

Oil Palm *in* FOCUS



An e-Newsletter from the Society for Promotion of Oil Palm Research and Development (SOPOPRAD)



President Speaks

I am very happy to bring out the second issue of second volume of the News Letter with lot of new information which are very much necessary in the event of people publishing information without having a holistic picture about oil palm and its development programmes. Publishing articles in Print media against Oil palm development is on the increasing side.

In order to improve the vegetable oil economy and to reduce the import of edible oil, the Government of India had envisaged many Mission oriented programmes in which Oil Palm Development Project (OPDP) is an important one, that can very well fit into the goals proposed by our Honourable Prime Minister like 'Doubling Farmers' Income'; 'Per Drop More Crop'; 'Atmanirbhar Bharat' (Self-reliant India' or 'Self-sufficient India'); 'Mera Gaon Mera Gaurav'; 'Oil Palm for North East Region' etc.

While introducing irrigated oil palm as Small holders' crop and in plain lands, right from the 'Dr. Chadha Committee 1987' to the 'Dr. Rethinam Committee in 2012' nominated by Ministry of Agriculture, Cooperation and Farmers Welfare, Government of India carefully identified areas with adequate irrigation facilities, without interfering forest lands, thereby not causing any damage to forest and bio diversity except providing a sustained life to Tribals (Jhoom cultivators) doing shifting cultivation.

Various steps in Oil palm cultivation, from the initial selection of land to marketing oil: training needs, cultivation, processing, price fixation, marketing, R & D support to farmers, financial assistance, Public-Private-Farmer tie ups, effective coordination and monitoring etc., were clearly spelt and the OPDP is being implemented successfully from 1990 till day.

Both indigenous and imported sprouts from identified sources were used. Additional Seed Gardens were set up to increase indigenous seed production. Small processing units were expanded to higher capacities by importing only the essential machineries. In the mean time, some processors left and new processors took over. Some of them have successfully completed one cycle of 30 years in Andhra Pradesh.

However, some problems like, slowing down of monitoring system, non- implementing Oil Palm Act etc. have surfaced. This had damaged the entire system. Poaching of FFB from one company area to another company and also from Andhra Pradesh to Telangana, entering of middle men etc. are not in the best interest of the oil palm growers. This was highlighted in our previous issue of the News Letter and we are earnestly appealing to the State Governments to see that such activities are stopped as soon as possible.

Oil Palm growers are well aware that it is a very profitable crop and can provide regular income, twice a month, even during the time of pandemic Covid-19.

Indian Oil palm is sustainable, but some people are unnecessarily confusing with South East Asian Oil palm more particularly with the Malaysian and Indonesian Oil Palm where deforestation and destruction to bio diversity were regular phenomenon which are criticised by EU and American countries. On the contrary, Indian way of Oil Palm development could be a successful example as no such destruction takes place for Oil palm cultivation.

The present price for FFB is really good, if maintained. This can be done through the 'Price Stabilisation Fund', which can be created using a portion of cess fund collected. Processors are to be encouraged to undertake value addition, product diversification and by product utilisation. There are good opportunities for many subsidiary industries. Let the Government encourage such activities.

Indian Oil Palm is for meeting the ever increasing domestic demand of vegetable oil and moving towards self sufficiency through Atmanirbhar Bharat programme as per the goal of Honourable Prime Minister of India.

We have all natural resources to produce palm oil in our country without converting any of the forest as well as without any biodiversity destruction programme. We have no ambition to compete with Indonesia and Malaysia for export but move towards self sufficiency in Vegetable oil.

Global Warming and Ground Water Depletion are some of the Universal problems due various reasons and let us not attribute them due to Oil Palm cultivation. Ground water recharging is possible with proper planning and strict execution of programmes which are being implemented as a target and achievement programme. The real physical achievement needs to be monitored strictly. Mitigation of global warming, like in many other crops, we do have management aspects which can be adopted.

Through adequate planning and implementation of a time targeted separate programme exclusively for oil palm, with adequate funding and implementing by identifying committed and dedicated person as that of 'Milk Revolution', within another 15 years, it should be possible to produce 8 to 20 million tons of palm oil and 0.8 to 0.10 million tons of Palm Kernel Oil, besides many other products including electricity and organic manures .

Let us join together for promoting 'Oil Palm for Farmers' Prosperity and Nations Vegetable Oil Security'.



Dr. P. Rethinam
President, SOPOPRAD

What do people say about Oil Palm /Palm Oil

1.Oil palm in the 2020s and beyond: challenges and solutions:

Denis. J Murphy*, Kirstie Goggin, R. Russell M Paterson

(*corresponding author: denis.murphy@southwales.ac.uk)

Oil palm (OP), *Elaeis guineensis*, is by far the most important global oil crop, supplying about 40% of total traded vegetable oil. Palm oils are key dietary components consumed daily by over three billion people, mostly in Asia, and also have a wide range of important non-food uses including in cleansing and sanitising products.

Oil palm is a perennial crop with a >25-year life cycle and an exceptionally small land footprint compared to annual oilseed crops. Oil palm crops globally produce an annual 81 million tonnes (Mt) of oil from about 19 million hectares (M ha). In contrast, the second and third largest vegetable oil crops, soybean and rapeseed, yield a combined 84 Mt oil but occupy over 163 M ha of increasingly scarce arable land. Despite this advantage, oil palm has acquired a poor environmental reputation, especially in Europe and North America, although soybean planting is now responsible for more deforestation. Oil palm crops face other challenges in the 2020s.

Oil palm crops face many future challenges, including emerging threats from climate change and new pests and diseases, that require more effective international

collaboration. Nevertheless, new breeding technologies are providing the promise of improvements, such as much higher yielding varieties, improved oil profiles, enhanced disease resistance and modified crop architecture to enable harvesting mechanisation. The industry also needs to redouble its efforts to engage with global consumers in a constructive dialogue aimed at addressing its image problem and explaining the many benefits of its products.

The above Abstract is very informative for better understanding of oil palm in the context of global and country's vegetable oil pool needs. For farmers, Oil Palm is a Golden Egg laying Goose giving income once in 15 days from 3rd to 30 years of crop, with less area producing more oil. Globally more than 3.0 million and in India 0.3 million small holders are depending on Oil palm for their livelihood and social security. Golden Palm oil is contributing nearly 40% of total traded oil, providing health and nutrition, supporting lot of food industries, besides providing bio fuel security. Fortunately, Indian Oil Palm is different and has no problem of environmental degradation, no deforestation and biodiversity losses. We have created an Oil palm forest of 3.4 lakhs ha as on today in the country. A well-planned study may be taken up to understand the socio-economic impact of Oil palm cultivation in India - Dr. P. Rethinam.



2. In Andhra Pradesh, oil palm is bringing economic prosperity – but at what cost?

Many farmers who have switched to the crop are making more money, but the water table beneath them is falling dangerously.

(Jency Samuel Jul 18, 2021 · 07:30 pm)

Some of the salient points from the above news alone are high lighted below :

- Mr. Chandrasekar Rao has made his homestead here in the Krishna district of Andhra Pradesh, on a four-hectare oil palm farm. He is happy about his decision to switch from farming mangoes in 1996. His income has tripled as a result.
- Mr. Balusu Bala Chandrasekar of Mundur village says his oil palm farm helped him educate both his sons as engineers and to build a house.
- In the southern Indian state of Andhra Pradesh, oil palm farmers are pleased with their crop. They earn more and do not have to deal with middlemen to sell their produce. Millers buy the oil palm fruit bunches directly and pay within two weeks.
- Oil palm is touted as a win-win for farmers, the palm oil industry and the government. But the economic prosperity appears to be coming at a critical cost, i.e., water.
- Andhra Pradesh has the highest amount of land under oil palm cultivation of all states, with 0.17 M ha, as well as yield of 1.38 million tonnes of fresh fruit bunches.
- In West Godavari district, former air force officer Mr. EV Subba Rao switched to oil palm when he saw middlemen reaping the benefits of his labour from his bamboo and cashew plantations. Such middlemen habitually indebted farmers, underpay for produce and make large profits when selling on. With oil palm, Mr. Rao's contact is a single miller, who buys the crop directly from him.
- Farmers find that oil palm gives them higher income and lower labour needs than paddy, sugarcane, maize, tobacco and other horticultural crops. It is also less prone to damage during extreme weather events. Still, oil palm remains a favourite.
- Before switching to oil palms, Mr. Balusu Bala Chandrasekar suffered heavy losses when his banana plants were flattened by a cyclone. Many find oil palm hardy and better able to withstand extreme weather events.
- Mr. K Prasad of West Godavari was encouraged by the crop's longevity and planted oil palm on his four-hectare farm. He leased extra land to grow maize and banana. Mr. Murthy Pendyala of East Godavari and Mr. L

Pradeep of West Godavari have also been impressed by the crop's success, and have increased their oil palm acreage. **"Oil palm is a golden crop for farmers,"** said Mr. KNagabushnam Rao in Krishna district.

Oil Palm- a Resource-intensive Crop?

- Some officials of the District Horticulture Departments disagree. They say oil palm is not a sustainable crop and point out its failure in Nellore and Anantapur districts. Though the department's portal lists the areas in these districts where oil palm is grown as 4,169 hectares and 282 hectares respectively, officials say that information is outdated.
- "Now we have 850 hectares only. About five years ago, many farmers removed the palms because of water scarcity," said Mr. SMA Khaleem, Assistant Director of Horticulture for Nellore district.
- "Presently, oil palm cultivation in our district is nil," said Mr. P Padmalatha, Deputy Director of Horticulture in Anantapur district. "Now no one in my district grows it, since it needs more water."
- "Oil palm is a water- and nutrient-loving crop," said Mr. RK Mathur, Director of the Indian Institute of Oil Palm Research. "Though a rain-fed crop in other countries, we have successfully established that it can be grown under irrigation, requiring 240 litres to 300 litres per palm per day, rising to 325 litres per palm per day to 350 litres per palm per day in summer."

Rainfall Variability

- The National Mission on Oilseeds and Oil Palm states that the crop requires evenly distributed annual rainfall of 2,500 mm-4,000 mm. However, the maximum rainfall of India's coastal districts ranges only from 1,045 mm-1,170 mm, according to an analysis of rainfall variability data over 30 years by the India Meteorological Department.

Sinking Water Table

- Mr. Balusu Bala Chandrasekar had a single bore well for irrigation in 1992, when he started oil palm cultivation, with water available at about 100 feet below ground level. Now he has three bore wells, but the water table has fallen to about 300 feet.
- "People started sinking bores only in the 1990s," said Mr. Chandrasekar Rao. "We had only dug open wells with water available at 100 feet. Now there are 900-foot-deep bores in our area". Some farmers pointed out that canals and traditional small reservoirs called 'Cheruvu' have disappeared, impairing groundwater recharge.
- A groundwater scenario report of the Andhra Pradesh government indicates that the number of dug and bore



wells increased from 0.8 million in 1980 to 2.5 million in 2010. The average yield from a well decreased from 60m³/h to 150m³/h in 1982, to 20m³/h to 40m³/h in 2010.

- “In our area, water levels and rainfall have been good,” said Mr. Srinivas Prasad, Chief Executive and Director of Navabharat Limited, miller and refiner of oil palm in West Godavari district. The company buys oil palm fruit from several areas including T Narasapuram.
- Some farmers in Andhra Pradesh graze cattle on their oil palm plantations. This is a natural way of controlling weeds and the dung from the animals also helps fertilise the soil.
- “I have not had weed problems since I planted cacao,” said Mr. Subba Rao. “The large quantity of leaf litter from the cacao trees has improved the structure and organic content of the soil.”
- Besides cacao, the institute has identified and is experimenting with intercropping bush pepper and plants such as *Heliconia psittacorum* and *Alpinia purpurata*, whose flowers are sold for their beauty.
- Indian Institute of Oil Palm Research has been forming farmer groups and providing chaff-cutter machines. “With the machine, they can cut the fronds easily and spread them in the basin around each tree,” said Mr. MV Prasad. “It acts as mulch, conserving water and micro-organisms, as well as smothering the weeds.”

Marketing issues

- The Provincial Government has divided the districts into agricultural zones, allotting them to 13 private and two government-owned oil palm mills. Farmers have a buy-back arrangement with the closest miller and are assured an income twice a month. But in Srikakulam district, one miller has shut down his operations.
- “Since there is no crushing unit and no transportation facility, many have uprooted palm trees and gone back to growing paddy,” said Mr. K Ramana Reddy, Founder-Director of Society for Welfare Education and Environmental Protection, a non-governmental organisation. “Some who still have palms take the fruits to a factory in a neighbouring district,” said Mr. Reddy. “But some sell to middlemen at a lower price.”

Better Water Management

- Farmers such as Mr. L Rama Rao in West Godavari and Mr. K Nagabushnam Rao in Krishna, who took to oil palm cultivation early, recall that water-intensive flood irrigation was the norm when they started. They have switched to drip irrigation over the last decade.
- Mr. L Rama Rao’s son Pradeep looks after their farm’s drip irrigation system, which can also be used to deliver fertiliser to their oil palms.

- “Irrigating more will lead to leaching, leaving the root zone devoid of nutrients; irrigating less will lead to water-stress symptoms,” said Dr. Mathur. “We have developed a mobile app which analyses 60 years of weather data to inform farmers how much water to use.”
- The federal government advocates subsidies to help farmers install drip irrigation, but the Andhra Pradesh government stopped its subsidy in 2018. Reportedly it came to the conclusion that many farmers had moved over to drip systems already. Without subsidies, farmers like Mr. Nageswara Rao continue with flood irrigation.
- Mr. Bujjibabu has sloped the land and made a pit in which to dig his bore wells, so that there is more rainwater to recharge the aquifers where his bore wells are located. “Since I recharge, I get water at 160 feet, whereas my neighbours get it at 200 feet or more,” he said.
- “These are one-off initiatives by farmers,” said Mr. Sreenivasulu. “All farmers should make similar efforts.” Some Horticulture officials pointed out that water-resource management needs large-scale, long-term planning to improve the groundwater situation and safeguard the farming community.
- Water scarcity affects all crops, not only oil palms and has implications not just for farmers but whole communities living close to oil palm plantations.

This article was first published by China Dialogue.

Explanation of facts and on ground realities of Oil Palm Development in Andhra Pradesh by Dr. P. Rethinam, President, SOPOPRAD, who was responsible for introducing irrigated Oil Palm cultivation in the country and also proved success in the farmers field.

Thanks to China Dialogue for publishing this News report highlighting the success story of Oil Palm growers of AP and some key issues .

It is a fact that the farmers are switching over to Oil palm because of its profitability with the good net work of inbuilt tie up for collection of FFB, price being fixed by a committee and effecting DBT (direct benefit transfer) to the farmers within two weeks. Even during the pandemic Covid-19 period, farmers did not experience any problems in getting money for his crop. Only recently, some poaching problems have surfaced, encouraging middlemen, which is detrimental to both the farmers and processors. The Farmers and State Government have to take strong action to stop this activity using Oil Palm Act of the State.



- Even if the factory has not procured the harvested produce and if the area is allotted to a Processor, it is his responsibility to procure FFB from farmers and make payment. So farmers of Srikakulam district should take up the matter with the Government for immediate action.
- Ground water table going down is a fact, but it is not entirely because of oil palm cultivation. There are many crops like Banana, Sugarcane, Paddy etc which need more water. There are many research results available to show that the water requirement of Oil palm is highly comparable to that of sugarcane, banana etc.
- It is also a fact that farmers have indiscriminately used ground water (since the electricity was free) causing loss of nutrients being leached down. It is also a fact that with drip irrigation coupled with fertigation can reduce water requirement and increase fertilizer use efficiency and this has been expressed by farmers themselves. ICAR-IIOPR, Pedavegi had developed and transferred this technology as well as apps for calculating water requirements.
- Nellore is a potential area for growing Oil palm and farmers like Mr J.S.Reddy and many others are getting 20 to 30 tons of FFB /ha/year with adequate irrigation facilities. In the uplands, many farmers have planted Oil palm in large areas than the availability of water without taking into consideration that Oil palm needs more water. (40 l water /day in first years, 80 l,120 to 150 l during third year and may be little more in subsequent years depending up on, soil type , growth, yield and prevailing climatic conditions). So, there was some removal of palms due to water scarcity. But even today farmers having adequate irrigation facilities want to take up cultivation of Oil palm.
- The situation in Ananthapur is totally different. This District was not included in any of the Central Committee Reports till 2012.Due to political pressure, a committee was formed locally by the Department, Scientists and others and the programme was taken up. A careful scrutinization was required before sanctioning of the programme, which probably was not done.
- Only the recommended area by the Central Committee should be considered and sanctioned for further area expansion by NFSM –Micro Mission-2 Oil Palm.
- Since the report of the Central Committee broadly indicated the districts, the processors have to undertake micro level identification of the fields before approving the farmer to take up Oil palm cultivation.

3. Irrigation status, issues and management in Andhra Pradesh

V Prasuna, B Suneetha, K Madhavi, GSHaritha and GR Ramakrishna Murthy

Journal of Pharmacognosy and Phytochemistry 2018; SP1: 304-309

Abstract

Irrigation potential of Andhra Pradesh is 103.11 lakh acres out of 199.04 lakh acres of cultivable area. In the present study the data was collected from secondary data referring Agriculture Dash Board-Government of Andhra Pradesh, AP Water Resource board, websites and research journals. Andhra Pradesh has one of the largest irrigated areas. With a gross irrigated area of 6.28 m. ha, the state accounts for nearly 7.3 per cent of the total irrigation in the country. Groundwater is the major source of irrigation in the state, with nearly 49 per cent of the net irrigation is from wells and tube wells. The rest of the irrigation is from sources such as canals, tanks and other sources. The major irrigation issues identified in the state are over exploitation of ground water resources, deteriorating groundwater quality and climate change. Management strategies proposed for these issues are finding alternate sources of water, repair, renovation, and restoration of water bodies, basin management, water efficient technological solutions, water conservation measures, water shed management, conjunctive use of surface and ground water, contingency crop planning for the project area, resilience and adaptation to climate change and enhanced co-ordination among agencies such as State Pollution Control Board, Industrial Development Corporation, State Finance Corporation, Irrigation Department, Panchayat raj Department, Ground Water Department, and some other non-Governmental Agencies. Major Medium Irrigation Projects working in Andhra Pradesh are 95 projects. Andhra Pradesh is undergoing a dramatic shift in the irrigational pattern moving from large scale surface to ground water irrigation. Different programmes and irrigation projects being taken up can improve the irrigation status in India.

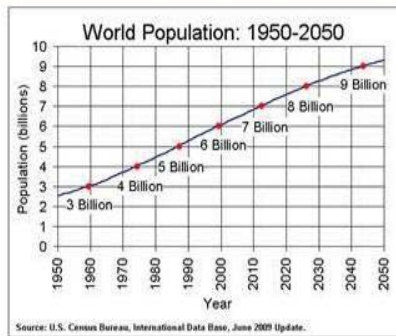
The above Abstract clearly indicates that Ground water is the major source for all the irrigated crops including Oil Palm. So it is not because of Oil Palm cultivation the ground water level had gone down. Oil Palm comparatively requires less water than sugarcane, banana and two crops of paddy.

The Commission on Inclusive and Sustainable Agricultural Development in Andhra Pradesh constituted by Government of A.P had given policy report with details on irrigation sources and crops

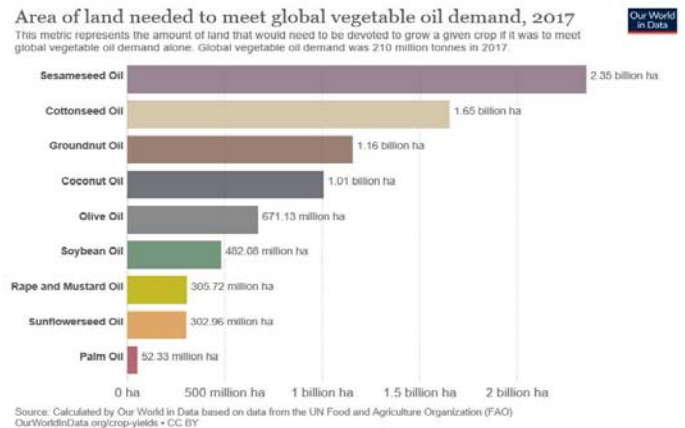


grown had indicated that Water body encroachments should be removed with the participation of farmers, village Panchayats and State agencies . So it is all the more important to recharge ground water regularly. (Dr. P.Rethinam)

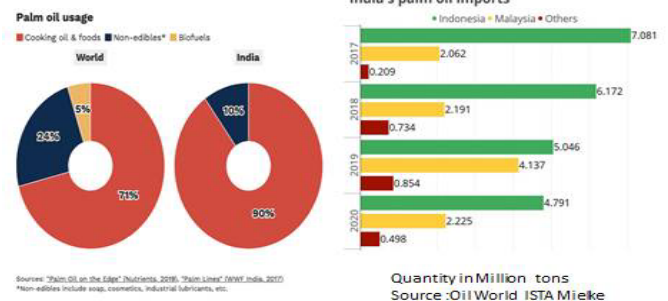
IMPACT OF INCREASING GLOBAL POPULATION ON DEMAND & CONSUMPTION



- Demand for oils & fats will continue to increase
- By 2016, world population was at 7.3 bil. This will reach 9 billion in 2043.
- Nearly all of the population growth will occur in developing countries.
- Sub-Saharan Africa's population expected to grow the fastest (up 108%; 910 million people).



Palm oil use in world & India & Import



Glad to know that the Telangana Government has planned to promote Oil palm cultivation in 8.14 lakh acres.- News in Telangana Today, July 16, 2021, Hyderabad

The State government is aiming to promote cultivation of oil palm in around 8.14 lakh acres in Telangana to cater to the increasing demand for cooking oil and also improve the income levels of farmers. At present, Oil palm crop is being cultivated in about 48,806 acres in the State.”Oil palm trees in the State can produce about 21 per cent oil as against the national average of 18 per cent. Farmers can earn four times their investment on the crop, besides growing internal crops excluding paddy and sugarcane,” Sri S. Niranjan Reddy, Hon'ble Agriculture Minister said.

In response to questions raised in the State Assembly on Wednesday, Agriculture Minister said several measures were initiated to promote cultivation of oil palm in about 8.14 lakh acres covering 25 districts in the State which are suitable for this crop cultivation. He said Telangana was conducive for oil palm cultivation considering the soil type, variety and availability of water and other resources. At present, Oil palm crop is being cultivated in about 48,806 acres in the State.

While appreciating the interest and Political Will to go for fast Oil Palm development, some of the important aspects like getting the sprouts from reliable sources while importing and growing seedling in the nursery for 12 to 15 months, carefully clearing the seedling by authorised Plant Quarantine team before planting etc. are to be ensured. No short cut method should be adopted. The Foreign companies normally wants the order for sprouts to be placed six months before for preparation of sprouts and clearing from ship, 12 to 15 months for nursery which means it will take minimum 18 to 21 months before planting. In case if the state wants to complete planting, almost 18 million sprouts need to be imported annually for nursery facilities to be created. Starting with 50,000 to 75,000 ha during first year and after gaining experience one can double it in the next year. We have to bear in mind that we have to deal with hundreds of farmers. Slow and Steady will Win the Race. - Dr.P.Rethinam



NEW HYBRID *TENERA* RELEASED

New Hybrid *tenera* released and notified by Central Variety Release Committee

Based on long term (for 12 years) multilocation evaluation of the different crosses evolved at ICAR-IIOPR, NRCOP-4 with FFB yield of 30.11t/ha was recommended for release as 'Godavari Swarna' for Andhra Pradesh and Telangana states and has been notified by the CVRC.

Main features of 'Godavari Swarna'

Details	NRCOP-4
Parentage	131 D x 435 P
Palm height (m)	3.46* (at 12 th year)
Total numbers of leaves	40* (at 12 th year)
Pollination	Cross pollination
Age of first flowering (Months)	32
Total number of inflorescence /year	27.67
Bearing habit	Regular

H.P. Maheswarappa¹, R.K Mathur², M. Kalpana³, P. Madhavi Latha⁴ & Sumitha. S¹

ICAR- AICRP on Palms, ICAR- CPCRI, Kasaragod, Kerala;² ICAR- IIOPR, Pedavegi, ^{3,4}AICRP on Palms, HRS, Vijayarai, Andhra Pradesh



Palm oil and Health: continued from last issue

Since people are not very clear about the health and nutritional benefits of Oil palm, we are trying to give the available published research findings in every News Letter so that we understand the benefits of palm oil clearly.

Red Palm Oil for a Healthier Tomorrow

Red Palm Oil (RPO) - from the mesocarp of *Elaeis guineensis*, is a golden gift of nature and so is the crude palm kernel oil. The prefix 'red' truly represents its unique

nutritional attributes. It contains nearly 500 ppm carotenes; majority being alpha (~37%) and beta carotenes (~50%), which apart from being potent anti-oxidants, are the precursors of vitamin A too. One of the lesser exploited species *E. olifera* has astonishingly high carotenoid content (~4000 ppm). RPO is also an excellent source of vitamin E, containing about 800 ppm most of which is in the form of tocotrienols (~70%) having a greater anti-oxidant property. The oil also contains ubiquinone 10 (coenzyme Q 10); and all these three potent anti-oxidants, boost our immune system and protect our body cells/tissues from oxidative damage, thereby help in delaying the ageing process as well as reducing the risk of several non-communicable diseases such as Cardio-Vascular Diseases, cancer, respiratory diseases and many others.

RPO's strong odour poses hindrances in the use of otherwise healthy oil (because of its high anti-oxidant levels and favourable fatty acid profile) possessing a semi-solid consistency (most suited alternative for PHVOs, commonly used in bakery products). However, the cold filtration process (molecular distillation) under vacuum helps to remove phospholipids (and with them the bound flavor compounds), moisture and free fatty acids, but keeps the RPO's antioxidants intact. Researches indicate that despite being high in saturated fatty acids (~50%), RPO does not promote atherosclerosis or arterial thrombosis; and this can be attributed to its saturated: unsaturated fatty acid (SFA:MUFA/PUFA) ratio coupled with an army of antioxidants.

Its deep orangish-yellow colour imparts a high sensory appeal in Indian culinary practices, wherein the use of turmeric/saffron is rather common. Scientifically planned, sensory evaluation trials -at the laboratory level followed by consumer/ mass-scale acceptability and the sale trials carried out at the Institute of Home Economics, University of Delhi, have indicated that when RPO is used in variable ratios with other usual cooking oils (1:1 to 1:3), it can be incorporated in almost all dishes ranging from gravies, dry vegetables, *pulaos*, *poha*, *upma*, various snacks, *paranths* and even certain sweets/desserts such as sweet rice, semolina *halwa*, *malpuras*, *jalebis* to name a few. Mass scale acceptability trials have endorsed that the beneficiaries of government funded supplementary feeding/food-meal programmes liked the food cooked in RPO plus mixed vegetable oil equally as of the food cooked in any other common cooking medium. Several other studies, across the globe, have also indicated its successful use in bakery products and nutrition programmes.



Mankind has often been challenged by several communicable/non-communicable diseases; the covid-19 pandemic being one of them. There is a need to promote the consumption of foods which can boost our immune system. RPO, being a reservoir of vitamins A and E (the nutrient anti-oxidants) as well as several other micro nutrients, promoting its use as a cooking medium at the household/ institutional level is need of the hour.

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Dr Santosh Jain Passi, Public Health Nutrition Consultant, Former Director, Institute of Home Economics, University of Delhi, Associate & Honorary Consultant, Nutrition Foundation of India, Honorary Professor - Public Health Nutrition, Amity University, NOIDA & Dr Sukhneet Suri, Vivekananda College (University of Delhi); and Coordinator, IGNOU Study Center

M E van Stuijvenberg¹, M Faber, M A Dhansay, C J Lombard, N Vorster, A J Benadé Red palm oil as a source of beta-carotene in a school biscuit used to address vitamin A deficiency in primary school children. *Int J Food Sci Nutr.* 2000;51 Suppl:S43-50.

M S Radhika¹, P Bhaskaram, N Balakrishna, B A Ramalakshmi, 2003. Red palm oil supplementation: a feasible diet-based approach to improve the vitamin A status of pregnant women and their infants. *Food Nutr Bull.* 24(2):208-17.

Red palm oil supplementation significantly improved maternal and neonatal vitamin A status and reduced the prevalence of maternal anemia. Fetal growth and maturity should be associated with maternal Vitamin A status in the later part of pregnancy. Hence red palm oil, a rich source of bioavailable vitamin A, could be used as a diet-based approach for improving vitamin A status in pregnancy.

R Manorama¹, G N Brahman, C Rukmini. 1996. Red palm oil as a source of beta-carotene for combating vitamin A deficiency. *Foods Hum Nutr.* 49(1):75-8.

Twenty four school children of 7-9 years of age were divided into two groups of six boys and six girls each. One group was given a daily supplement of 'Sujihalwa', a sweet snack made with semolina and red palm oil, supplying 2400 µg of beta-carotene and the second group was the control group which was given 600 µg of oral vitamin A palmitate, for 60 days. Vitamin A status before and after supplementation was assessed by the Modified Relative Dose Response Assay (MRDR) This study indicates that RPO is an efficient source of beta-carotene which is found to be bioavailable in all the subjects tested, hence it can be used for supplementary feeding programmes to combat vitamin A deficiency in target population.

R Manorama¹, M Sarita, C Rukmini. 1997 Red palm oil for combating vitamin A deficiency. *Asia Pac J Clin Nutr.* 6(1):56-59.

Red palm oil (*Elaeis guineensis*, RPO) is nutritionally rich and unique in comparison with other edible oils as it has a high content of b-carotene (400 ppm). It is the ideal choice for combating vitamin A deficiency in developing countries. The Modified Relative Dose Response test was conducted to assess the vitamin A status of school children fed RPO in the form of a sweet snack supplying the RDA (2400 µg) of b-carotene for two months. A significant increase was seen in serum retinol levels from 0.86 ± 0.14 to 1.89 ± 0.23 µmol/L, comparable with a control group fed oral vitamin A drops daily whose retinol levels increased from 0.74 ± 0.09 to 1.94 ± 0.21 µmol/L. School children fed RPO snack for one month as per the RDA, maintained normal levels even after six months of cessation of supplementation. Children fed 50 % of RDA from RPO snack also maintained normal levels (>0.7 µmol/L) at the end of six months of supplementation. Hence, periodic bouts of RPO feeding twice or thrice a year may help in maintaining adequate vitamin A status throughout the year. Hence RPO has great promise in maintaining the nutritional well-being of the population.

Ahmad Gazali Sofwan Sinaga, Donald Siahaan. 2019. Antioxidant Activity of Bioactive Constituents from Crude Palm Oil and Palm Methyl Ester. *Int. J. Oil Palm.* 2(1): 46-52.



Result revealed that PME has higher content of carotenoid and vitamin E than CPO. As expected, the concentration of carotenoid and vitamin E in PME increased with transesterification process. Results also showed that all of non-polar extracts exhibited antioxidant activity significantly, as proven by inhibitory concentration 50% (IC50) of PME and CPO is 5.9 µg mL⁻¹ and 15.6 µg mL⁻¹. It is suggested that the presence of carotenoid and vitamin E may have a potential effect as natural antioxidant.

Palm oil is also linked to several health benefits including protecting brain function, reducing heart disease risk factors and improving vitamin A status. Palm oil is an excellent source of tocotrienols, a form of vitamin E with strong antioxidant properties thought to support brain health. Animal and human studies suggest that the tocotrienols in palm oil may help protect polyunsaturated fats in the brain, slow dementia progression, reduce the risk of stroke and prevent the growth of brain lesions. Other research has shown that palm oil can improve vitamin A status in people who are deficient or at risk of deficiency (Dongs et al. 2017). Studies in pregnant women in developing countries have shown that consuming red palm oil increases vitamin A levels in blood, as well as in their breastfed infants (. Maia et al. 2019). Furthermore, people with cystic fibrosis who have difficulty absorbing fat-soluble vitamins, experienced an increase in vitamin A blood levels after taking two to three tablespoons of red palm oil daily for eight weeks (Sommerburg et al. 2015).

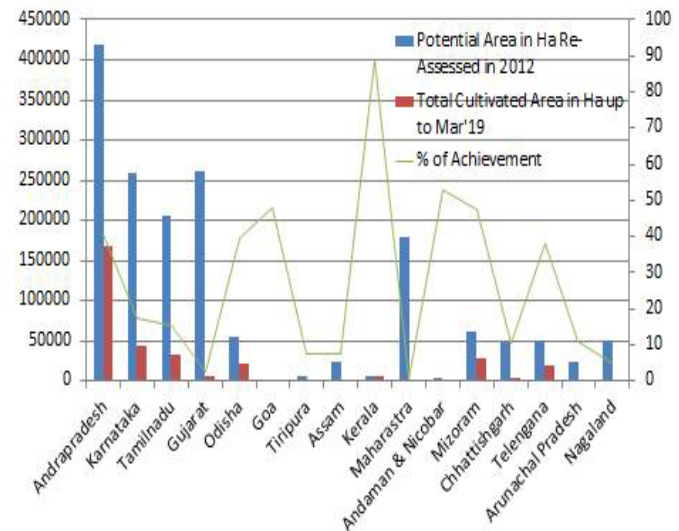
Dong S, Xia H, Wang F, Sun G. The Effect of Red Palm Oil on Vitamin A Deficiency/ : A Meta-Analysis of Randomized Controlled Trials. 2017;8223(01):22–3.

Maia SB, Sandro A, Souza R, Fátima M De, Caminha C, Lins S. Vitamin A and Pregnancy/ : A Narrative Review. 2019;24–5.

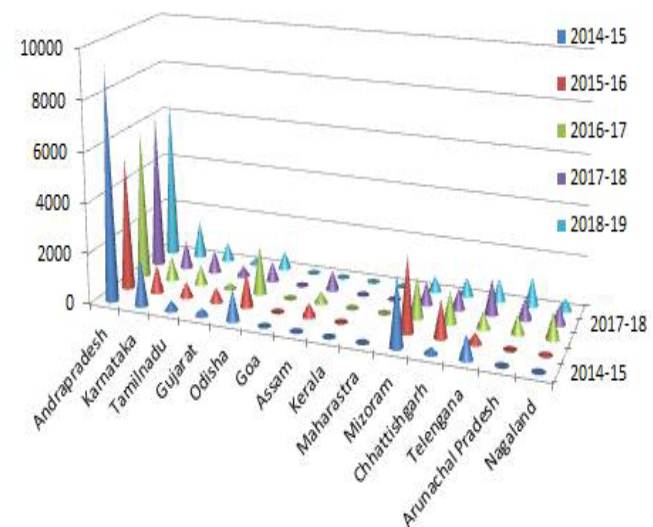
Sommerburg O, Spirt S De, Joachim C. Supplementation With Red Palm Oil Increases β -carotene and Vitamin A Blood Levels in Patients With Cystic Fibrosis. National Center for Biotechnology Information. 2015;19. Mediators Inflamm. 2015; 2015: 817127. Published online 2015 Jan. 26.

Oil Palm Development in India progress as on March 2019

State wise Potential Area and Area Covered under Oil Palm up to Mar'19



State wise Achievement of Area Expansion of Oil palm under ISOPOM, NMOOP, OPAE & NFSM (Area in Ha) – 5 YRS

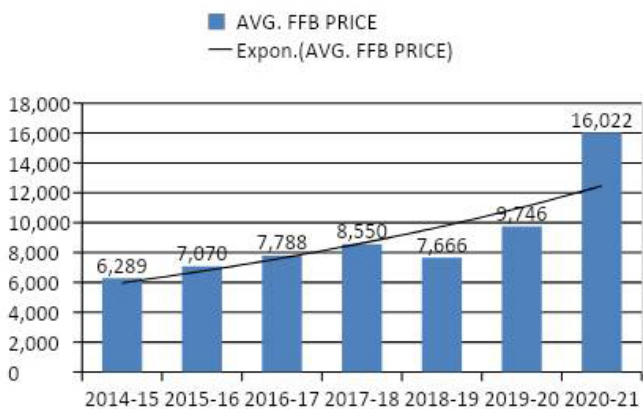


Andhra Pradesh and Telangana will be having major share in Palm Oil production. It is likely that with the fast progress being made in Telangana, and if properly/ carefully managed along with the present and strong political will, may overtake Andhra Pradesh like Indonesia over took Malaysia.

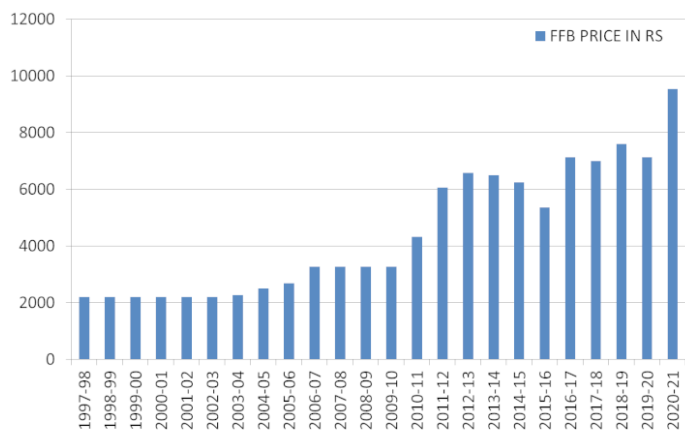
Average prices of FFB in Andhra Pradesh and Tamil Nadu

The present price for FFB is the highest and this is motivating more farmers with irrigation potential to take up Oil palm cultivation.

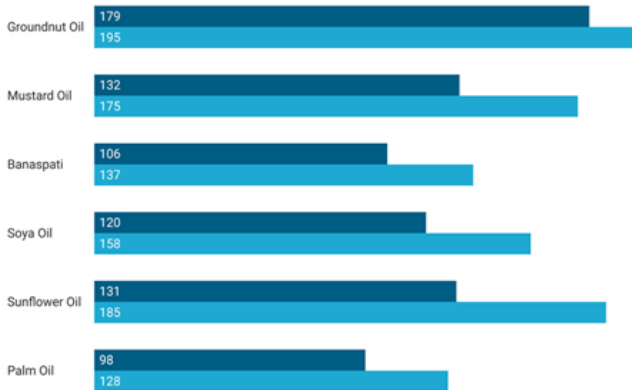
Average FFB price in Andhra Pradesh, 2014-15 to 2020-21 (₹/t)



Average FFB Price in Tamil Nadu from 1997-98 to 2020-21 (₹/t)



Edible oil prices have gone up dramatically in the past year



Prices as on June 1, 2020 and June 1, 2021 in Delhi city
 Chart: Shoab Daniyal • Source: Department of Consumer Affairs, Government of India • Created with Datawrapper

Successful Oil Palm growers of Karnataka

1. Sri Nagendra,

Chamrajnagar, Chandakavadi

Planted on 15 -01-2008, **Actual Area Existed-**0.81 ha, The FFB yield obtained is 23.68ton /ha in 2020 -2021.



Good package of practices like mulching, weekly irrigation, fertilizer application once in three months, and FYM application once in six months as per advise followed judiciously.

2. Sri. Mari Lingu,

Mandya, Srirangapatnam,

GANJAM-Planted on 28-11-2008, Actual area existed 0.91 ha with 130 palms. Harvested 25.68 tons FFB /Ha during 2020-21.



Flood irrigation, fertilizer application once in three months along with micro nutrients and organic manure application once in four months as per advise.

Successful Oil Palm growers of Tamil Nadu

1. Smt. V. Kaliamm, W/o Varadarajan

Thirukovilpathu, Ammapettai, Thanjavur

Area: 2.60 ha

Planting year: 2012-13

FFB Yield Mt/ha: 2017-18:**15.192**, 2018-19:**24.169**; 2019-20: **12.269**; 2020-21: **21.626**



2. Sri V. Varadhan, S/o Venkatasamy

Thirukkandeswaram, Annagramam, Cuddalore

Area: 2.80 ha

Planting year: 2006-2007

FFB Yield Mt/ha: 2018-19:**32.50**; 2019-20: **20.00**; 2020-21:**18.21**



3. Sri S. Subramanian, S/o Shanmugam

Village: Mathi, Union: Kumbakonam, Thanjavur

Area: 2.60 ha

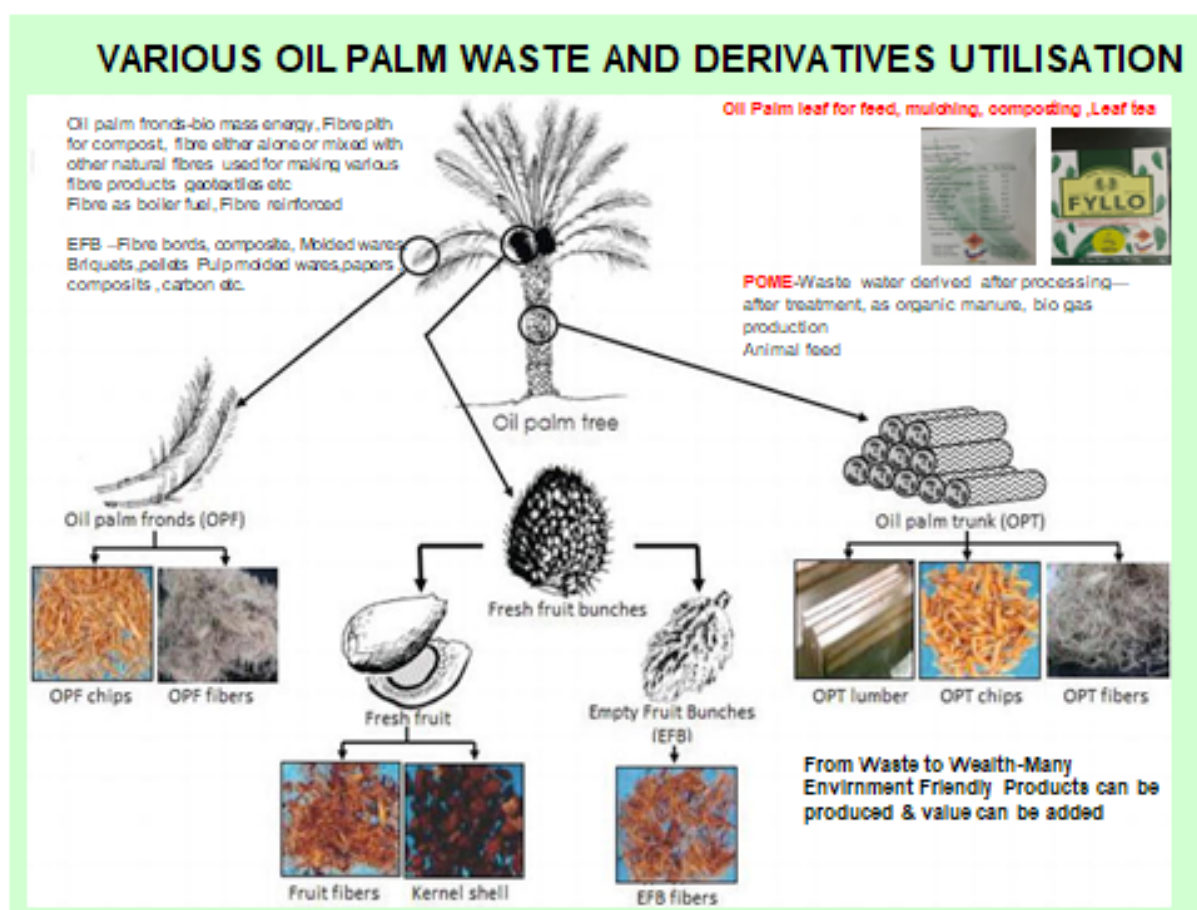
Planting year: 2012-13

FFB Yield Mt/ha: 2017-18:**25.334**, 2018-19:**26.878**; 2019-20:**19.714**; 2020-21:**22.685**



Oil PALM WASTE UTILIZATION

Processed **palm oil wastes** has high organics, which meets the needs of plant growth. Studies have shown that the organic **fertilizers** produced by **palm oil wastes** contain much more nutrients than common **fertilizers**. It has obvious effect on **oil palm** growth. It is one of suitable **palm tree fertilizer**. The following chart depicts the utilisation of various oil palm waste and its derivatives.



Product specific by-products from the palm oil mill are characterised by its high proportion of organic materials. These range from solid products (biomass) such as EFP, PPF and shells composed mainly of lignin, cellulose, hemicelluloses and other carbonaceous material. Formerly, shells and PPF were used mainly as fuel for the boiler to generate steam and electricity for running the palm oil mill. EFBs were burnt in incinerators for bunch ash or used for mulching in oil palm estates. Currently however, biomass from the palm oil industry has wide applications in the production of fibre and particle boards (Mohamad H, Anis M, Ridzuan R, et al.2002 and Mohamad H, Wan Hasamuddin H, Anis M. Yap Ka.2003) charcoal briquettes [Ropand M.1993] and various cellulose materials [Astimar AA, Mohamad H, Anis M, Kamarudin H, Ridzuan R.2002,Wan Hasamudin WH, Rosnah MS.2002 and Rosnah MS. Gapor MT, Wan Hasamudin WH.2004].

- Source:Yew-Ai TAN. By-products of palm oil extraction and refining.OCL VOL. 13 N° 1 JANVIER-FE´VRIER 2006, MPOB, Malaysia.

DREAM COMES TRUE

GOOGLE Map-OIL Palm Plantation in Krishna District



Compiled and Edited by : **Dr. P. Rethinam**. Assisted by : **Dr. V. Krishna Kumar (CPCRI, RS)** and **Dr. B. Kalyana Babu**
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