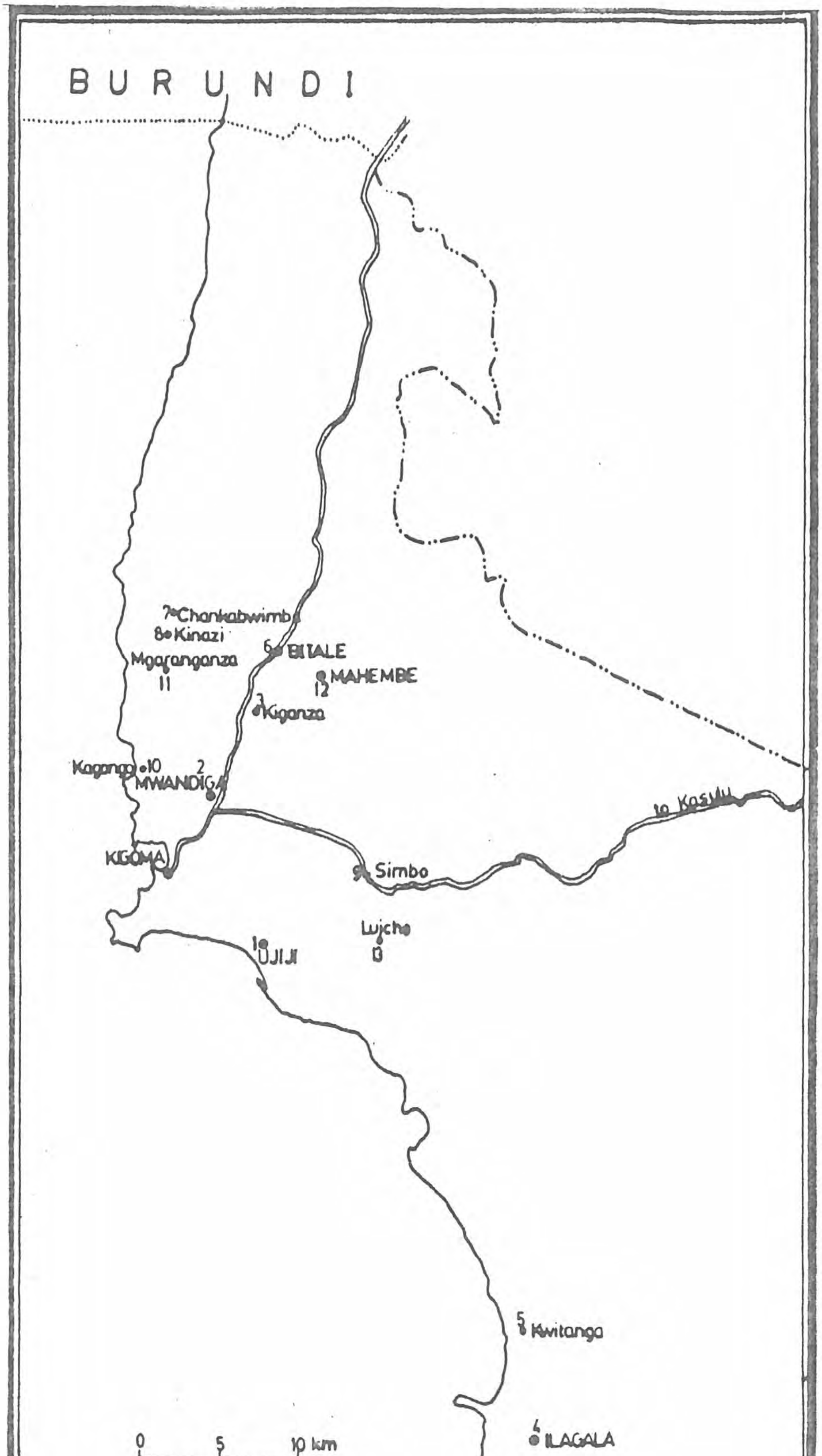

Figure 2: Collection sites at the Kigoma region

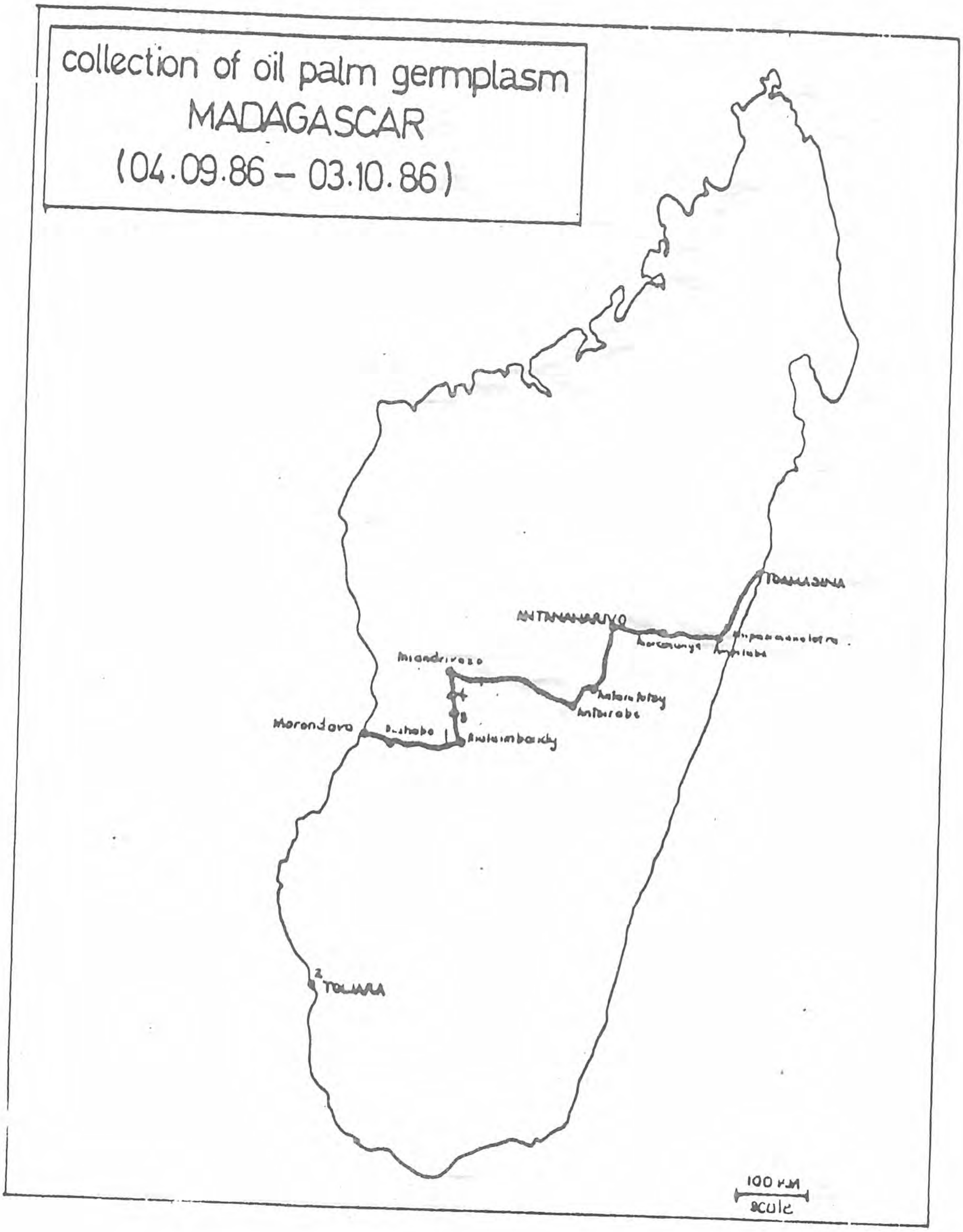

Figure 3: Collection sites in Madagascar