

OIL PALM IN INDIA

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Oil Palm is a native of West Africa and grown extensively in South-East Asian countries, (Malaysia, Indonesia and Papua New Guinea) African countries, (Nigeria, Ivory Coast, Ghana, Liberia, Sierra Leone, Cameroon, Republic of Congo and Zaire) and south American countries (Costa Rica, Panama, Columbia, British Guyana, Peru, Ecuador, Venezuela and Brazil).

Oil Palm was introduced in India during last century in National Botanical Garden, Calcutta. During 1947-54, the African oil palm plants (*dura*) were introduced in Pune and planted for ornamental purpose by the Maharashtra Association for Cultivation of Sciences (MACS). The Government of Kerala introduced oil palm and set up an oil palm research station at Thodupuzha during 1960. The growth of plants at this station was satisfactory and this encouraged the Plantation Corporation of Kerala Limited to start oil palm plantations on a commercial scale during 1971.



Oil Palm was introduced in *Andhra Pradesh* nearly 40 years ago at Agricultural Research Station, Kovvur and Ambajipet in East Godavari District. For the first time in India, commercial planting under irrigated condition was taken up during 1987 in Pedavegi Mandal, West Godavari District. In

Assam, oil palm was introduced in Jorhat, nearly 38 years ago.

During 1986, ten tenera hybrid seedlings were planted at Central Plantation Crops Research Institute, Research Centre, Kahikuchi, Assam. Large scale oil palm planting was taken up in *Karnataka* in Dakshina Kannda during 1969. Dura palms were planted at Curzon park, Mysore and Chetahalli, Kodagu District, nearly 38 years ago. The Department of Horticulture has planted oil palm seedlings at most of their horticulture farms located in different agro-climatic regions in Karnataka State.

Dura palms were introduced in *Maharashtra* near Pune during 1947-54, for ornamental purpose. Few palms were planted at Neeral and Ganeshkhanda, Pune.

Few dura palms are growing satisfactorily in Dapoli. CPCRI has supplied 100 palms and planted at Agricultural School, Manjri, Pune during 1982. At the coconut research station Sakhigopal, *Orissa*, four dura x dura and three plants of dura x pisifera were brought from Kerala and planted during 1965. A few palms were available at coconut seed garden, Isaneshwar and tourist guest house at Konark. In Kanyalumari district of *Tamil Nadu*, 24 dura palms were planted in 1969 at Pechiparai. Fifteen palms were planted during 1972 at coconut research station, Veppankulam, Thanjavur district. In *Tripura*, 24 tenera palms planted during 1975 at bio-complex of Sipahijala along lake side. Tenera seedlings were planted during 1983 at Horticultural Station, Nagicheera. In *West Bengal*, tenera oil palm seedlings were planted during 1979 at Indian Statistical Institute, Calcutta. Tenera seedlings were brought from CPCRI Research Centre, Palode during 1986 at planted at Agricultural Farm, Manmatha Nagar in 24-Parganas district. Few palms are more than 50 and 100 years old. Oil palm cultivation has been taken up on a commercial scale in *Andaman and Nicobar Islands* (2,400 ha) by Andaman and Nicobar Islands Forest and Plantation Development Corporation (ANIFPDC) and in *Kerala* by Plantation Corporation of Kerala Limited (PCKL) (1,052 ha) and Oil Palm India Limited (OPIL) (3,705 ha) under rainfed conditions during 70s and 80s. Pollinating weevil *Elaeidobius kamerunicus* has been introduced for pollination, better fruit set and yield.

All the earlier introductions of oil palm in the country were made on experimental basis without adequate working knowledge about the crop. Despite several limitations, stray plants have given useful indication of

the possibility of growing oil palm successfully in these areas. The better performance of palms located near water source or under irrigation confirmed the need for assured water supply for oil palm cultivation.

It is evident from the above that oil palm is available in 10 states of the country from Tamil Nadu to Tripura. Oil Palm plants available in different parts of the country have demonstrated the possibility to grow oil palm in different states of the country. Systematic "Oil Palm" planting programme was taken up during 1988-89. Three large demonstrations were laid out in the states of Andhra Pradesh, Karnataka and Maharashtra under the aegis of Department of Biotechnology to assess the potentialities of the crop. Oil Palm cultivation as a small farmer's crop under irrigation was taken up in West Godavari district during 1988-89 under District Rural Development Agency (DRDA) program.

Chadha committee reports (1988 and 2006) recommended an area of 10.36 lakh ha as potential for oil palm cultivation in India. Following these documents, a massive Oil Palm Development Programme (OPDP) was formulated by Technology Mission on Oilseeds and Pulses (TMO&P), Ministry of Agriculture, Government of India started during 1991-92, to promote oil palm on a commercial scale under irrigated conditions in potential states of oil palm. The area expansion took place in different states till date and the present area is as follows, Andhra Pradesh (1,06,204 ha), Chhattisgarh (4 ha), Goa (855 ha), Gujarat (2,227 ha), Karnataka (22,136 ha), Kerala (5,217 ha), Mizoram (10,458 ha), Orissa (3,269 ha), Tamil Nadu (11,104 ha), Tripura (31 ha) and Andaman Nicobar Islands (1,593 ha).

Tenera is the ruling hybrid grown all over the world. It is a cross between thick shelled dura (female parent) and shell less pisifera (male parent). Tenera has thin shell, medium to high mesocarp content and high oil content. Palm oil is derived from the mesocarp of the oil palm fruit and palm kernel oil is extracted from palm kernels. Processing of oil palm involves multi unit operation. Major steps in the extraction of palm oil are harvesting of bunches, sterilization, stripping, digestion, pressing, clarification and purification. Methods such as refining, bleaching and deodorization (RBD) palm oil and fractionation of palm oil are followed to produce a liquid fraction called palmolein. Oil Palm is the richest source of vegetable oil and has potential to yield 4-6 tonnes of oil / ha / yr. which is 5 to 8 times the yield of cultivated annual oil seeds. Palm oil is a wholesome source of energy. Palm oil is stable against oxidation due to low content of poly

unsaturated fatty acids and also non foaming, have good frying qualities and is suitable for cooking. It can play a vital role in sustainable vegetable oil production and vegetable oil economy of the country.

Oil Palm Research in India

Oil Palm research in India started with the establishment of a Research Station at Thodupuzha by the Department of Agriculture, Kerala during 1960. Indian Council of Agricultural Research (ICAR) started oil palm research at Central Plantation Crops Research Institute Research Centre at Palode during 1975. Oil Palm was included as one of the crops in the All India Coordinated Research Project on Palms during VII Five Year Plan period. ICAR established National Research Centre for Oil Palm in Andhra Pradesh during 1995 that was later upgraded to Directorate of Oil Palm Research during 2009.

Oil Palm at a glance

Oil palm	: Highest vegetable oil yielder per unit area (4-6 t/ha/annum)
Family	: Palmae
Species	: <i>Elaeis guineensis</i> (Jacq).(African Oil Palm) <i>Elaeis oleifera</i> (American Oil Palm)
Source of oil	: Palm oil : Mesocarp Kernel oil : Kernel
Economic cropping period	: 25-30 years
Climatic requirements	: Above 2000mm evenly distributed rain/ irrigation. Max. temp. 29-33°C, Min. temp. 22-24°C, 5 hrs Sunshine and above.
No. of palms/ha	: 143 (9 x 9 x 9 m triangular)
Nursery period	: 12 - 18 months
Pollination	: Insect (<i>Elaeiodobius kamerunicus</i>)
Tree height	: 15 - 18 m

Leaf production/year	: 24-30
Leaf length	: 6 - 8 m
First harvest	: 36 months after planting
Yield of FFB/ha/year	: 15 - 30 t
No. of bunches/palm/year	: 5 - 12
No. of fruits/bunch	: Above 2000
Av. bunch weight	: 25 kg.
Weight of fruit	: 30 gm.
Fruit to bunch	: 42 - 65%
Mesocarp to fruit	: 60 - 83%
Oil to mesocarp	: 77 - 81%
Kernel to fruit	: 7 - 12%
Oil to kernel	: 49 - 52%
Shell to fruit	: 3 - 11%
Palm oil yield/palm	: $\text{Bunch weight/palm} \times \text{fruit/number of bunches} \times \text{mesocarp/}$ $\text{fruits weight} \times \text{oil \%/mesocarp}$

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