JUST AGRICULTURE
multidisciplinary e-Newsletter

Cultivation of Oil Palm in India

Ms. B. Tulasi[1], Dr. Jessie Suneetha. W[2*],Dr. J. Hemantha Kumar[2], Dr. V. Chaitanya[2], Ms. K. Navya[1] andDr. K. Ravi Kumar[2]

[1]PGRC, PJTS Agricultural University, Rajendranagar, Hyderabad 500030

[2]Krishi Vigyan Kendra, PJTS Agricultural University, Wyra 507165, Khammam Dt.

ARTICLE ID: 07

Introduction:

Oil palm (*Elaeis guineensis* Jacq.) is a native of West Africa and also referred to as the red oil palm or the African oil palm. It is well renowned as the perennial crop with the highest production of edible oil. It produces two types of oils namely palm oil and palm kernel oil. The fruit's fleshy mesocarp has an oil content of 45–55 % and is the source of palm oil. A potential source of lauric oil is the palm kernel oil made from the rocky seed kernel. The current and future vegetable oil economies worldwide including India depend on the oil palm crop. The low cost of this oil than other cooking oils is making the consumers use it extensively along with use by commercial outlets. It is an excellent raw material for producing the oleo compounds needed in making soaps, candles and plasticizers. It is extensively used as edible oil, in cosmetics, pharmaceuticals to biofuels and bio lubricants.

Distribution:

It is widely grown in South-East Asian nations like Malaysia, Indonesia and Papua New Guinea as well as African nations like Nigeria, Ivory Coast, Ghana, Liberia, Sierra Leone, Cameroon, Republic of Congo and Zaire. It is also widely grown in South American nations like Argentina, Uruguay, Costa Rica, Panama, Columbia, British Guyana, Peru, Ecuador, Venezuela and Brazil. Nigeria, Indonesia and Malaysia are the top three countries for oil palm production.

The oil palm was first introduced to India at the National Royal Botanical Gardens, Kolkata in 1886. Later, between 1947 and 1959, the Maharashtra Association for Cultivation of Sciences, Pune introduced African dura palms along canal bunds, in backyard gardens, and to some extent in nearby forested areas. Plantation Corporation of Kerala Ltd. Oil palm has widely planted them in Kerala between 1971 and 1984 and the Andaman Forest and Plantation Development Corporation Ltd., has one in the Little Andaman Islands of the Andaman and Nicobar Islands between 1976 and 1985.

JUST AGRICULTURE
multidisciplinary e-Newsletter

Throughout order to evaluate the potential area for oil palm production in the nation, including the North-Eastern States and the Andaman and Nicobar Islands, a Committee of ICAR-IIOPR undertook a study in 2020. In total, 22 States have been assessed as having a prospective area for oil palm agriculture in India totaling 27.99 lakh acres as per their report.

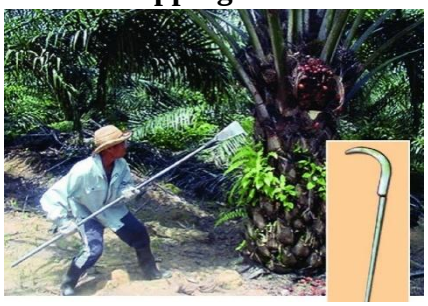
Irrigation by basin method

Weeding

Intercropping with Banana

Flowering

Mulching



Harvesting

Palm fruit and its oil

Climatic requirements:

It is a humid crop requiring2500–4000mm evenly distributed over the year with at least 150 mm water per day. India experiences an uneven and insufficient distribution of rainfall. The growing of oil palm requires ensuring irrigation conditions by implementing advised procedures. The ideal temperature range for crop growth is between 29 – 33°C, with a minimum temperature of 22°C and a maximum temperature of 33°C. For plants to grow successfully, humidity of at least 80% is mandated.

JUST AGRICULTURE
multidisciplinary e-Newsletter

Soils:

The best soils for oil palm are deep, loamy, wet, well-drained, rich in organic matter and water permeable ones. Soil must be at least one meter deep and is advisable to avoid sandy soils that from coastal regions with high salinity or waterlogged or alkaline.

Cultivated variety:

The dominant hybrid is Tenera which is a mix of Pisifera and Dura, two species known for their thick shells. The mesocarp content of Tenera ranges from medium to high, and its oil content is very good.

Planting:

The best time to plant is between June and December, particularly during the monsoon. If planting throughout the summer is done good irrigation, mulching and the growth of cover crops like sun hemp in the basin would assist to reduce summertime heat. It is advised to plant seedlings that are 12 to 14 months old, healthy with at least 13 functional leaves and a height of 1.0 to 1.3 m. When planting, 143 plants per hectare should be placed with a 9 x 9 x 9 m spacing (triangular planting). The size of the pit used for planting should be 60 x 60 x 60 cm (length, breadth and depth).250g of Diammonium Phosphate or 400g of Single Super Phosphate or 50g of Phorate should be placed at the pit's bottom and mixed thoroughly with soil. After planting the saplings, abasin should be created right away and irrigated heavily to help in development of good rooting system.

Irrigation management:

Due to its rapid growth, high productivity and enormous biomass production, oil palm requires adequate irrigation. If a reliable and sufficient irrigation facility is not available, it is advisable not to cultivate oil palm. A minimum of 150 to 200 L of water is required in a day for mature producing palms that are 3 years and older. However, in older plantations, this number may be increased to 300 L due to summer's heat.

When irrigation water is not an issue, the basin method of irrigation can be used. Proper irrigation is possible when the irrigation channels are connected to different sub-channels so that each palm tree can receive desired amount of water. Frequent watering with less water can be done to keep the light soils fertilize.

Basin management:

JUST AGRICULTURE
multidisciplinary e-Newsletter

In order to prevent soil from building up at the collar area during the first year, basins with a 1.0 or 2.0 or 3.0 m radius have to be taken around the palm by removing soil from inside. The oil palm's active root zone is represented by its basin area. In order to prevent competition for nutrients and water, it must be kept clean and weed-free.

Weeding:

Routine weeding by hand or with just the use of approved herbicides can be done. Effective weed control can be achieved by applying herbicide mixes twice a year to the ground.

Inter-cropping:

The widely spread perennial oil palm has a three-year-long juvenile stage. During the crop's juvenile stage, inter and intrarow space can be utilised to make money. The intercrop chosen should not compete with oil palm for light, water or nutrients with the main crop and should be compatible with it. Any profitable crop can be grown, but the most suitable ones are fruits and vegetables like bananas, pineapple, flowers, tobacco, chilies and turmeric. The intercrops should be able to grow in partially shaded conditions and shouldnot compete with oil palm for water, sunlight and nutrients when grown in mature oil palm gardens with 8–12 year old oil palms or palms that have reached a height of 3 m.

The oil palm fronds should not be cut. For inter-cropping, tying oil palm fronds too closely to the stem should be avoided as this would decrease photosynthetic activity. Plowing too closely to the base of the palm will damage the absorbing roots and restrict the amount of water and nutrient uptake by the plant. The palm should preserve as many green leaves as possible.

Ablation:

The removal of male and female flowers produced in the early stages of plantation is known as ablation. This permits the plant to obtain the necessary stem girth, vigour and root system development. Beginning 14 to 18 months after planting, flowers begin to bloom. As soon as inflorescences start to emerge on the palms, ablation should be done. By hand plucking or by using suitable equipment they can be removed easily. Depending on the plant's size and vigour, ablation can be prolonged for up to two and a half to three years.

Pollination:

JUST AGRICULTURE
multidisciplinary e-Newsletter

Oil palm is a crop that is heavily cross-pollinated. Pollination is aided by the wind and insects, although wind pollination alone is insufficient. *Elaeidobius kamerunicus* weevil is an efficient pollinator, aids in fruit set and good pollination. It is advised to release these weevils two and a half years after planting. After three years, weevils can once again be releasedif the plants are not growing with sufficient girth and vigour.

Flowering:

After being planted, the oil palm takes 14 to 18 months to blossom. On the same palm, different male and female blooms are produced. In a palm, male and female stages do normally occur in succeeding cycles.

Mulching:

Oil palm basins must be mulched to prevent weed growth and preserve moisture. Mulching can be done with male flowers, coconut husks, dried leaves and empty bunches.

Harvesting:

A stalk length of 5 cm should be left alone during harvest. Harvesting should be carried out every 10 to 12 days. Harvesting should take place throughout the rainy season at tighter intervals of 6-7 days since ripening is accelerated after a hot summer. Young plants produce more bunches with lower bunch weights, while mature trees produce fewer bunches with higher bunch weights.

Yield:

The yield stabilization period is 4 to 8 years with about 12 t/ha and after 8 years can reach to 20 t/ha.

Uses of oil palm:

Palm oil enhances the taste of processed food especially fast foods. It is also used for frying because it has a high melting point. It also leads to fast food being less greasy. This oil is added to frozen meals to prevent them from sticking and it functions as a natural preservative in processed meals.

Conclusion:

Palm oil is avery productive crop with its production and demand are rising quickly on a global scale. Asia, Africa, and Latin American countries are all experiencing a growth in plantations. It is a very sustainable crop.