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EDITORIAL

A large scale propagation of elite oil palms through tissue culture technique has encountered a major set back because of the occurrence of abnormality and somaclonal variation.

It has been an idea to produce "clonal" seeds. The idea is simple - clone the parents of outstanding DxP progenies which can then be conventionally crossed to produce large numbers of the very best seeds. With only very few palms needed to be cloned, the time spent in culture will be minimal with a concomitant minimal, or even zero, incidence of abnormality. However, even this method has encountered clonally - induced changes which are genetically transmissible.

Cloned parental palms, normal as they may appear, still beg the question - has latent changes already occurred in them? Latent changes, however innocuous, can still be transmitted for greater expression in the progenies. Thus, clonal seeds still have to be assessed for fidelity. United Plantations reports on its clonal seeds in this issue.

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TRUNCATED LEAF SYMPTOMS (TLS) ON CLONAL SEEDLING

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INTRODUCTION

Micropropagation of elite oil palm planting material for commercial utilisation has been hampered principally by the 'mantle fruit' phenomenon. Corley (1986) first reported that clones planted in 1981 were completely normal but the very same clones planted later in 1982 and 1983 showed increasing incidences of abnormalities. The abnormalities, which presented as androgynous male inflorescences, mantled and parthenocarpic fruit, appeared to be linked to the time spent in culture. It was thus hypothesized that reducing the time in culture would reduce, if not eliminate, the abnormality problem. Based on this assumption, United Plantations Berhad embarked on cloning the parents of top DP combinations. *Dura* and *Pisifera* palms cloned could then be used as parents to produce "clonal" seeds in large numbers. The technique also offers an opportunity to conserve superior parent palms (particularly *Pisiferas*) which may otherwise be lost through *Ganoderma* root disease, replanting or being rendered difficult to use because of height.

Cloning of Elite DP Parents

Young unopened leaf explants from 3 *Dura* and 2 *Pisifera* palms, selected for their superiority as parents, were successfully initiated into culture. The *Pisifera* cultures were observed to be less proliferative than the *Dura* cultures in shoot production. Ramets (tissue culture plants) from all the 5 ortets (plants which tissue are used for culture) were established in the nursery and subsequently field planted in 1992 and 1993. The number of ramets planted ranged from 12 to 366 per clone. Visual observation and evaluation of the ramets in the nursery and field did not reveal any vegetative abnormality. Census on the first bunches borned confirmed that all the ramets were devoid of mantle fruit.

Biclonal and Monoclonal DxP Crossing Programme

It was decided to use the ramets for progeny testing to confirm their clonal fidelity. The programme involved:-

i. Crossings between Clonal *Dura* (Dc) and Clonal *Pisifera* (Pc) = Biclonal Seeds
ii. Crossings between Clonal *Dura* (Dc) and Progeny *Pisifera* (P) and vice-versa = Monoclonal Seeds.

The individual Dc palms involved in the programme were randomly taken while *Pisiferas* were used on the basis of their pollen availability. The first batch of progenies comprising 56 biclonal and 20 monoclonal progenies were raised in the nursery in 1996.

Observation

A census carried out prior to the transfer of the seedlings from the pre-nursery revealed a large number of progenies exhibiting truncated leaf symptom (TLS). Other general abnormalities noted like grassy leaf, rolled leaf, etc. were similar to those found in traditional DxP seedlings.

Truncated leaf, sometimes termed "self pruning", is a vegetative abnormality which presents as partial necrosis across the lamina. The affliction resembles grasshopper damage. Depending on the degree of severity, a leaf can lose only a small fraction to as much as half its lamina. The symptom can be seen as early as in the lanceolate leaf stage. Bifid and pinnated leave are also affected.

This abnormality was first encountered in a nursery in 1989 on ramets derived from very old cultures. In one particular clone (UY7) all 50 ramets from one line were affected, while ramets from another line of the same clone were completely free from TLS. The few ramets with mild symptoms recovered when placed in shade. However most moderately and all severely affected palms remained stunted, necessitating their culling. Unfortunately, no attempt was made to follow through on the performance of the affected ramets to maturity.

TLS on seedlings has not been previously observed. This appearance on clonal seedlings was therefore our first experience. The result of the census showed that 56 or 74% of 76 progenies had TLS. The data, summarised in Table 1 below, showed that:

1. Among Biclonal material, only 7 out of 56 progenies were free from TLS. The 2 *Pisifera* clones gave different results - only 1 progeny out of 7 from Clone Pc25, and all but 1 progenies of Clone Pc27 were affected.

2. Even among the Monoclonal material, 7 of 20 progenies had TLS.

Within affected progenies, the frequency of plants affected by TLS varied, the ranging from 3% to 37%. Mean figures for each group of the affected crosses, given in Table 2, showed that the incidence in monoclonal progenies can be quite high e.g. Dc26 x TP5 was 23% affected, although biclonal progenies were generally more severely affected.

DISCUSSION

No attempt was made to identify the cause of this phenomenon, but it is likely to have genetic implications. Selected crossings will be repeated to determine whether the age of the ramets has any effect on occurence of TLS.

Whether TLS will give rise to other abnormalities will have to await the performance of these seedlings which will be field planted in 1997.

This observation reaffirmed the general feeling that ramets intended for use as parents must be adequately tested. Proper records based on intensive observation are essential.

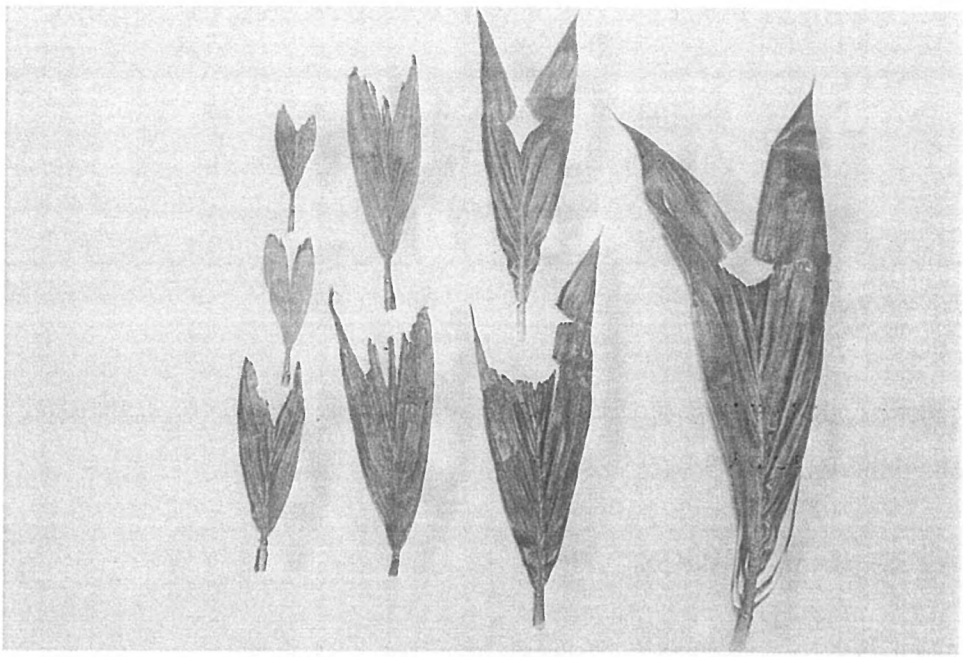
Table 1. Number of Progenies Affected by Truncated Leaf Symptom (TLS)

Pisifera Parent / *Dura* Parent	Clone Pc25		Clone Pc27			Progeny TP5
Clone	Palm 39/20	Palm 39/22	Palm 37/19	Palm 37/20	Palm 37/21	Palm 282/3.22
Dc24	0(1)	1(3)	5(5)	2(2)	7(7)	2(10)
Dc26	-	0(2)	4(5)	6(6)	7(7)	4(7)
Dc29	0(1)	-	2(2)	10(10)	5(5)	1(3)
Total	0(2)	1(5)	11(12)	18(18)	19(19)	7(20)

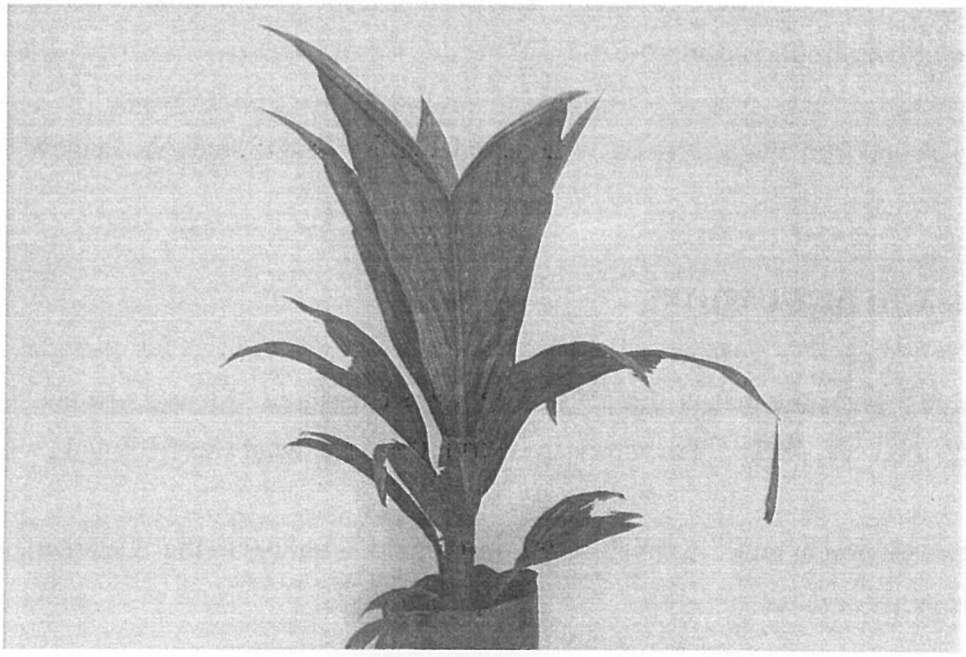
Ref.: (x) = Total number of progenies

Table 2. Incidence of Seedlings with TLS in Affected Progenies (Expressed as % of Total Number of Seedlings Planted)

Pisifera Parent / *Dura* Parent	Clone Pc25		Clone Pc27			Progeny TP5
Clone	Palm 39/20	Palm 39/22	Palm 37/19	Palm 37/20	Palm 37/21	Palm 282/3.22
Dc24	-	9	19	12	12	3
Dc26	-	-	29	29	29	23
Dc29	-	-	28	19	20	5



1. Various degrees of truncation of leaves



2. A seedling recovering from TLS

COLLECTION OF OIL PALM GERMPLASM IN GUINEA

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INTRODUCTION

A genetic collection was carried out in May 1994 to gather a cross-sectional sample of oil palm genetic material from Guinea Conakry.

MATERIALS AND METHODS

The collection was carried out with the cooperation of the Guinean Ministry of Agriculture and Extension. Collection was done at 14 sites, the locations of which are given in Table 1. The numbers of *Dura* and *Tenera* palms sampled per site are given in Table 2. Seeds from 61 palms (58 Duras and 3 *Teneras*) were collected. Dense palm groves were found at Boffa and Boke but only sparse groves around Nzerekore.

Bunch and fruit characteristics were recorded in the field to study the range of variation for the traits.

RESULTS AND DISCUSSIONS

Table 3 gives the means and c.v.s of the traits measured. Mean *Dura* bunch weight was 11.4kg with a c.v. of 48.4%. For mesocarp to fruit (%), the mean was 35% and c.v. 17.6%.

The variation in bunch weight, scored in the field, is shown in Fig. 1 with the means, c.v.s, and ranges in histograms.

Data on individual populations were analysed. Generally, populations in the south of the country had higher mean values for the characters scored in the field.

Multivariate analysis - principal component analysis - showed that the populations in the wetter south are rather distinct from the populations in the north.

Table 1. Details of sites sampled in Guinea.

	Site	Location
1.	Korodu	- 2 km from Kissidougou
2.	Dempodu	- 7 km from Gueckdou
3.	Bolodou	- 8 km from Macenta on the way to Nzerekore
4.	Seredou	- on the way to Nzerekore
5.	Samota	- 12 km from Nzerekore on the way to Yamou
6.	Golowe	- 12 km from Nzerekore on the way to Lola
7.	Bomasi	- k km from Nzerekore on the way to Macenta
8.	Koliadi II	- 5 km from Kindia on the way to Telimele
9.	Gbensenke	- 30 km from Dubioka on the way to Boffa
10.	Sokoutou	- 60 km from Boffa on the way to Boke
11.	Youssouf Aonkeya	- 22 km from Boke on the way to Boffa
12.	Kastiri	- 10 km from Kamsar on the way to Boke
13.	Tumbeta (Carrefour Mankountay)	- 80 km to Boffa
14.	Tokiron	- 7 km from Coyale on the way to Forecariah

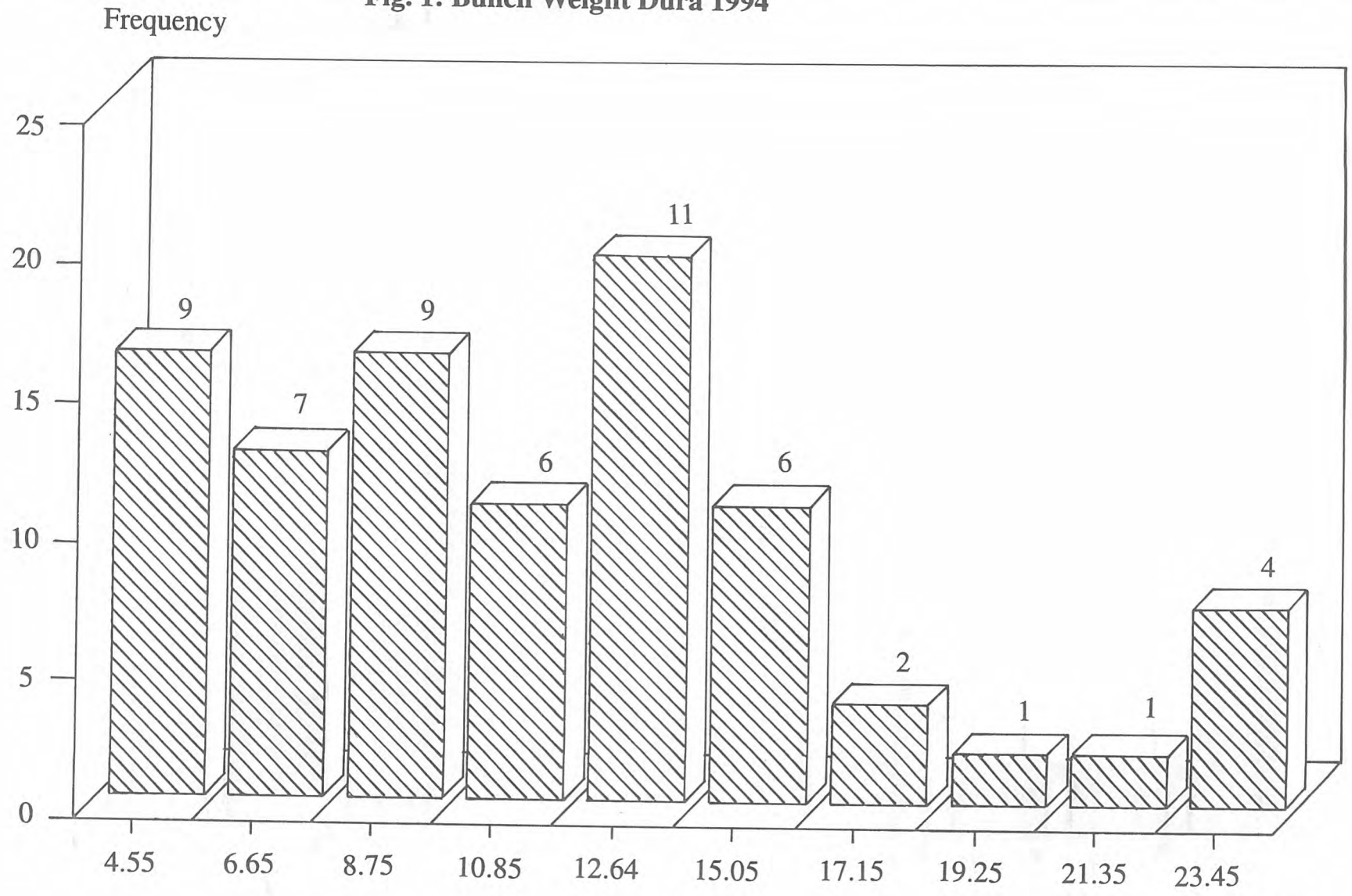
Table 2: Number of *Dura* and *Tenera* palms sampled at the sites

Site	*Dura*	*Tenera*	Total
1	4	0	4
2	4	0	4
3	5	0	5
4	4	0	4
5	3	2	5
6	5	0	5
7	4	1	5
8	3	0	3
9	5	0	5
10	5	0	5
11	5	0	5
12	5	0	5
13	3	0	3
14	3	0	3
Total	58	3	61

Table 3. Variation of characters recorded in the field in Guinea (*Duras*)

Character	n	$\bar{x}$	c.v. (%)
Bunch weight (kg)	56	11.4	48.4
Bunch length (cm)	56	38.4	11.0
Bunch breadth (cm)	56	33.7	12.8
Bunch depth (cm)	56	25.8	15.3
Weight of 10 fruits (g)	56	64.3	41.2
Weight of 10 nuts (g)	56	41.8	42.6
Mesocarp to fruit (%)	56	35.0	17.6
Length of fruit (cm)	56	3.4	18.7
Diametre of fruit (cm)	56	1.9	15.5
Diametre of nut (cm)	56	1.5	16.5
Diametre of kernel (cm)	56	1.0	26.9

Fig. 1: Bunch Weight Dura 1994



MEAN	:	11.42
SD.	:	5.52
CV.	:	48.37
MIN.	:	3.50
MAX.	:	24.50
N.	:	56

OTHER NEWS

1. **Conference In Cairns And Field Visit To Dami (PNG)**

This has been postponed to 1998 and members will be informed of new developments in due course.

2. **Genetic Linkage Maps In Some Tropical Perennial Crops.**

The society proposes to have a workshop on the above subject in the last quarter of this year to update members on the progress made in genetic mapping of crops like oil palm, tea, coffee, rubber, bananas, etc.

Invitations will be sent out when details are finalised.