



Economic Importance and Impact of Oil Palm Cultivation in North-East Region of India

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Oil palm (*Elaeis guineensis*) is a tropical plant that produces both palm oil and palm kernel oil, is the main reason for its cultivation. Oil palm is one of the most economically significant crops in tropical areas since it has a wide range of applications in different sectors. Oil palm is native to West Africa, particularly the region stretching from Nigeria to Angola. Oil palm cultivation has spread to numerous tropical places globally due to its economic importance. Indonesia, Malaysia, Nigeria, Thailand, Colombia, and Papua New Guinea are among the top producers of oil palm. Over 20% of the palm oil used globally is consumed by India, which is also the largest user in the world. At the moment, India imports a whopping 99% of its palm oil, mostly from Malaysia and Indonesia. Assam and Arunachal Pradesh in Northeast India have already created oil palm plantations. Whole districts of Mizoram, including Kolasib and Mamit, have been set aside for oil palm farming. India is attempting to increase oil output by promoting palm cultivation in the northeastern states of Assam, Mizoram, and Arunachal Pradesh. The country currently imports oil at a cost of millions of dollars annually. The Arunachal Pradesh government most recently signed an Memorandum of Understanding (MoU) with Patanjali Foods Ltd. (formerly known as Ruchi Soya Industries Ltd).

According to Barcelos et al. (2015) and Corley and Tinker (2008), oil palm is a plant that is commercially significant to the food and cosmetics sectors. It is also becoming widely recognised as a biofuel feedstock to reduce greenhouse gas (GHG) emissions (Reijnders and Huijbregts, 2008). According to estimates, oil palm grows over 17 M hectares of land, the majority of which is tropical forest (Pirker et al., 2016). In India, oil palm was planted on about 17% of the 1.9 M hectares of viable land up till 2019 (ICAR, 2019). Oil palm production has been encouraged in order to improve climate regulation services, as well as to provide an alternative energy source, aid in economic growth, and improve rural livelihoods (Feintrenie et al., 2010; Wicke). Oil palm, according to Mizoram's agricultural department, "stands as an ideal crop capable of achieving soil and moisture conservation, repair of degraded land, provide ecological balance, and food security of rural and urban poor." The oil palm industry would help farmers expand their economies, it is further said. Because India depends on palm oil imports, there will be constant demand for the crop in the upcoming years, guaranteeing a current market for the produce. The oil palm crop will be the greatest choice to meet the country's need for edible oil because it produces 5-7 times more oil per acre per year than other oil seed crops. The Central Government has launched its Centrally Sponsored Scheme NMEO-OP to encourage oil palm cultivation and provide farmers with various forms of assistance.

Wet rice cultivation, also known as established agriculture, is a significant option and frequently goes hand in hand with shifting cultivation in the majority of North-Eastern India.

Due to the area's undulating landscape, irrigation is a valuable resource. The food security and livelihoods of rural people may be impacted if this scarce resource is diverted to water-intensive oil palm crops. Oil palm's prospects are further complicated by the region's isolation. Northeast India has several areas where marketplaces and manufacturing facilities are not well connected. When access is restricted, the quality of the final product may suffer since fresh oil palm bunches must be processed within 24 hours of harvest in order to assure high-quality oil and prevent the build-up of free fatty acids. The woods of the Indian North-East, which in addition to supporting a number of endangered species of plants and animals are mostly managed by indigenous tribes, would be impacted by such ecological effects. It is projected that the growth of oil palm plantations and their replacement of arable land under swidden will have an impact on the agricultural communities' livelihoods. For instance, the Dayak population in Central Kalimantan, Indonesia, has been impacted by palm plantations.

In order to assure environmentally sustainable and socially responsible practises and to certify businesses that uphold its ideals, the Round table on Sustainable Palm Oil (RSPO) was established in 2004 after becoming aware of the issues related to oil palm farms. North-east India should receive some protection from certification, but RSPO principles have been difficult to execute. First off, being a member of the RSPO is problematic because only 20% of its members are oil palm farmers while 65% of its members trade crude palm oil. Therefore, the majority are not directly accountable for actions taken on the ground. Second, the nations where oil palm is farmed lack the social, ecological, and environmental competence necessary for the effective implementation of RSPO principles. Furthermore, barely a third of the output of palm oil by RSPO members was certified as sustainable in 2012. According to Umesh Srinivasan, a member of the Bangaluru-based National Centre for Biological Sciences, shifting agriculture dominates cultivation in the northeastern states. There are very few or no areas that are ideal for oil palm, expanding oil palm plantations will damage forests, and oil palm (like other plantation crops) is likely to change social dynamics in tribal communities, hence escalating socioeconomic disparities.

The Andaman and Nicobar Islands and the Northeast Indian states have been prioritised for the expansion of oil palm plantations. Together, these two regions are home to three Global Biodiversity Hotspots, several globally threatened, range-restricted, or endemic species, and some of India's largest expanses of intact forest. These woods are essential for biodiversity, a resilient climate, and the preservation of indigenous cultures' interests, way of life, and means of subsistence. Assam and Arunachal Pradesh in Northeast India have already created oil palm farms. Whole districts of Mizoram, including Kolasib and Mamit, have been set aside for oil palm farming. Oil palm planting has been a terrible endeavour in Mizoram. Even though indigenous tribes depend on jhum agriculture (or shifting cultivation) landscapes for food and non-food produce, the government has designated them as "wasteland" and replaced them with oil palm plantations. The soil has been rendered infertile by oil palm plantations, and the water supply has been gravely depleted. Because there is no infrastructure for transportation or grinding, the crop is simply allowed to decay after harvest, either on the tree or on the ground. Oil palm has provided farmers with little earnings, and attempts to switch it out for other crops due to low soil nutrients and declining water availability have failed. The three businesses growing oil palm in Mizoram, Godrej, 3F, and Ruchi Soya (the latter of which is now controlled by Patanjali), have not been held accountable for the state's oil palm crop failure. Despite official guarantees, farmers in Nagaland are hesitant to grow oil palm because of the severely inadequate water supply, crop loss due to rodents, and a lack of consumers for the produce.

Conclusion

Oil palm farming has increased wealth in the areas where it is practised, frequently removing communities from poverty and giving farmers and labourers a reliable source of income. The profitable palm oil business has benefited both small- and large-scale plantation companies. Large-scale oil palm plantations have had a negative impact on the ecosystem of the area by producing deforestation, biodiversity loss, and encroachment into ecologically sensitive areas. Concerns have also been raised concerning the use of agrochemicals and water, which could pollute the environment and have a severe influence on nearby people. It is essential for the government and stakeholders to enact and enforce strict environmental legislation, encourage smallholder participation, and promote responsible land-use practises in order to address these issues and ensure sustainable oil palm cultivation. Further reducing the damaging effects of oil palm production on the environment can be achieved by funding research and development of more efficient and sustainable cultivation techniques. Northeast India's economic growth has been greatly aided by oil palm planting, which has improved livelihood prospects and increased food security for the country. To preserve its long-term survival and reduce ecological harm, the sector must, nevertheless, find a balance between economic benefits and environmental preservation. Thus, Northeast India may continue to benefit from oil palm farming while protecting its priceless natural resources.

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