

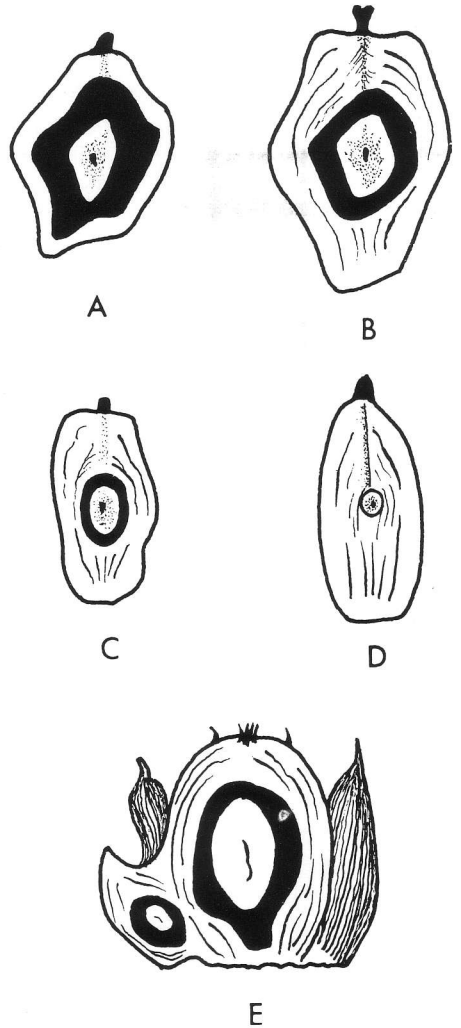
The Cultivars of the African Oil Palm

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The most common horticultural form of the African oil palm, *Elaeis guineensis*, is the 'Dura' which has spherical thick-shelled fruit and is found in large groves in West Africa and Latin America, and in plantations in the Far East. In the latter area the fruit is usually larger and the shell very thick, and it is known as the 'Deli Dura' of Sumatra. The difference between the bunches (or *bangas* in Nigeria) of the ordinary African 'Dura' and the 'Deli Dura' is that the spikelets of the former end in long spines while the latter have short spikes. Another form is the rare 'Pisifera' which produces predominantly sterile fruit, but a few fertile fruit will identify it as these are without shell and have pea-like kernels.

An important discovery was made in the Congo, namely that the 'Dura' used as a mother plant could be crossed with the 'Pisifera' as pollen parent. The resulting hybrid was called 'Tenera' or 'Lisombe' in the Congo and it produced an elongated or ovoid thin-shelled fruit with more oil-bearing mesocarp than the 'Dura.' At present the 'Tenera' form is preferred for the Latin American and the African plantation industry. Malaysia is also changing to 'Tenera.' The 'Tenera' fruit has a dark-colored fiber ring around the shell which is absent in the 'Dura.' The length of 'Dura' and 'Tenera' fruit is 2-5 cm. or more, and the weight is 3-30 g. and over. The shell thickness in 'Dura' is 2-8 mm. and in 'Tenera' 0.5-4 mm.; the mesocarp content in the former is 35-65 percent and in the latter 55-96 percent. The trunk of the plantation 'Tenera' is thicker and shorter than the grove 'Dura' and the

leaf span is larger. The grove palms grow at a higher density than the plantation palms, and this causes the former



1. Fruit forms. A, African 'Dura'; B, 'Deli Dura'; C, 'Tenera'; D, 'Pisifera'; E, 'Poissoni' or 'Diwakkawakka.' A-D adapted from Hartley, E after Janssens in Hartley, drawings by Miss Razia Ehsanullah.



2. 'Dura' oil palms between Aba and Owerri, Nigeria. Epiphytes and cuts from wine-tapping can be seen on the trunks. In the center of the red (dark) bunches is a yellow-green (lighter) 'Virescens' bunch. Photo Mrs. L. Ehsanullah.

to grow rapidly to about 80-100 ft. in their fight for adequate light. The commercial plantation palms are usually allowed to grow up to about 58 ft. after which they become too tall for economical harvesting and are therefore cut down and replaced.

Crosses between the American oil palm *Elaeis oleifera* (HBK) Cortes and *E. guineensis* Jacquin cv. 'Pisifera' have been planted in the Congo and these produce a thin-shelled 'Tenera' form of fruit without a fiber ring. One disadvantage of the hybrids was that the leaves developed to huge dimensions, and if the

palms were used for plantations they would have to be grown at a low density. It is hoped, however, that the procumbent and slow-growing habit of *Elaeis oleifera* would make the hybrids useful for easier and longer harvesting in the plantations, but inheritance of procumbency has not yet been established.

An unusual type known as 'Idolatrix' is found mostly in western Nigeria and Dahomey. It differs from other cultivars in that instead of being at right angles to the rachis the leaflets are attached at an acute angle and adhere to



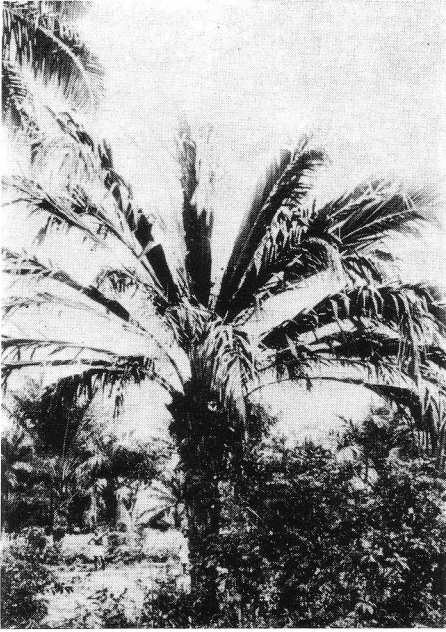
3. 'Tenera' oil palm plantation at the Nigerian Institute for Oil Palm Research, Benin, Nigeria.
Photo courtesy N.I.F.O.R.

each other most of the way up the rachis. The leaves are also a darker green and less drooping than the other types. The fruit is used for fetish rites in West Africa and the oil, which is said to seethe and bubble during preparation, is reserved for medicinal purposes. This palm is therefore known by such names as the king palm, the tabu palm, and the juju palm—the word *juju* means "black magic" in West Africa. It is not tapped for wine and is often planted as an ornamental palm. Branched oil palms are also considered sacred and are not harvested.

An abnormal fruit type is the rare 'Poissoni' or 'Diwakkawakka' in the East Indies, also called mantled fruit. The "mantle" surrounds the main part of the fruit and consists of 6–10 supplementary carpels—often containing both kernel and shell—which have developed from the rudimentary stamens of the female

flower. This fruit is 3–4 cm. long. For the plantations, however, the ordinary type of fruit is preferred.

There is a great variety in the color of the skin or exocarp which is usually more pigmented than the mesocarp or pulp. The ordinary or more common type is 'Nigrescens' which in its unripe state is black to violet on the upper part and white where it is attached to the bunch. Purvis has proposed two names, viz. 'Rutilo-Nigrescens' and 'Rubro-Nigrescens,' but intermediate types are found. On the former, more than half of the upper part of the ripe fruit is reddish-black and the lower part is a lighter red. Ripe 'Rubro-Nigrescens' has a garnet-brown cap, changing to red or Indian orange at the base. Ripe 'Deli' fruits are usually a paler orange. I was lucky to see a yellow-green 'Virescens' bunch lying among red 'Nigrescens' bunches on the road between Aba and



4. 'Idolatraca' oil palm. The fused pinnae make it easily distinguishable from other cultivars. Photo courtesy Institut de Recherches pour les Huiles et Oléagineux (I.R.H.O.).

Owerri in East Central State of Nigeria in 1965. This type is so rare in Nigeria that in a grove area only 50 of 10,000 bunches were 'Virescens.' When unripe, the fruit is bright green on the upper half and yellow at the base, and at maturity it changes to reddish-orange all over except the apex which remains green. These fruit contain traces of an anthocyanin which may be different from that found in 'Nigrescens.' Like the 'Idolatraca' and also the 'Poissoni,' the green-fruited 'Virescens' are associated with fetish beliefs. When the green fruits had been gathered in certain places the fruits would be abandoned and thus would give rise to several 'Virescens' palms grouped together.

The mesocarp of 'Nigrescens' and 'Virescens' fruits contains carotene. Fruits at the exterior of the bunch may have twice as much carotene as those

from the interior. The fruits of grove palms have been found to contain more carotene in their oil than the plantation palms. The "white" oil palm, named 'Albescens' by Beccari, has a very low carotene content. These fruits are very large and pale ivory at the base when unripe, turning to a greenish-yellowish white at maturity. The tip is either green and is known in the Congo as 'Albo-Virescens,' or dark brown and known as 'Albo-Nigrescens'; the former is the rarest. 'Albescens' is even rarer in Africa than 'Virescens' and in Angola is found in the proportion of 3 to 10,000.

In Brazil, the 'Virescens' type is known as *dende da almas* or *perriquito*, the 'Rutilo-Nigrescens' as *creoulo*, and the 'Rubro-Nigrescens' as *caboclo*. 'Tenera' and 'Pisifera' are rare in the Brazilian groves outside the main palm belt in Bahia state; the former is called *sombra* and the latter *dende caroco de quiabo* or *cafune*. The large-fruited 'Dura' in these groves are known as *assu*, the small-fruited as *mirim*.

For inheritance studies in the Congo and at the Nigerian Institute for Oil Palm Research, Benin, Nigeria, the oil palm has been classified under (1) shell or no shell and/or fiber ring: three forms; (2) presence or absence of supplementary carpels: two types; (3) presence or absence of anthocyanin or pigmentation of the exocarp: two types; (4) presence or absence of carotene in the mesocarp on ripening: two types. As all these characters are independently inherited there are eight types or type-combinations, and 24 type-form combinations of the oil palm fruit. There is still some doubt regarding the inheritance of the various characters. In intravarietal crosses the following four characteristics are known to breed true: 'Dura,' 'Pisifera,' 'Nigrescens,' and 'Albescens.' The 'Tenera' is a heterozygous hybrid which does not breed

true, and the rest of the characters may be heterozygous and may or may not breed true.

An unusual type of oil palm has been found in the Ivory Coast and Dahomey which produces vegetative shoots instead of inflorescences in the axils of its leaves. These oil palms have been termed viviparous by P. Henry. Sometimes the

shoots can be rooted and will then produce similar viviparous palms.

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PALM BRIEFS

Fruiting in the Saw Palmetto

Never mind the lilies of the field. We are to consider the almost indestructible saw palmetto (*Serenoa repens*). Does it have possibilities as an ornamental, or is it only an unsightly weed that commonly grows in thickets and is a nuisance? If there were but one form of it, and only one growth habit, there might be a ready answer to that question, but it is an extremely variable palm, depending upon environment and other factors not yet comprehended or even investigated. Some forms of it are quite elegant, while others fail to inspire admiration.

In Florida casual observers seldom know the saw palmetto under more than two of its many guises. They have seen it in seemingly endless extensions under pines or other trees, in low thickets of nearly uniform height that appear half blighted or starved, and the very embodiment of monotony; or they have seen tight "islands" of it scattered in high pineland or in open spaces pastured chiefly by grasshoppers; or growing so thickly on dry sand dunes along the Atlantic littoral in Florida that only yuccas and xerophytic prickly pear succeed in gaining a sparse foothold at wide intervals or else not at all. So an indelible impression is made on these observers, most of them travelers doing all their observing from moving cars.

Not everyone penetrates countryside much farther removed from a highway than an average golf course extends. A city park is wilderness enough for many people, and only a minority have seen the saw palmetto in low moist hammocks, in undeniable swamps and along the banks of streams with its feet in the water. Nor is this adaptability and wide variability known to all lifelong Floridians by any means. To be on the safe side, one might refer to the different forms as "kinds" rather than races or varieties, for at present no botanical varieties are recognized and of course there is but the one species. For example, two kinds have each a different color of the palmate foliage, one green and the other distinctly bluish, and these contrasting colors are constant. The bluish form often compels admiration and also gives rise to a burning desire to have it in the garden, which, though possible, is easier said than done.

Plant nurseries do not stock the saw palmetto for several reasons. For one thing, there seems to be a notion among customers that the saw palmetto is not worth hard cash since it grows wild by the useless millions and therefore is a highly undesirable plant, a sort of black sheep of the palm family; and certainly nurserymen do not care to waste time in efforts to overcome prejudice, whether