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

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EDITORIAL

geographically Gambia lies within Senegal and it was opportune that the PORIM oil palm prospection to the latter also collected in the former, albeit fewer accessions. Rajanidu and Jalani describe these prospections in this issue; the Senegal mission being described earlier in the last. They record that groves are relatively isolated and contain mainly if not exclusively Duras.

The Malaysian state of Sabah, besides an intervening 400 km of sea, has an oil palm history of its own. Oil palms were first grown on the island of Daat off its coast in 1867 which is well before anywhere else in the country. The palms grew well and all the 700 were removed a few years later, their experimental growing being deemed a success; and there being fewer breeders, agronomists, research controllers etc and etc then. Nothing very much happened after that until the sixties and seventies when oil palm cultivation rapidly expanded. Very poor fruit set in comparison to Peninsular Malaysia, perhaps because even Thrips hawaiiensis was a minority there, started observations and events that eventually led to the dramatic immigration of an alien beetle. That and the rest is all history now. Oil palms continue in importance in Sabah, a kind of last oil palm frontier in Malaysia. Significant breeding work is conducted by the Sabah Dept. of Agriculture and new research stations such as PORIM's are being developed while elsewhere such as in Pamol Sabah there is now more breeding work. We have in this issue brief reports on three stations, four if not for the unfortunate cancellation of the Pamol visit.

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FEATURE ARTICLE

OIL PALM GERMPLASM COLLECTION IN GAMBIA

by

Rajanaidu, N and Jalani, B.S.

INTRODUCTION

Gambia is a narrow strip of land which is wedged within Senegal. During the course of oil palm germplasm collection in Senegal, a limited number of accessions were sampled in Gambia.

We outline the method of collection and the level variation of the traits scored in Gambia.

MATERIAL AND METHODS

The exploration for oil palm germplasm in Gambia was carried out in collaboration with the Ministry of Agriculture and Forestry. Collections were made at six sites (Fig 1) and the details on the locations are given in *Table 1*. The number of palms sampled at each site is given in *Table 2*. At each site 5-10 palms were sampled. Only *Dura* palms were encountered in Gambia. The reason for this phenomenon is outline is the previous paper. A total of 45 palms samples collected in Gambia.

TABLE 1 : GAMBIA COLLECTION SITE

SITE	NAME OF SITE
1	Gunjur - 30 km from Banjul
2	Dasilameh - 38 km from Banjul
3	Berendeng (10 km from Barra)
4	Nyassia
5	Jarra East
6	Bajannah, 60 km

TABLE 2 : GAMBIA - SIZE SAMPLE

SITE	SIZE SAMPLE		
	DURA	TENERA	TOTAL
1	6	-	6
2	5	-	5
3	10	-	10
4	9	-	9
5	8	-	8
6	7	-	7
			45

As in Senegal, isolated palm groves were encountered and natives regularly harvest the bunches and extract oil using crude village methods. The crude palm oil is sold in the markets for cooking purposes.

The traits related to bunch and fruit were scored in the field as in Senegal. The level of variation for these traits is recorded in this paper.

RESULTS AND DISCUSSION

Table 3 summarises the mean and coefficient of variation (c.v.) of the traits scored in Gambia. The mean bunch weight is 5.74kg and M/F(%) is 33.47. The mean and C.V. values for the characters scored in Gambia and Senegal are quite similar in magnitude.

TABLE 3 : VARIATION OF VARIOUS TRAITS IN THE FIELD RECORDED IN GAMBIA

CHARACTERS	n	x	cv
Bunch wt (kg)	45	5.74	39.52
Diameter 7 fruit (cm)	45	1.50	14.24
Diameter 7 nut (cm)	45	1.27	14.44
Diameter 7 kernel (cm)	45	0.96	18.90
Length of fruit (cm)	45	2.32	12.99
Wt of 10 fruits (g)	45	25.35	22.07
Wt of 10 nuts (g)	45	16.83	22.25
Mesocarp to fruit (%)	45	33.47	16.35
Bunch depth (cm)	45	17.36	16.35
Bunch length (cm)	45	28.96	12.32
Bunch breadth (cm)	45	24.51	14.15

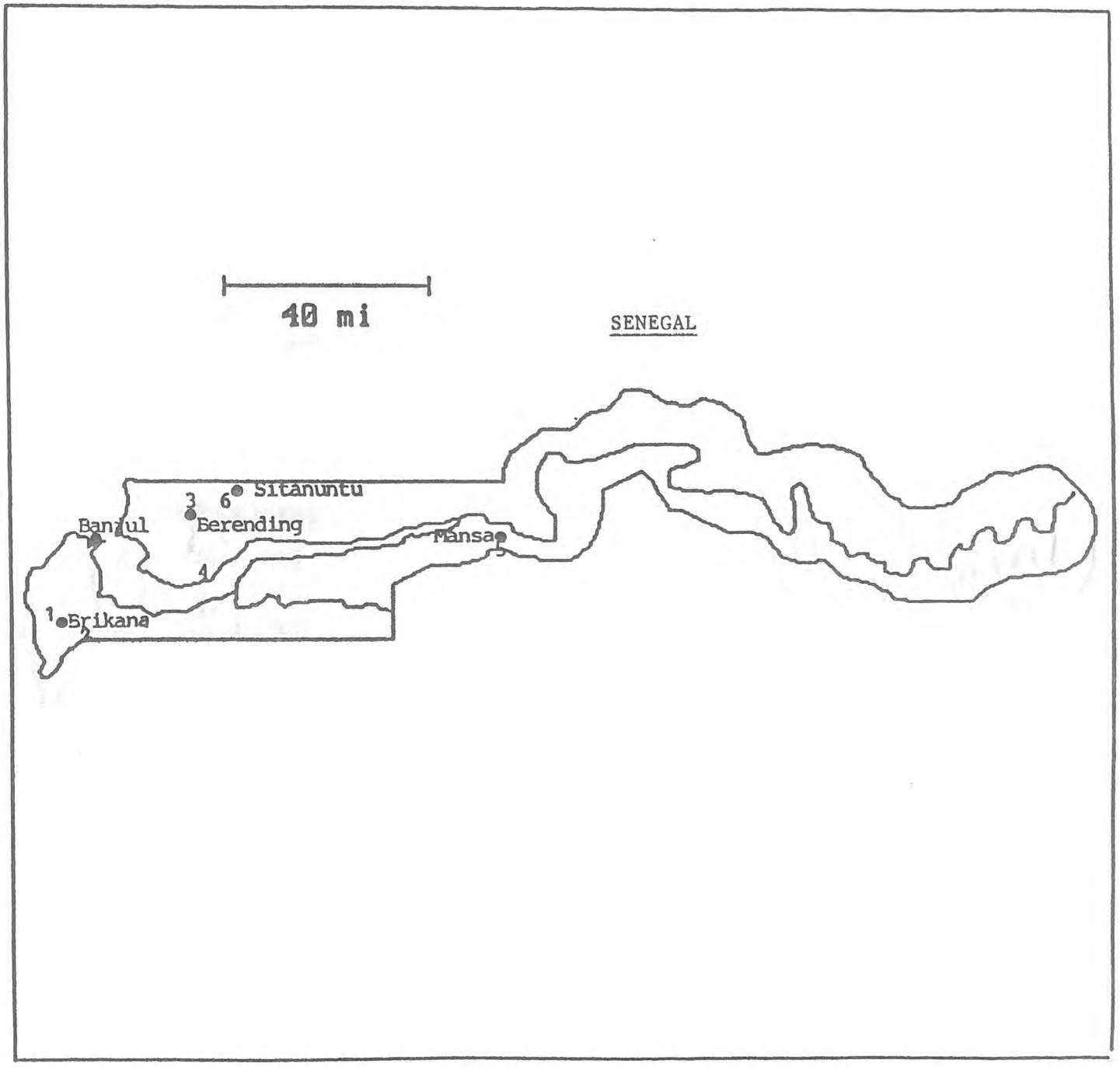


Fig. 1 : Map of Gambia showing the sample sites

Table 4 : ANOVA of Field Data Collected in Gambia

Source of variation	df	Bunch wt	Bunch length	Bunch breadth	Bunch depth	Wt of 10 fruits	Wt of 10 nuts	Mesocarp to fruit	Fruit length	Fruit diameter	nut diameter	kernel diameter
Between Populatin	5	NS	NS	**	**	**	**	NS	NS	**	**	NS
Within Population	39											

Fig. 2 : **Collection of germplasm in Gambia**
Bunch weight

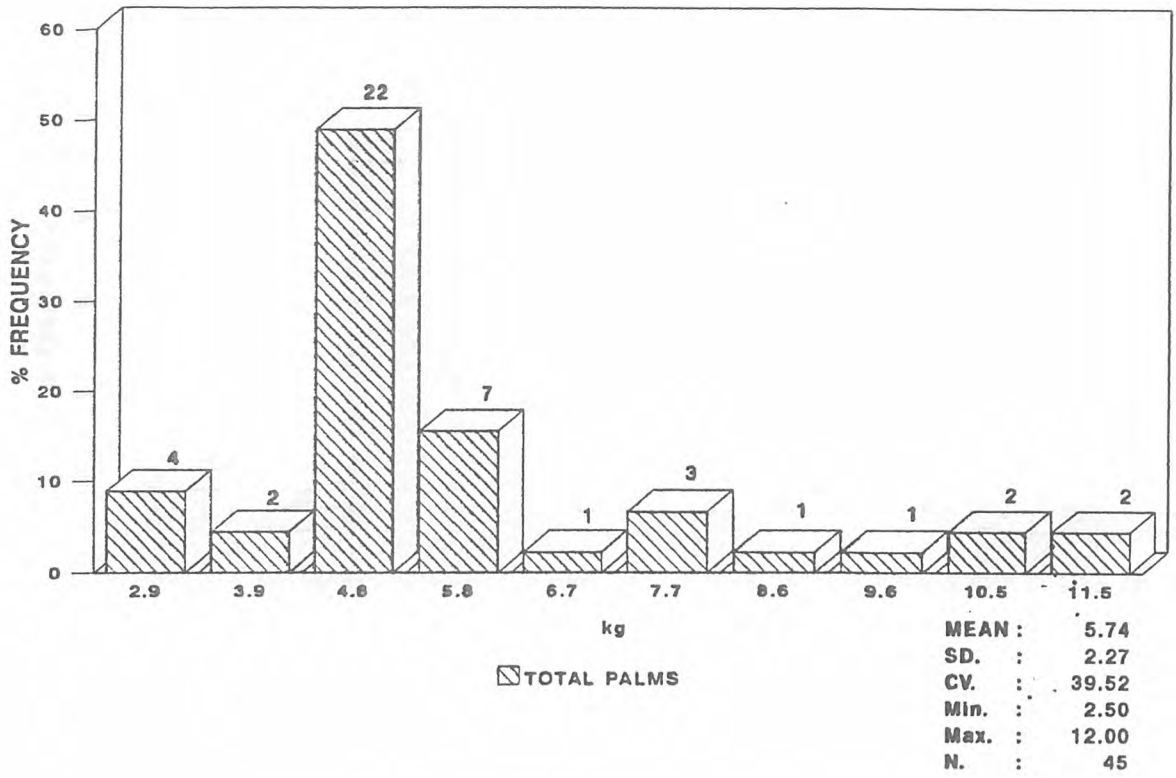


Fig. 3 : **Collection of germplasm in Gambia**
Bunch Breadth

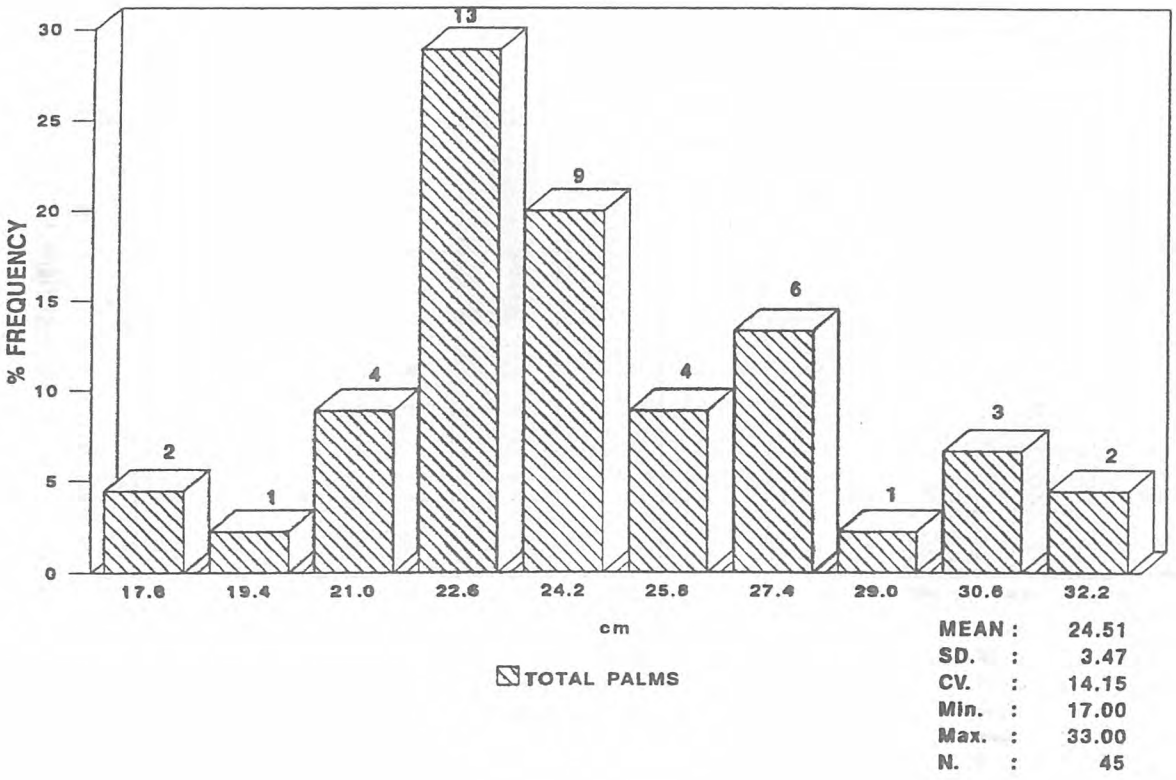


Fig. 4 : **Collection of germplasm in Gambia**
Bunch depth

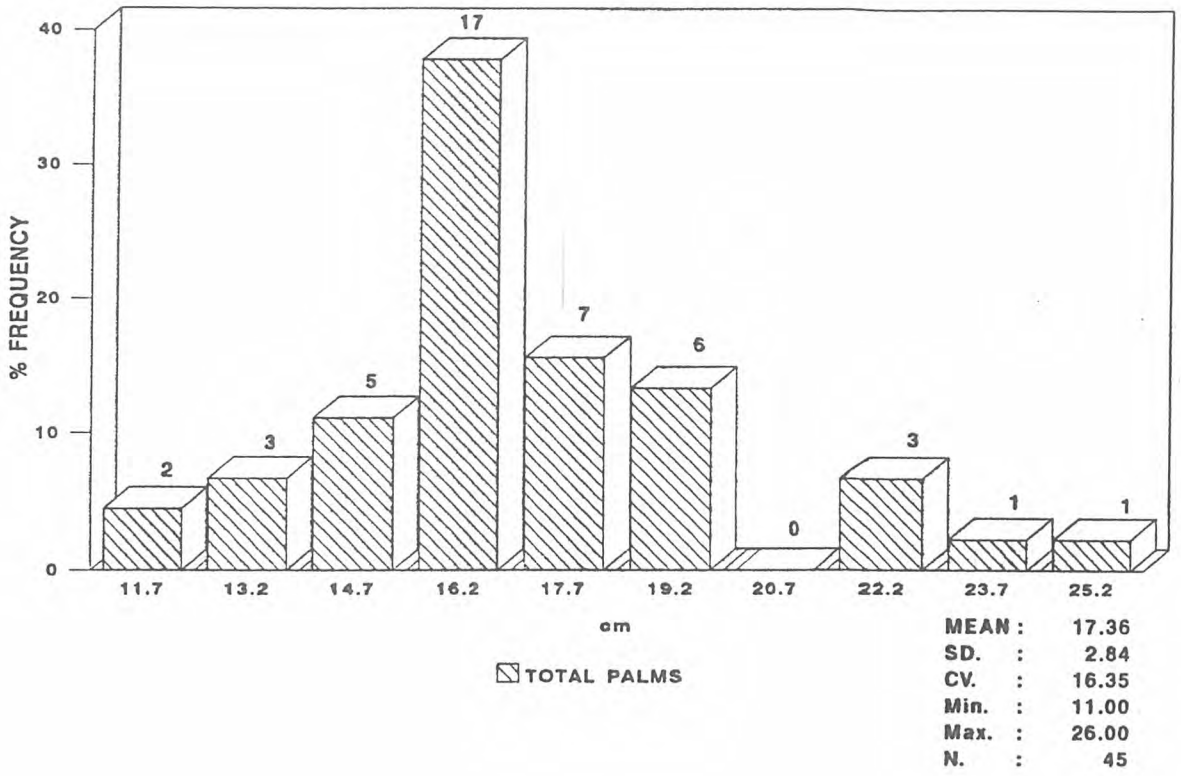


Fig. 5 : **Collection of germplasm in Gambia**
Bunch length

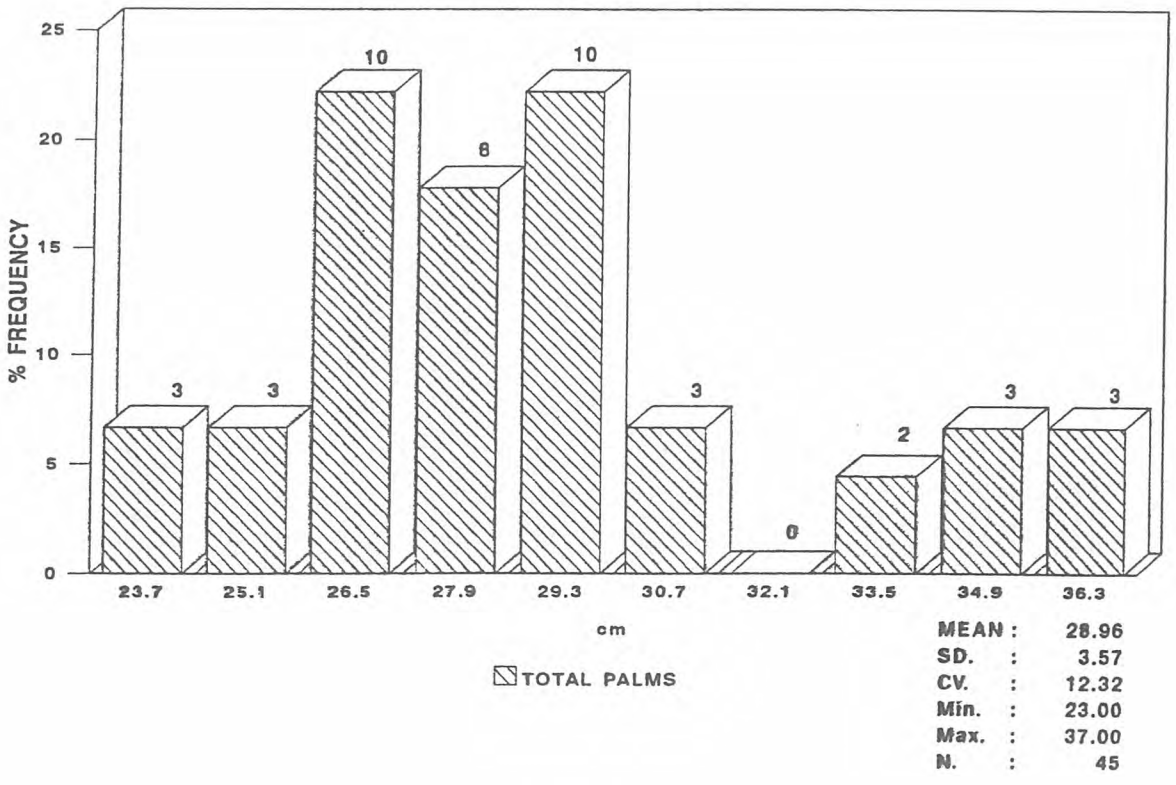
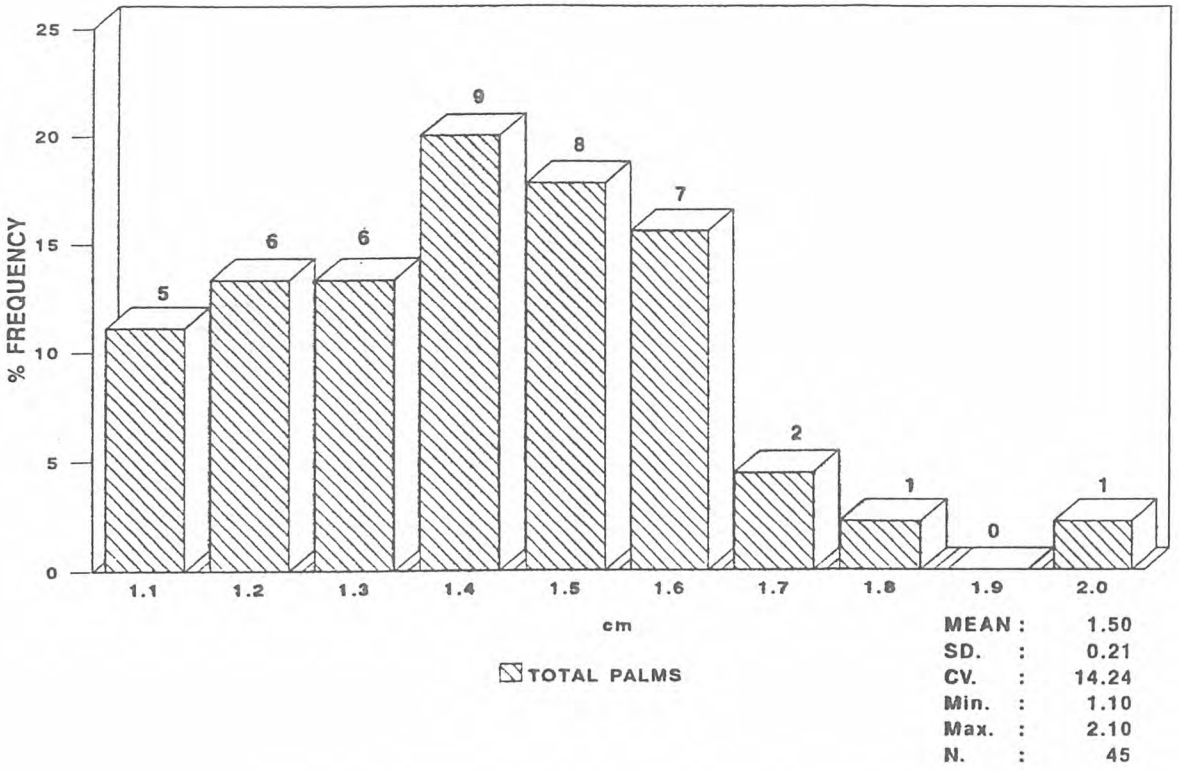
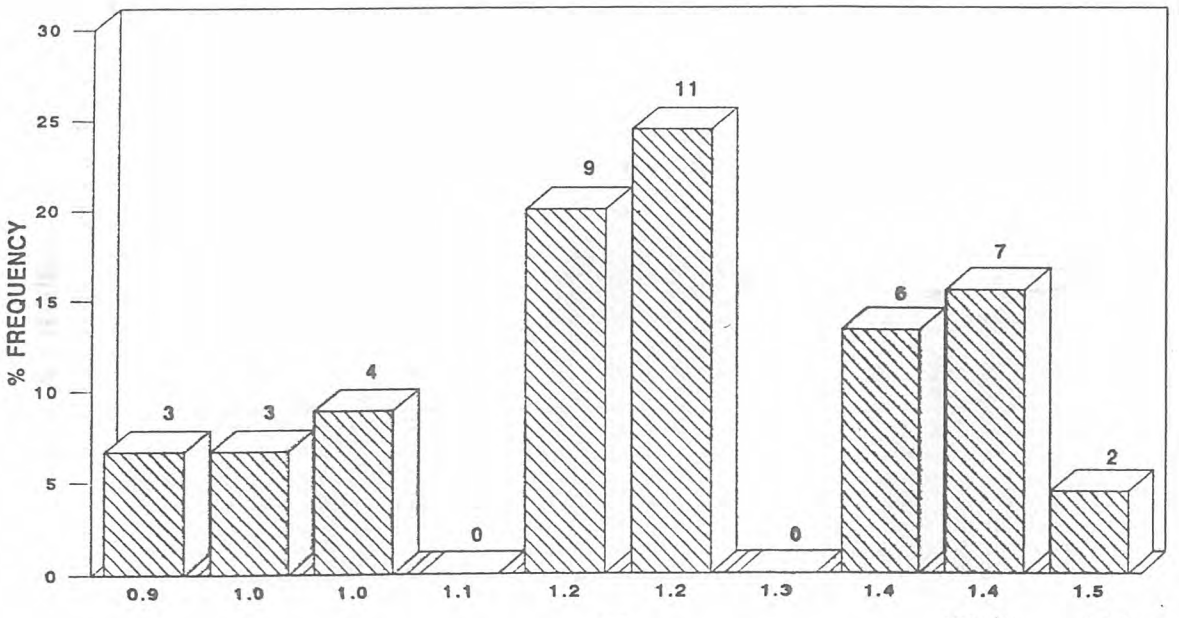


Fig. 6 : **Collection of germplasm in Gambia**
Diameter of Fruit



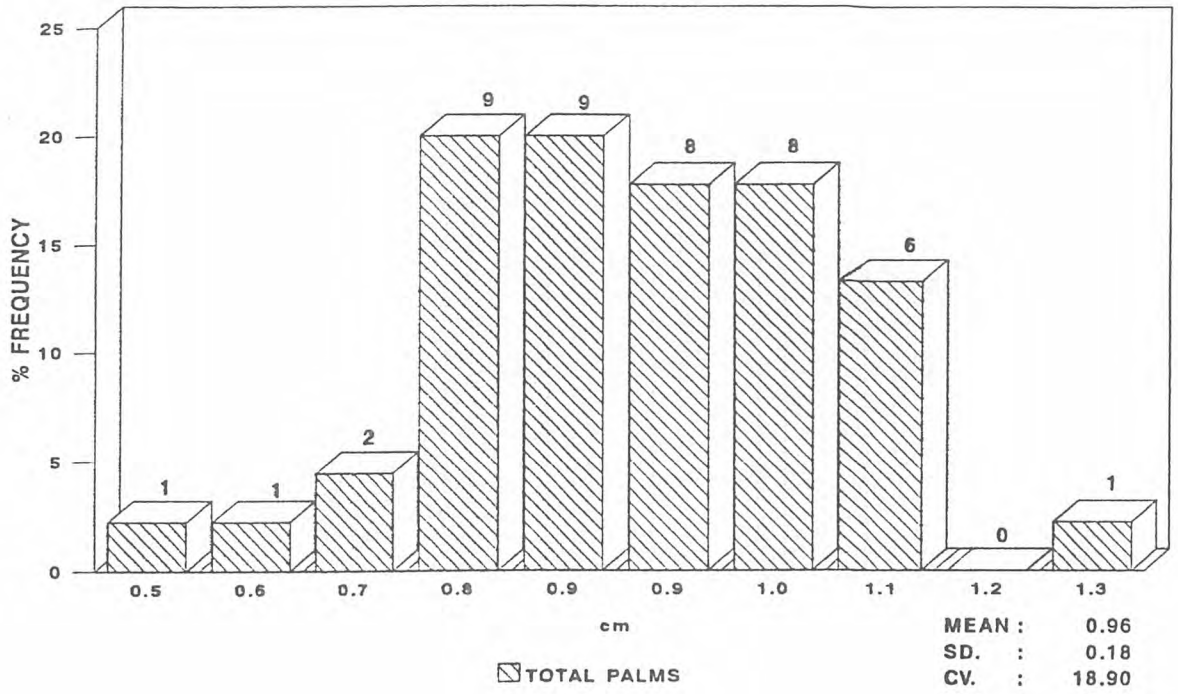
MEAN	:	1.50
SD.	:	0.21
CV.	:	14.24
Min.	:	1.10
Max.	:	2.10
N.	:	45

Fig. 7 : **Collection of germplasm in Gambia**
Diameter of nut



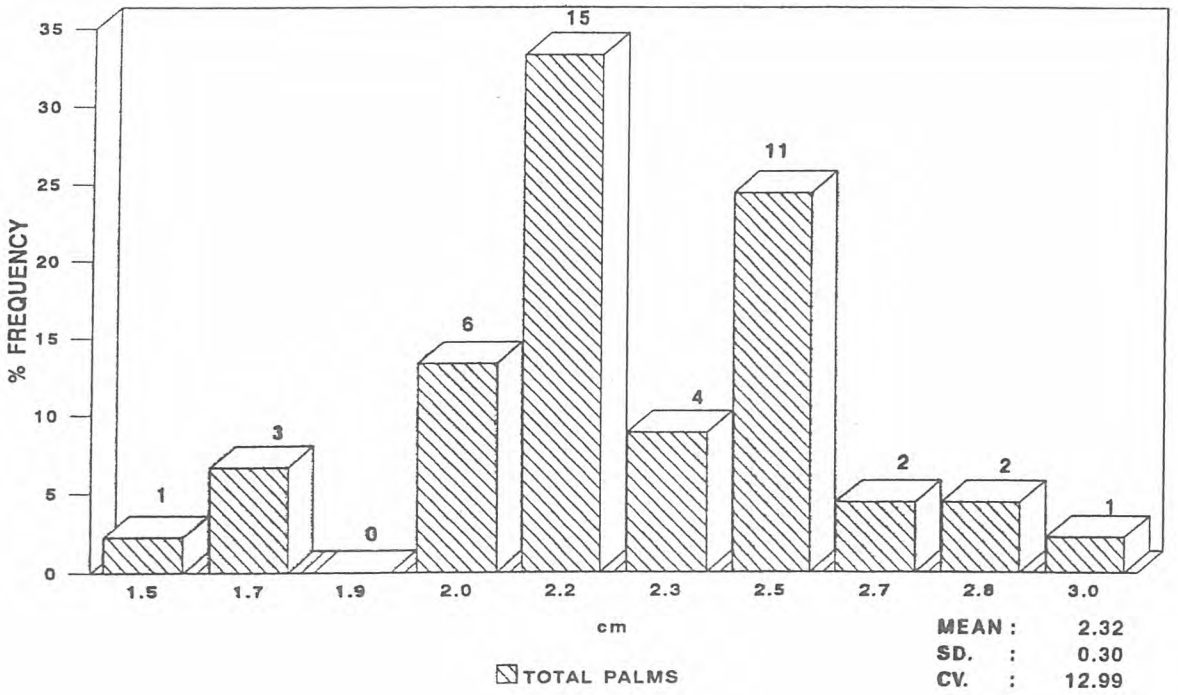
MEAN	:	1.27
SD.	:	0.18
CV.	:	14.44
Min.	:	0.90
Max.	:	1.60
N.	:	45

Fig. 8 : **Collection of germplasm in Gambia**
Diameter of kernel



MEAN	:	0.96
SD.	:	0.18
CV.	:	18.90
Min.	:	0.50
Max.	:	1.40
N.	:	45

Fig. 9 : **Collection of germplasm in Gambia**
Length of Fruit



MEAN	:	2.32
SD.	:	0.30
CV.	:	12.99
Min.	:	1.50
Max.	:	3.10
N.	:	45

Fig. 10 : **Collection of germplasm in Gambia**
Weight of 10 fruits

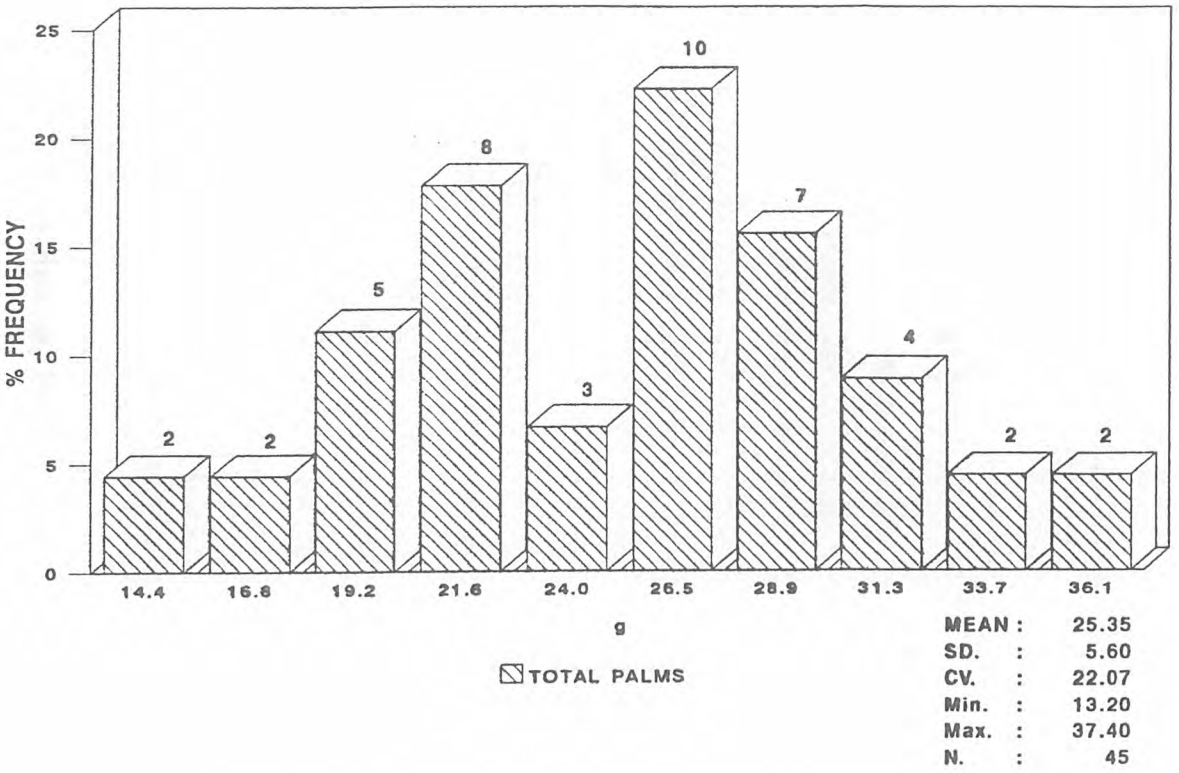


Fig. 11 : **Collection of germplasm in Gambia**
Weight of 10 nuts

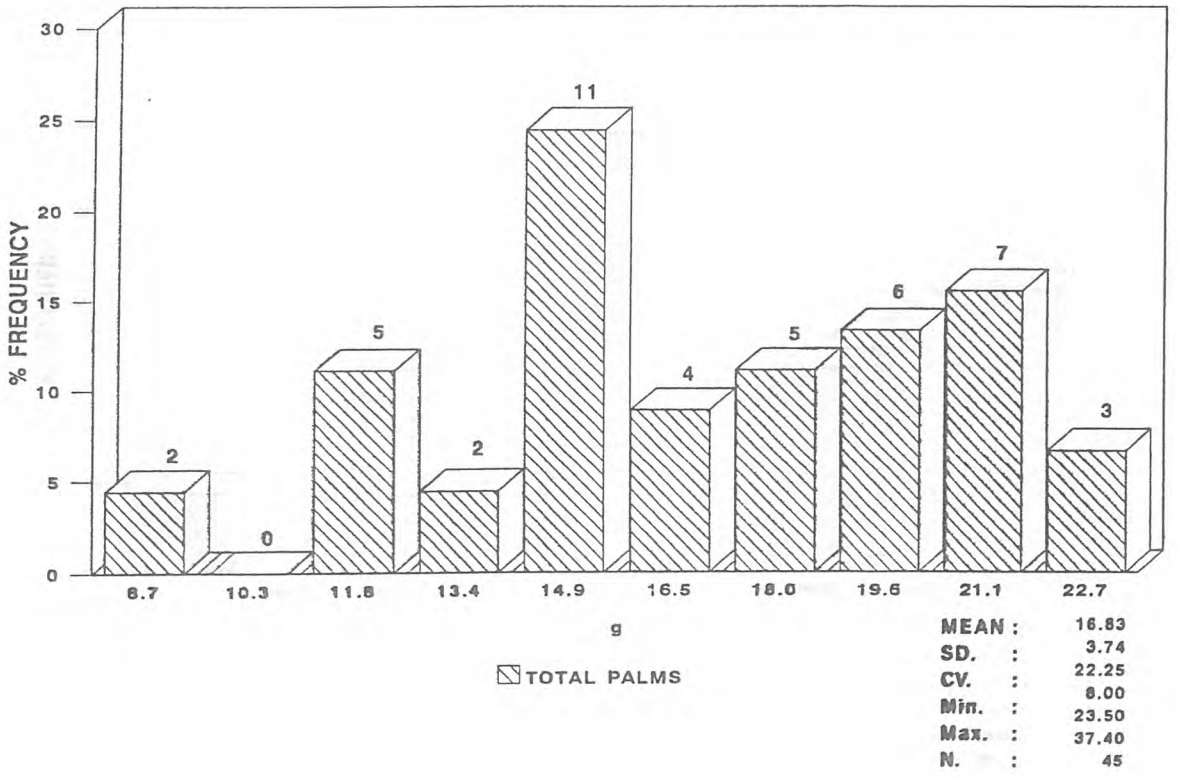


Fig. 12 : **Collection of germplasm in Gambia**
Mesocarp to fruit

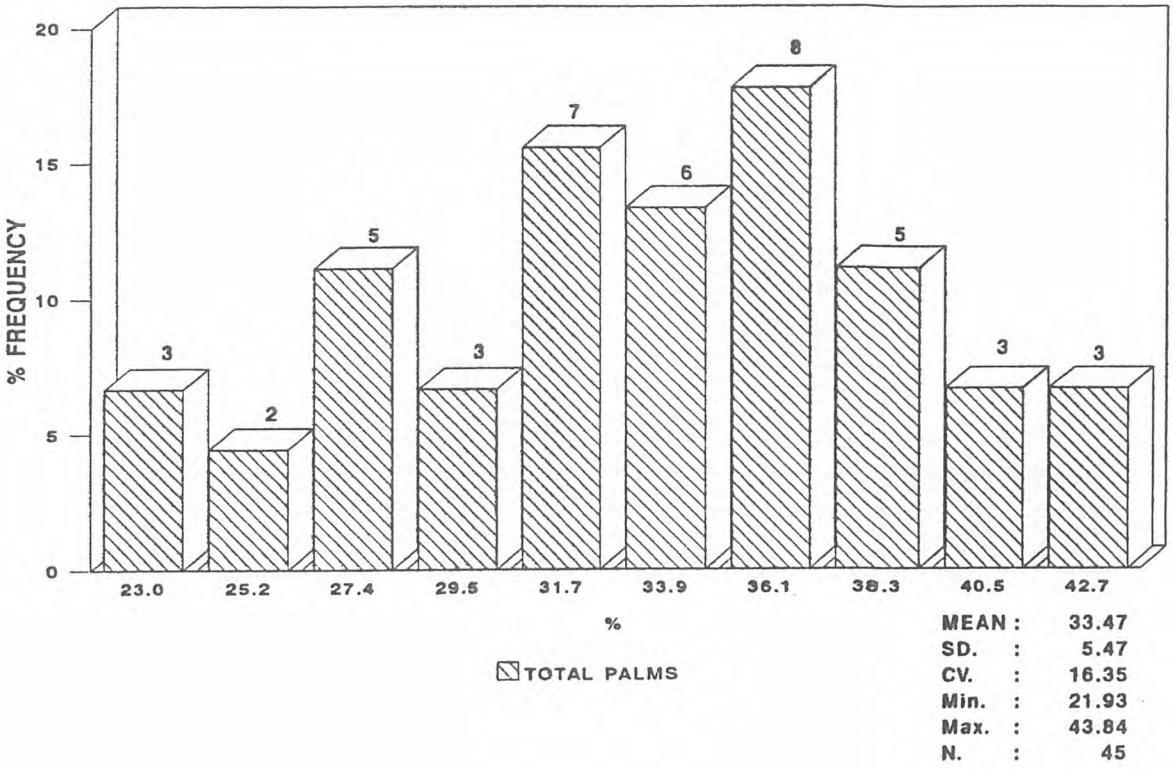


Fig. 13 : **Collection of germplasm in Gambia (1993)**
Bunch Weight

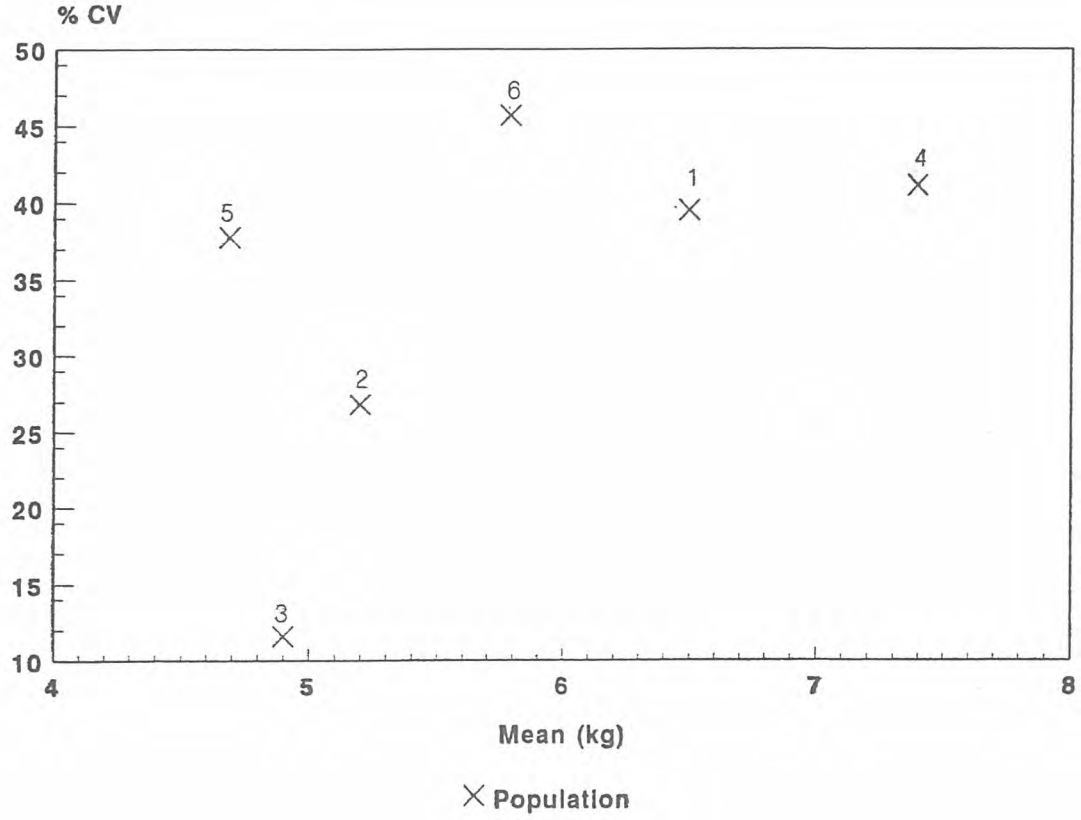


Fig. 14 : **Collection of germplasm in Gambia (1993)**
Bunch Length

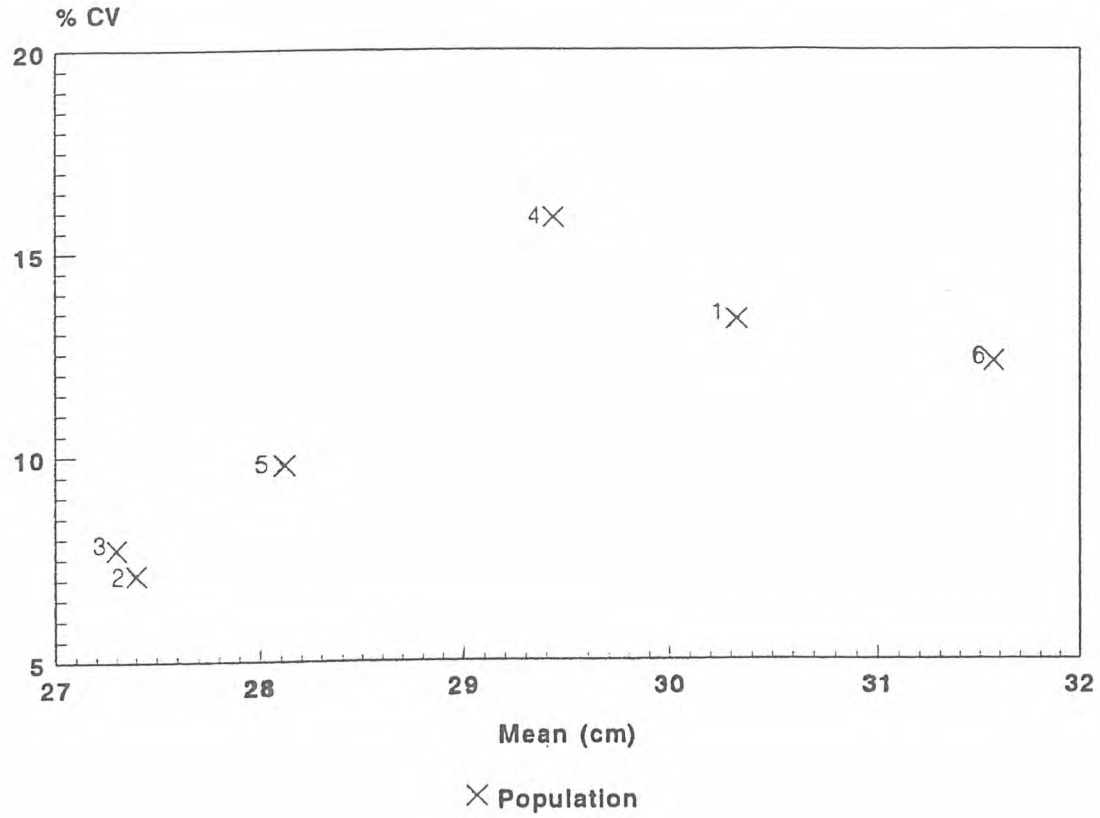


Fig. 15 : **Collection of germplasm in Gambia (1993)**
Bunch Breadth

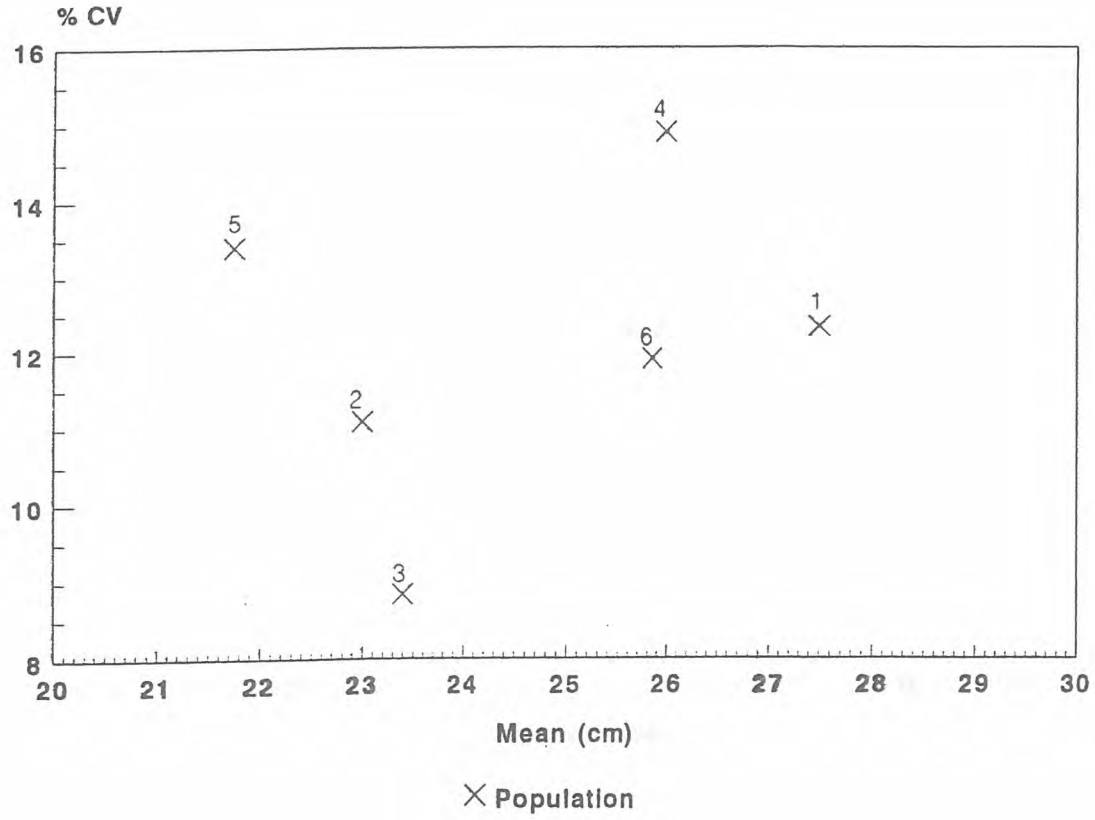


Fig. 16 : **Collection of germplasm in Gambia (1993)**
Bunch depth

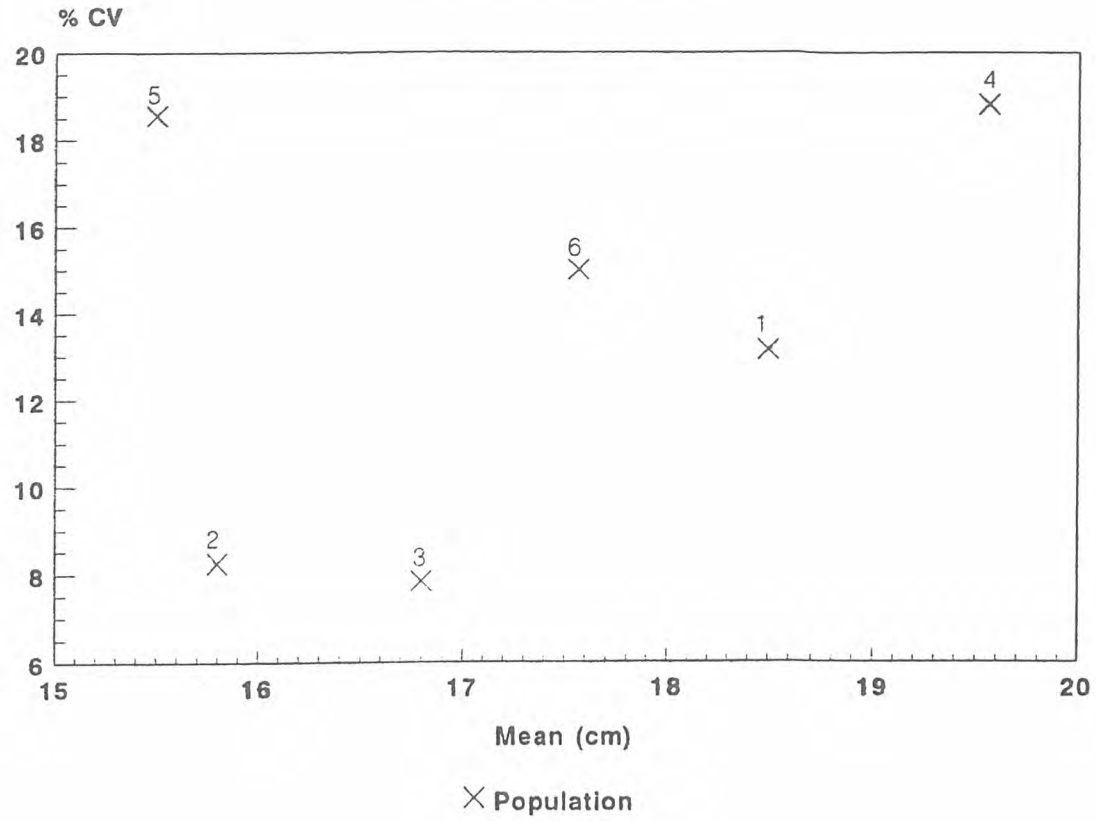


Fig. 17 : **Collection of germplasm in Gambia (1993)**
Length of Fruit

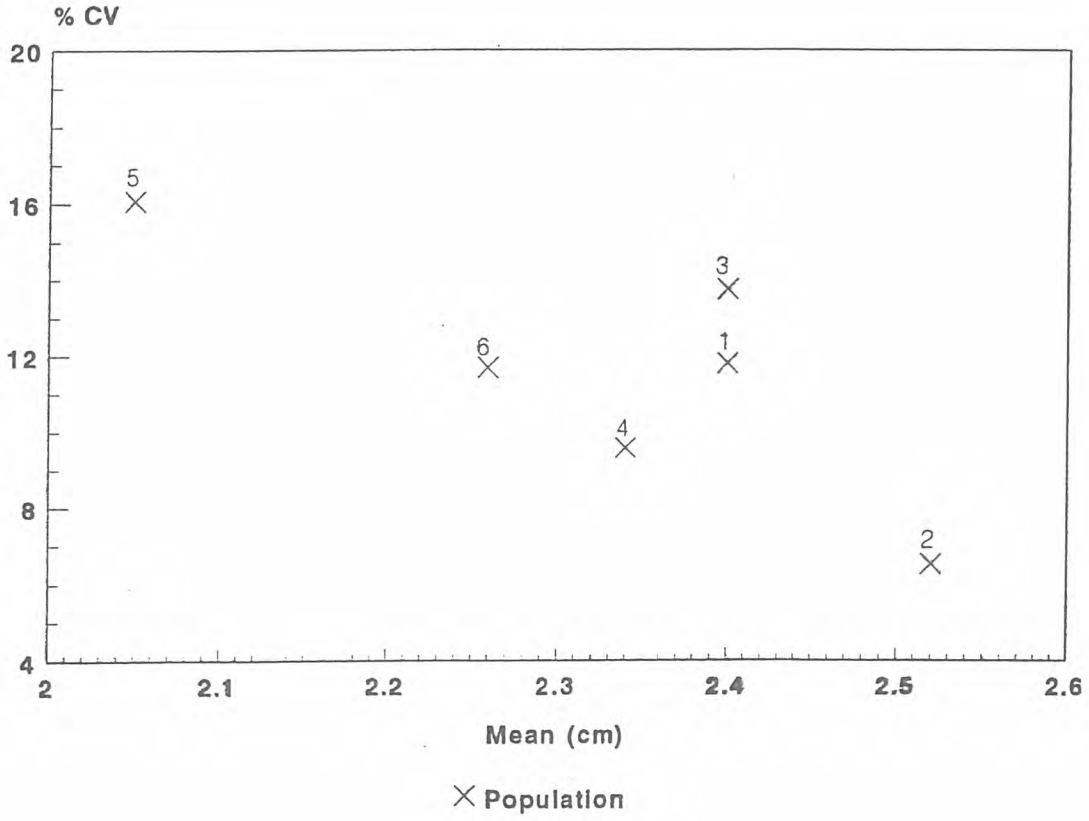


Fig. 18 : **Collection of germplasm in Gambia (1993)**
Diameter of Fruit

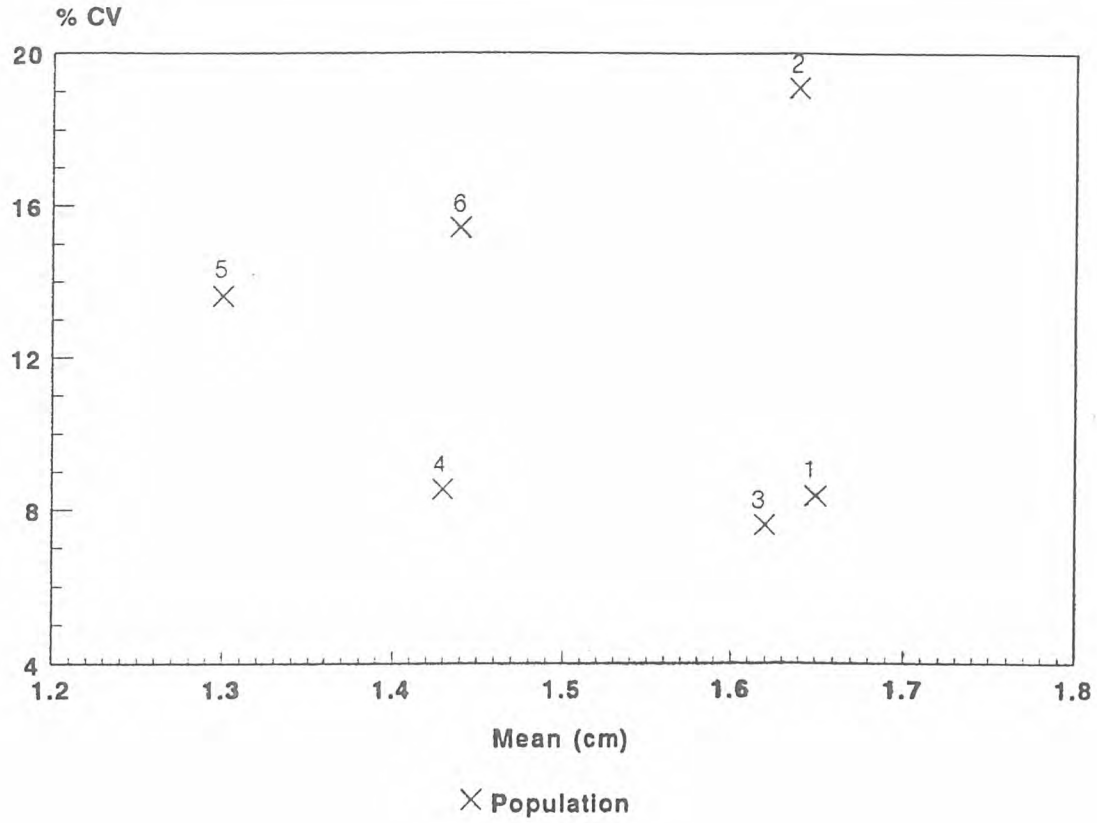


Fig. 19: **Collection of germplasm in Gambia (1993)**
Diameter of Nut

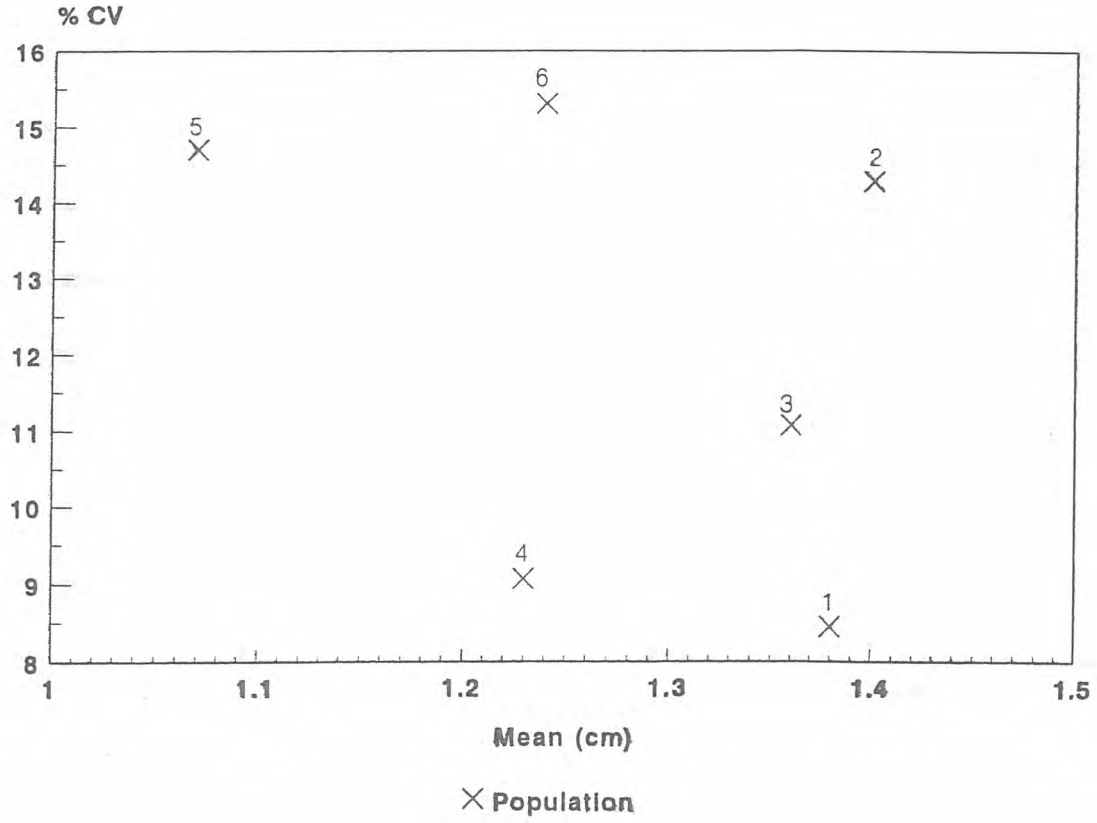


Fig. 20 : **Collection of germplasm in Gambia (1993)**
Diameter of Kernel

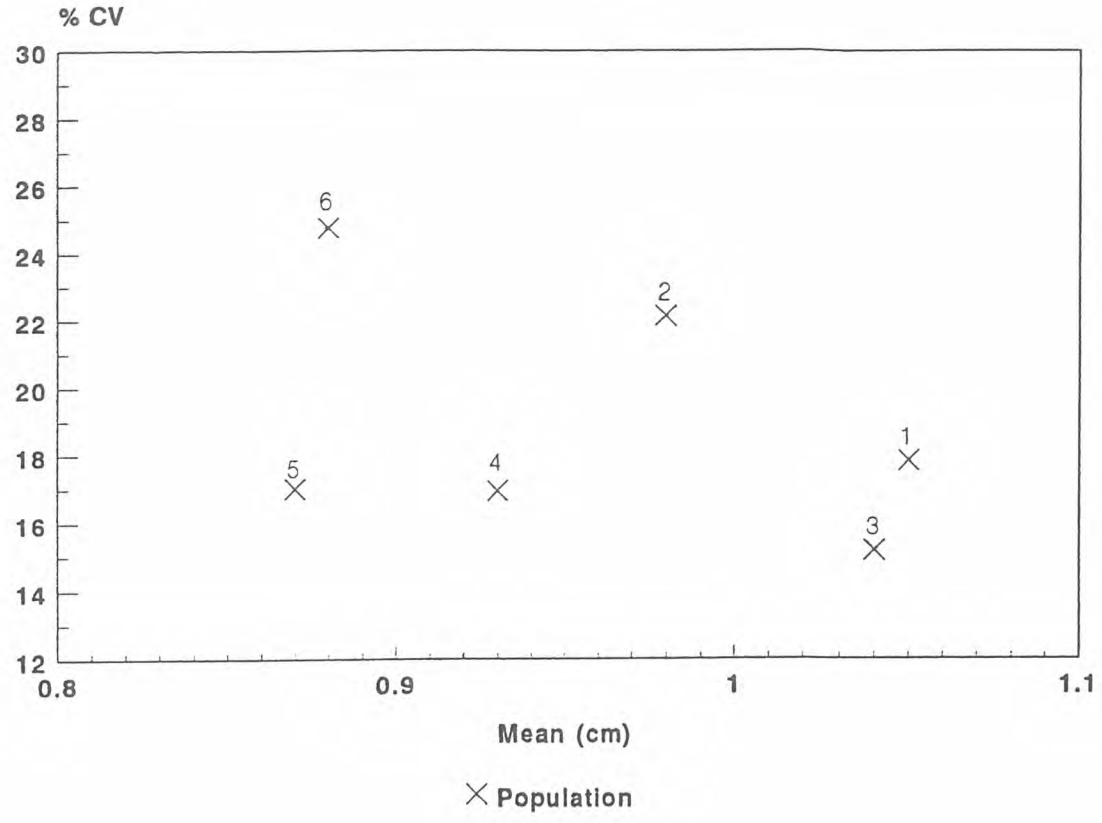


Fig. 21 : **Collection of germplasm in Gambia (1993)**
Wt of 10 Fruits

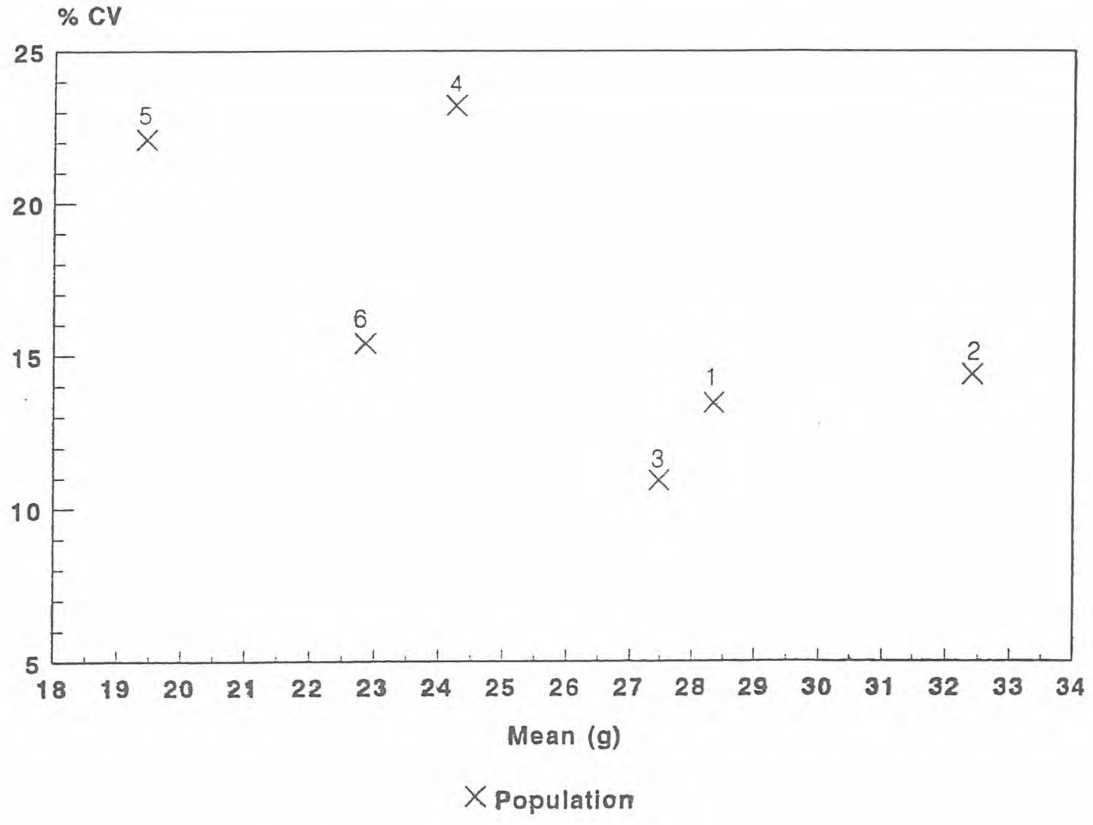


Fig. 22 : **Collection of germplasm in Gambia (1993)**
Wt of 10 Nuts

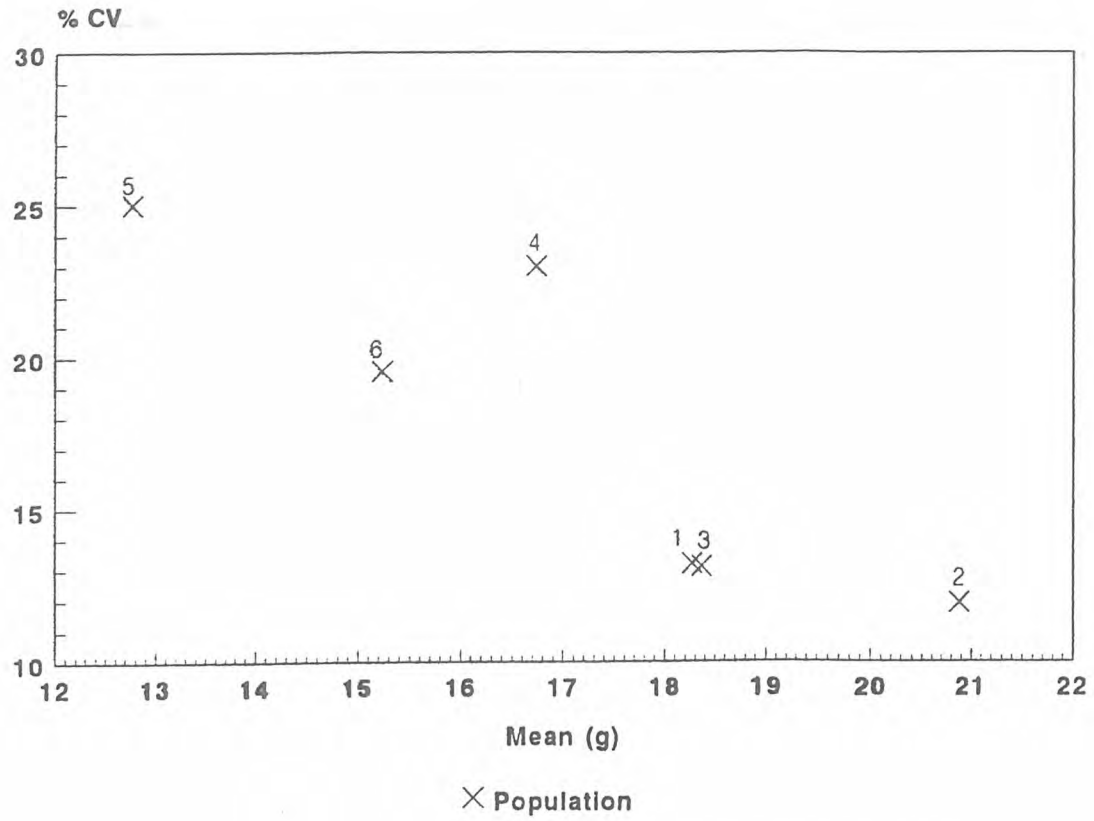


Fig. 23 : **Collection of germplasm in Gambia (1993)**
Mesocarp to Fruit

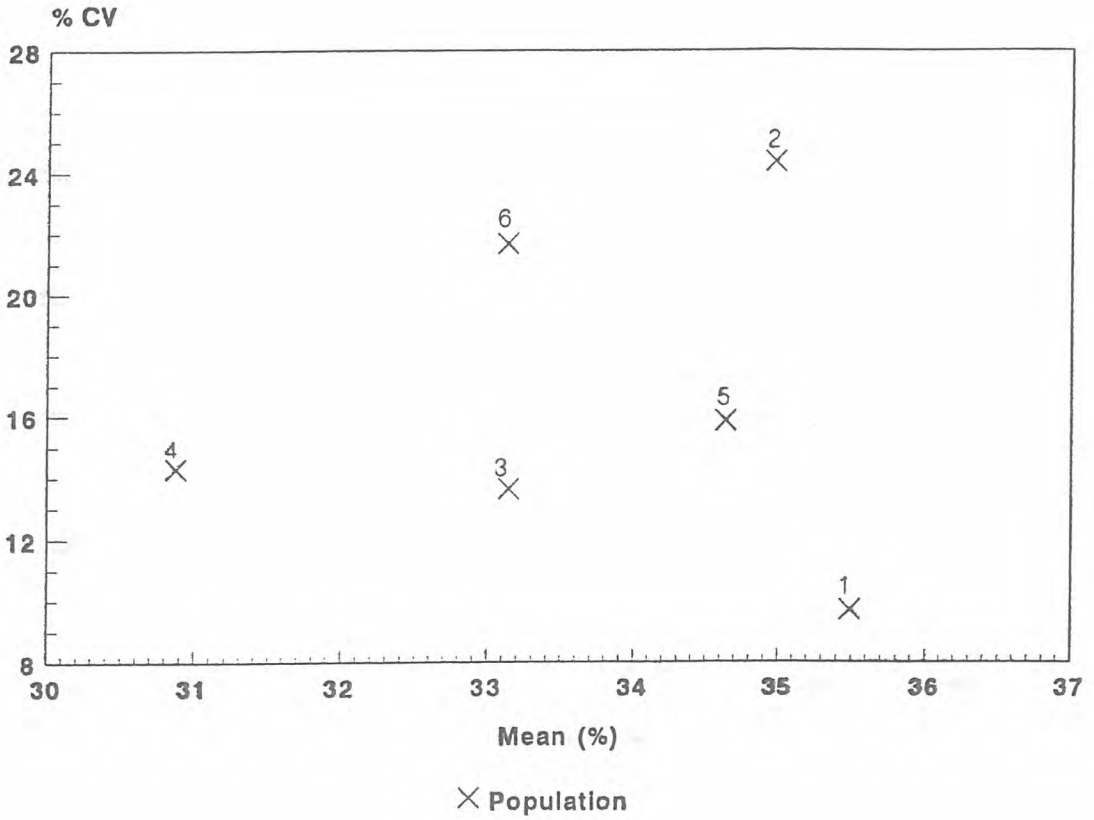
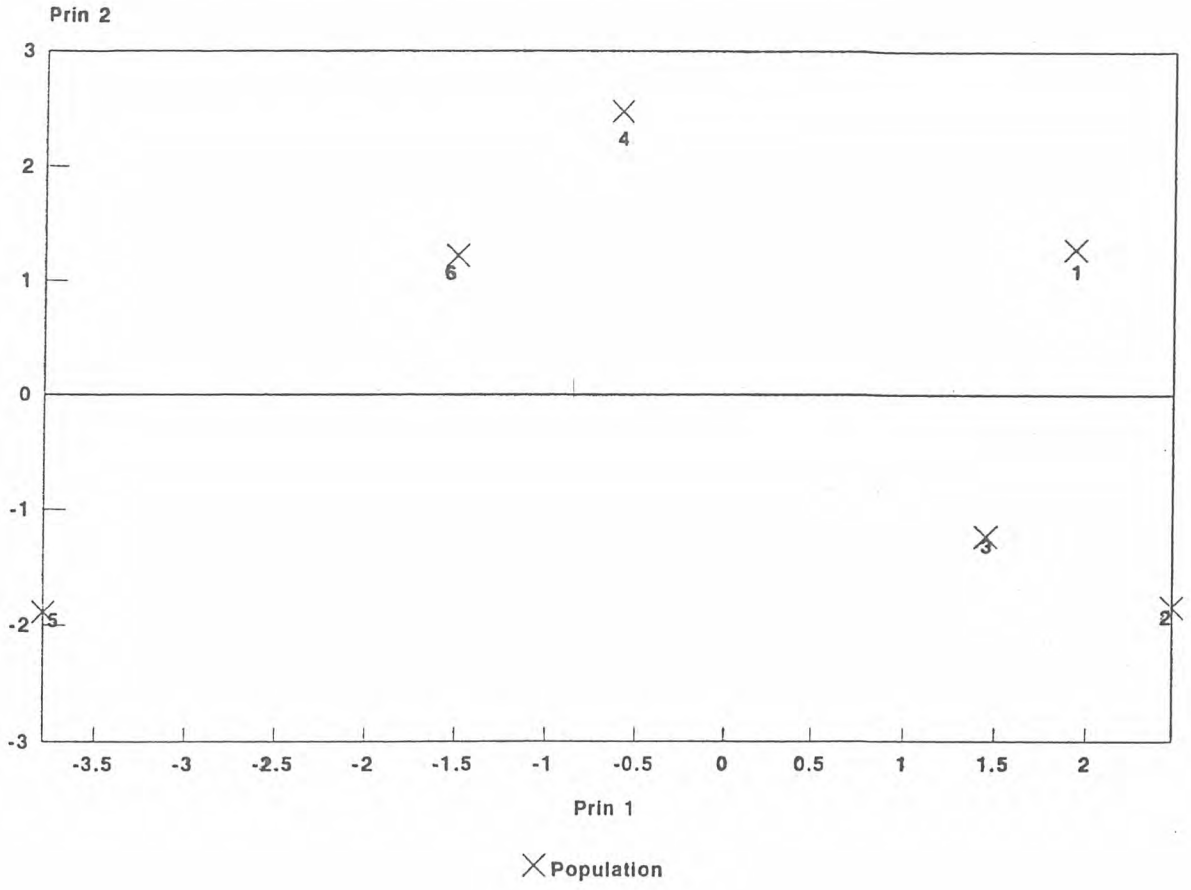


Fig. 24 : **Principal Component Analysis (Gambia)**



The level of variation for the characters recorded in the field is given in Figures 2 - 12. ANOVA was performed on the data to study the variation between populations (Table 4). ANOVA shows that these are significant differences between populations for seven traits.

The relationship between mean and coefficient of variation (c.v.) was computed for the traits scored in the field. The level of variation is rather similar in magnitude to variation of Senegal genetic material (Figures 13-23).

The population 5 sampled at Mansa is rather distinct from others when principal component analysis was carried out.

REFERENCES

Rajanaidu , N. and Jalani B.S. press). Oil palm germplasm collection in Senegal. *ISOPB Newsletter*. Vol. 10 No. 1.

SOCIETY NEWS

The ISOPB EXCO held its last meeting in Sabah, Malaysia in conjunction with a visit to oil palm research stations there. Given below are visit notes of one member of the visit team.

TO SABAH OIL PALM BREEDING STATIONS

1. PORIM Lahad Datu Research Station

This 2000 ha station about 20 km from Lahad Datu towards Tunku/ Sahabat was set up in 1989.

The first 10 km is on the main metaled road, the rest on gravel road towards Permai Plantation.

Todate about 500 ha have been developed, the first 200 (phase 1) in 1991 and the rest in 1993.

There are six agronomy trials occupying about 90 ha and eight breeding trials (166 ha). Only the breeding trials were visited.
As the oldest trials (1991 planting) were just into bearing, only yield recording had just commenced.

The rest of the land in the station will be developed in phases of 200 ha each over the next few years.

2. FELDA Sahabat

This is the largest of FELDA schemes of approximately 105,000 ha.There are 54 settlements and 6 mills and a refinery is proposed. Terrain and soils are generally good and yields of up to 30 tonnes in the fourth year have been reported.

The Agricultural Services of FELDA (PKPF) have a regional stations here (at Sahabat 6) and besides advisory services have some breeding and Agronomy field trials.

The breeding trials are all progeny trials and one such trial (Progeny Trial 5) was visited. The trial compared three different types of DxP namely DxP (La Me), DxP (Yangambi and DxP (AVROS). The comparison was somewhat flawed because of unequal numbers of progenies.

For FFB the DxP (La Me) was best but this planting material is not favoured because of smaller and spiny bunches. Production of this kind material is also sometimes limited by pollen scarcity.

The good growing conditions are reflected in the general yield mean of 12.5, 17.4, 27.2 and 28.6 tonnes p.a. from year 1 to 4.

DxP (Yangambi) and DxP (AVROS) were quite similar for FFB production.

For oil/bunch DxP (Yangambi) appeared superior followed by AVROS DxP.

Height increments were somewhat similar though surprisingly, DxP (La Me) had the largest. This was attributed to the different type of Deli dura used..

3. DoA Sabah Ulu Dusun Research Station

The station was set up in 1962 and is located about 50 km from Sandakan on the Sandakan to Kota Kinabalu road. Terrain is gently rolling with annual rainfall of 3000 mm, fairly evenly distributed except for dry spells in April - May.

Oil palm research is mainly breeding and Agronomy. The breeding programme is based on the Sabah Breeding Programme and is now in its second cycle. About 1 - 2 million DxP seeds are produced from the 1st and 2nd cycle SBP selections.

The breeder (Mr. Phua Peh Kee) proposes to commence the 3rd cycle crossing next year.

Agronomy trials are mainly some fertilizer trials and a long running fan design density trial.

There is also some coconut fruit trees and cocoa breeding and agronomy research; the former mainly devoted to collecting and evaluating different materials.

The tissue culture laboratory, originally set up for oil palm tissue culture, now also does limited banana and orchid culturing.