

Oil Expeller Units: A Prominent Agricultural Enterprise in the Lakshadweep Islands

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Introduction

Coconut cultivation is synonymous with the Lakshadweep Islands. The coconuts harvested in the islands occupy a distinctive position in the country's coconut industry, as they are traditionally cultivated under organic conditions. Coconut is the lifeline of the islanders and has a long history and a prominent role in the livelihoods of the people of Lakshadweep. For several years, however, concerns have been raised regarding coconut production in the islands. Published data indicate that, during 2017–18, the total area under coconut cultivation in Lakshadweep was 2,674.87 ha, with an annual production of 876.09 lakh nuts and a productivity of 32,753 nuts/ha. According to these data, coconut production and productivity in Lakshadweep were relatively high compared with the national

average. However, during 2022, ICAR-CPCRI and KVK-Lakshadweep conducted rapid surveys across the accessible islands and observed that the average productivity of coconut palms was only about 70–100 nuts per palm per year, compared with the reported figure of 100 nuts per palm per year (Shameena et al., 2022).

Coconuts are used for household consumption and are also traded with the mainland as fresh nuts and copra. They are further processed by enterprises into coconut oil, virgin coconut oil, hair oil, vinegar and various value-added products. Existing coconut-based enterprises contribute significantly to the economy of Lakshadweep by generating employment, utilizing local natural resources and producing value-added products. Despite these contributions, the sector remains underdeveloped

in terms of advanced technology adoption, operational efficiency and diversification into high-value products.

Among the various coconut-based ventures, coconut oil expeller units stand out as formally organized enterprises that comply with government regulations and have considerable potential for enterprise development. Other enterprises are largely managed by Self-Help Groups (SHGs), which often face sustainability challenges and operate at relatively low production volumes. The history



of coconut oil extraction in Lakshadweep spans over traditional as well as modern methods. Although traditional methods of coconut oil extraction have been documented in the literature, the use of modern oil extraction technology, particularly mechanical expellers, has emerged as a prominent enterprise in recent years.

Since the establishment of these expeller units, systematic documentation of their operations and performance has been limited. A study on coconut-based enterprises conducted by ICAR-CPCRI and KVK-Lakshadweep, with funding support from the Coconut Development Board, was the first study of its kind in Lakshadweep aimed at generating tangible results on the sector. The study extensively documented information on oil expeller units as an important component of the coconut enterprise sector (Thamban et al., 2025).

In parallel with this joint study, KVK-Lakshadweep organized Cocofest-2024 at Kavaratti in 2024, bringing together various coconut-based enterprises from across the 10 islands. The festival gave special emphasis to the participation of oil expeller units from Lakshadweep. The units displayed their products, participated in scientific interactions, and received recognition through awards and special commendations for their contributions to coconut-based entrepreneurship.

This article is based on primary data collected from eight prominent oil expeller units operating in Lakshadweep during 2024–2026, with the objective



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of deriving policy implications for strengthening the coconut enterprise sector in the islands. The study evaluated the strategic integration of oil expeller units within the agricultural sector of Lakshadweep by examining their economic potential and operational dynamics. It also aimed to identify development interventions that could be undertaken by KVK-Lakshadweep and incorporated into its mandated activities. The article details the profile, capacity and overall performance of these enterprises. Based on the empirical findings, the study concludes

with actionable policy recommendations to support the growth of the sector and guide organizations working towards the development of coconut-based enterprises.

Position of Coconut as a Critical Input for Oil Enterprises

Oil expeller units are present across the islands of Lakshadweep and are owned by both private individuals and the government. There are approximately 16 privately owned expeller units and six government-operated units across different islands. The privately owned expeller units were established by individuals using information obtained from various sources. Interestingly, many of these units were established at a time when access to information was limited compared with the present era of information technology.

Apart from coconuts, these units depend on almost all other resources imported from the mainland to complete their production cycle. They face considerable challenges in maintenance and sustainability because of logistical constraints and the prolonged lean period during the monsoon. The availability of fresh coconuts is also a concern, as farmers often trade fresh nuts with the mainland. Therefore, a detailed study of these units is important for policymakers to understand their potential and formulate appropriate measures for their promotion.

Since 2021, KVK-Lakshadweep has been actively working in the coconut sector within its mandated activities. As a recognized knowledge resource centre for

Management Feature	Lakshadweep Islands	Mainland
Scale of cultivation	Small holdings on fragmented lands	Larger-scale and commercial cultivation
Input type	Predominantly organic	Conventional farming using chemically derived fertilizers
Nutrient management practices	Biomass recycling and natural processes	Chemical fertilizers, including NPK, micronutrients and others
Irrigation management	Predominantly rainfed	Modern irrigation practices such as drip irrigation, including automated systems
Pest control	Biological methods	Chemical pesticide application, pheromone traps and systematic root feeding
Cropping system	Predominantly monocropping	High-density and multi-cropping systems
Mechanization	Predominantly handheld manual tools used by traditional climbers and tappers; limited use of climbing machines	Tilling tractors, power machines, intercultivators and other mechanized equipment

agriculture in the islands, the KVK has worked in collaboration with ICAR-CPCRI to create a relevant database on the coconut sector. There is a widespread perception that coconut as a crop has been neglected by the island community. Based on field experience and the identified needs of the sector, it has become evident that development agencies need to promote sustainable management practices in coconut cultivation. Development schemes for coconut cultivation should therefore be accelerated to facilitate the adoption of appropriate management practices. This, in turn, would ensure the availability of adequate quantities of raw material for oil enterprises. The 16 oil mills operating across different islands collectively produce approximately 3,89,800 litres of coconut oil annually (Thamban et al., 2025).

The improvement of these enterprises depends on several factors, including intensification of the cropping system and enhancement of coconut production and productivity. The management practices adopted in Lakshadweep are minimal compared with those followed in

other coconut-growing states of India. It is generally observed that coconuts in Lakshadweep are used primarily for local consumption rather than commercial purposes. Coconut production has shown a declining trend over the years, which is a matter of concern.

Nevertheless, oil expeller units remain the most prominent enterprises utilizing coconut resources in Lakshadweep. Apart from oil mills, other coconut-based enterprises, mainly operated by Self-Help Groups, produce value-added products such as virgin coconut oil, vinegar and other coconut-based food products. These activities are highly seasonal and may not always qualify as professionally organized enterprises.

Coconut cultivation in Lakshadweep is largely traditional and subsistence-oriented when assessed in terms of the scale of cultivation, inputs used, nutrient management practices, irrigation methods and other management features. The management practices followed by farmers are minimal or largely absent across the islands. The fragmented farms, characterized by small holdings, primarily use coconuts

for subsistence and household needs.

Since 2005, the community has prohibited the import of chemically derived fertilizers, making biomass recycling the predominant source of nutrient management. Coconut is predominantly cultivated under rainfed conditions. Pest and insect management is largely restricted to biological methods, consistent with the islands' traditionally organic production system. Monocropping system generally prevails, although a few farmers practise intercropping with crops such as banana on certain islands. Traditional climbers and tappers predominantly use handheld manual tools, while only a few use mechanical climbing devices.

Mechanization

Handheld manual tools predominantly used by traditional climbers and tappers; limited use of climbing machines, Tilling tractors, power machines, intercultivators and other mechanized equipment

It is therefore evident that the sustainability of oil expeller units in Lakshadweep depends on a continuous supply of coconuts and copra. The management practices associated with coconut

cultivation in Lakshadweep show a declining trend. Based on these observations, there is a need to promote appropriate management practices to improve coconut production. An increase in coconut production would have a direct bearing on the efficiency and sustainability of coconut-based enterprises in Lakshadweep (Ananth et al., 2022; Thamban et al., 2025).

Profile of the Oil Expeller Units

The evolution of coconut oil extraction in India reflects a transition from traditional animal-driven machinery to mechanized and continuously operated systems. Oil extraction from copra, i.e., dried coconut kernel, is a technically demanding process. Copra has a high oil content of approximately 65%–75% (Logamorthy and Karthikeyan, 2024). The development of coconut oil extraction technology can broadly be classified into three stages: the pre-industrial Ghani/Chekku system, early mechanization through rotary ghanis and hydraulic presses, and the technological leap of the 20th century with the introduction of continuous oil expellers. Oil expeller units in Lakshadweep have passed through these stages of technological development.

In terms of investment and returns, the oil expeller units in Lakshadweep can be considered micro-manufacturing or processing enterprises. Situated in a geographically isolated and resource-constrained region, these units represent first-generation enterprises and may be regarded as among the earliest industrial ventures established in the islands. They operate under challenging conditions because of significant



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logistical and operational constraints. Some units have evolved from traditional oil mills into modern expeller units. These enterprises were established using information obtained from various sources.

The history of the first oil milling enterprise in the Lakshadweep Islands is long and inspiring. It began in 1987 with the efforts of Mr. Pookoya, who became the first person to establish an oil mill on Kavaratti Island. Although he had completed his Pre-Degree Course and was eligible for government employment at that time, he chose a different path and decided to become an entrepreneur. His decision was motivated by his interest in creating a livelihood opportunity that could also benefit the local community.

Before establishing the oil mill, Mr. Pookoya was actively involved in the copra trade. He purchased copra from local farmers on the island and transported it to

the mainland, mainly to Kochi. Drawing on his experience in the trade, he subsequently established an oil milling unit by purchasing a new oil expeller machine from India Machine Tools Company, Kochi. Financial assistance for establishing the unit was obtained through a loan from the Service Cooperative Society.

Over the years, the business gradually expanded. During the last decade, he further strengthened the enterprise by purchasing an additional oil expeller, installing a copra dryer with a capacity of 1,200 kg, and establishing his own bottling and branding unit for coconut oil. In addition to coconut oil production, he also established a small ancillary unit for masala (spice) preparation, thereby adding value to his enterprise and diversifying his business activities.

Mr. Pookoya explained that the major challenge faced by the oil milling business is the seasonal variation in copra availability and drying conditions. During the summer season, farmers are generally able to supply well-dried copra directly. During the monsoon, however, insufficient sunlight affects the natural drying process, and farmers mostly supply fresh coconuts instead of dried copra.

To address this issue, during summer the coconuts are initially dried in a mechanical dryer for approximately eight hours and subsequently exposed to sunlight for another two days to complete the drying process. During the monsoon, complete drying has to be carried out in the dryer for nearly three to four days. The sundried copra generally produces better quality coconut oil when compared with mechanical drying.

Despite these difficulties, Mr.

Pookoya continues to operate the business with a strong sense of social responsibility. He supports local farmers by providing affordable oil extraction services at a rate of only Rs. 20 per kg of copra. Under some traditional arrangements, farmers take back the extracted oil while the oil cake residue is retained by the mill instead of charging a separate extraction fee. The minimum quantity required for oil extraction is five kg of copra. During periods of coconut shortage, support from his extended family in supplying coconuts has also helped sustain the business.

According to Mr. Pookoya, approximately 600–700 ml of coconut oil can be extracted from one kg of copra, along with approximately 300–400 g of oil cake residue. Looking ahead, he aspires to further modernize the enterprise by introducing mechanized oil-filling and packaging systems, including pouch packaging facilities. He also plans to procure a solar dryer in the future to improve drying efficiency and reduce dependence on conventional drying methods.

The servicing and maintenance of machinery are occasionally supported by development departments, particularly the Department of Fisheries, for minor issues. However, major repairs require the services of an external consultant, Mr. Bashi, a mechanic from Kerala. Mr. Bashi is well known across the islands for providing technical support to oil expeller units during major breakdowns.

Literature indicates that, in 1900, Valerius D. Anderson patented the “continuous mechanical screw press,” which he trademarked as the Expeller®. Since then, there has

been continuous innovation in oil extraction machinery, with Anderson’s development representing a major advancement in expeller technology.

Several oil expeller units in Lakshadweep have been established using machines procured from the mainland, many of which were pre-owned. Through personal contacts, these machines were transported to Lakshadweep by cargo boats. Mr. Pookoya explained the difficulties involved in transporting machinery to the islands during the early years. In the context of Lakshadweep, an economy deeply dependent on coconuts, the transition from traditional, low-yield stone or wooden oil presses to mechanical expellers was important for economic development. However, establishing a modern milling system in geographically isolated islands presented several unique challenges.

Connections with the mainland and personal networks played important roles in facilitating the introduction of mechanical expellers into Lakshadweep. The study found that the units were predominantly individually owned, with a few operating under partnership arrangements. All the units are registered under the government’s Udyam Registration system for Micro, Small and Medium Enterprises (MSMEs), and all possess FSSAI certification.

As indicated earlier, Mr. Bashi was also instrumental in bringing several expeller units from Kerala to Lakshadweep. He is prominent among the oil expeller unit owners and service providers in the islands. Most of the units in Lakshadweep operate oil expellers ranging from 5 to 16 bolts. Most of these machines were purchased as pre-owned equipment from

the mainland. In some cases, units acquired machinery from oil mills that had discontinued operations either in the islands or in the mainland.

The initial investment in machinery and equipment ranged from Rs. 10–20 lakh. Most oil mills produce coconut oil, virgin coconut oil (VCO), hair oil, coconut chips, coconut powder, vinegar and by-products such as coconut cake.

The majority of the units use hot-air dryers, box-type dryers and other drying systems with capacities of approximately 3,000–5,000 nuts per cycle. Electricity and coconut waste materials such as coconut shells are used as energy sources. Most units have specialized filters, sedimentation units, bottling facilities and other necessary equipments.

The procurement of coconuts for oil extraction is primarily from the owners’ own farms and from fellow farmers in the island, in an approximate ratio of 10:90. Each unit uses approximately 12,000–32,000 kg of copra for oil conversion. Most of the surveyed enterprises were established using the owners’ proprietary funds. The entrepreneurs also availed loans from nationalized banks, cooperative societies, the Khadi Board and other financial institutions. Some obtained overdraft facilities from nationalized banks, particularly Canara Bank, to support their business operations.

The enterprises utilize a combination of family and external labour. The units employ both permanent and temporary workers, with an average workforce of five to ten employees. Most of the surveyed enterprise owners have

Key Features of Oil Expeller Units	
Feature	Characteristics
Ownership type	Predominantly individually owned; a few units operate under partnerships
Registration	Registered under MSME/Udyam Registration and FASSI certified
Type and raw material capacity	Medium-scale; approximately 100 kg/hour
Products	Coconut oil, hair oil, coconut powder, virgin coconut oil, coconut chips and other products
Machine type	5–16 bolt machines
Source of coconut	Own farms and other farmers (10:90)
Use of raw materials	12,000–32,000 kg of copra
Dryers and capacity	Hot-air dryers, box-type dryers and others, with a capacity of approximately 3,000–5,000 nuts/cycle
Energy sources for dryers	Electricity and coconut waste such as coconut shells
Filters, sedimentation units, bottling and other equipment	All units possess the equipment required for these operations
Oil production	5,000–7,020 litres
Branding and marketing	Each enterprise has its own brand and operates primarily in the internal market
Credit facilities	Loans availed from financial institutions

undergone training conducted by the Coconut Development Board, Kochi, and ICAR-CPCRI, Kasaragod.

On an average, the total production cost of the final product was found to be Rs. 271.60 per kg of oil. This overall cost includes expenditure on copra, labour, bottling, rent, electricity and other overheads. The production cost decreases when coconut prices decline. Transportation of inputs, particularly packaging materials, constitutes a significant cost because processing units depend heavily on the mainland for supplies.

Coconut prices fluctuate considerably, averaging around Rs. 2,500 per quintal. Processing units procure copra from two primary sources: their own farms and external farmers. Based on the survey data, 1.54 kg of copra is required to produce 1 kg of oil, amounting to Rs. 215.60 at a raw material cost of Rs. 140/kg. The remaining manufacturing expenses amount to Rs. 56.00 per kg, comprising Rs. 30 for labour,

Rs. 20 for packaging materials, and Rs. 6 for rent and electricity.

Under this operational framework, copra represents the largest cost component, accounting for nearly 80% of total expenditure. Consequently, profitability remains highly sensitive to fluctuations in the market price of coconuts, which averages around Rs. 2,500 per quintal. The oil is sold at a wholesale price of Rs. 311/litre and a retail price of Rs. 331/litre.

Over the period of the study, the oil expeller sector in Lakshadweep emerged as a fascinating example of industrial and regional history. It represents two distinct but closely connected aspects of oil production: the global technological advancement in mechanical oil extraction and the manner in which this technology reached decentralized and geographically isolated communities such as Lakshadweep to process locally available resources such as copra.

Status of Oil Enterprises

Most oil enterprises in Lakshadweep are first-generation businesses, although a few are transitioning to second-generation family management. The enterprise established by Mr. Pookoya is one such example, as he has transferred the business to his son. Despite upgrading their basic machinery, the studied units have yet to transition to advanced industrial technologies. Such technological advancement is likely to depend on increasing market demand for premium and value-added products.

At present, most enterprises focus primarily on meeting localized and internal demand. Mechanically, these oil expeller units operate largely on a service-fee basis, enabling local farmers to process their copra, as illustrated by the case of Mr. Pookoya. However, this business model creates seasonal supply constraints. During summer, many farmers sun-dry their own copra

and either extract oil themselves or use local expeller units for processing. Consequently, commercial expeller units experience significant shortages of raw material during certain periods.

Unlike units on the mainland, the operation of oil expeller units in Lakshadweep is significantly disrupted by the monsoon season and the limited availability of efficient copra dryers. Inter-island vessel services are severely restricted during the annual monsoon season, which extends from 15th May to 15th September. Restrictions on passenger ships, cargo boats and barges disrupt maritime connectivity with Kochi and Bepore during this period.

Consequently, local enterprises have limited access to channels for sourcing critical manufacturing inputs and raw materials from the mainland during these four months. Specific schemes for the development of these enterprises need to be formulated to improve their efficiency and support their transition towards modern production practices. Cargo and shipping costs for inter-island and mainland transportation are not subsidized, further increasing the operational burden.

As discussed earlier, the maintenance and repair of these units also involve considerable expenditure because of the shortage of skilled technicians and the limited availability of spare parts. The units are highly dependent on resources and technical support from the mainland for maintaining machinery and resolving technical problems related to equipment.

The study also attempted to assess the performance of government-owned expeller

units. There are five coconut enterprises spread across five islands of Lakshadweep producing coconut oil, desiccated coconut powder, VCO and other value-added products. These units were functional but were reportedly operating at a loss. All these enterprises function under the Lakshadweep Development Corporation Limited (LDCL).

For several years, the UT Administration of Lakshadweep has been exploring various strategies to improve the performance of public-sector enterprises, particularly oil extraction units. The government also attempted to outsource these enterprises through an open call at the national level. Several such attempts were made to improve the effectiveness of publicly managed units.

One of the approaches involved establishing incubation centres for local residents, particularly islanders, to operate public-sector enterprises such as oil mills. The objective was to establish incubation centres and train local residents to manage units engaged in the production of coconut-based products. Shri A. Vikranth Raja, IAS, Managing Director, Lakshadweep Development Corporation Ltd., envisaged this approach as an institutional innovation aimed at incubating local entrepreneurs and empowering islanders through the process.

The officials of Lakshadweep Development Corporation Limited discussed this approach with KVK-Lakshadweep. KVK-Lakshadweep agreed to support the initiative by providing facilitation and technical guidance. Through several rounds of discussions, the concepts and operational framework of incubation and incubatee selection

were clarified and modified according to the local situation.

KVK-Lakshadweep prepared the first draft of the concept note, following which LDCL floated a public tender. The Terms of Reference (TOR) for all phases of the incubation process were facilitated by KVK-Lakshadweep. Officials from LDCL were deputed to work closely with KVK-Lakshadweep. Accordingly, the first tender was floated for the selection of an incubatee for the oil extraction unit at Kadmat Island.

The oil extraction unit at Kadmat had been operated by LDCL since its establishment, with a production capacity of 325 litres of oil per day. Over the years, the unit operated at a loss for several reasons, despite the various constraints associated with its location. Consequently, the operation of the unit was opened to the public through the tender process.

Mr. Sabith, a rural youth from Kadmat Island, won the public tender and was selected as the incubatee for the centre. Mr. Sabith had previously coordinated several activities of KVK-Lakshadweep and had provided valuable information on several occasions for implementing development interventions, particularly in Kadmat Island.

He also participated in the workshop on "Policy to Practice—Towards Strategizing Coconut Development in the Islands," organized by KVK-Lakshadweep and ICAR-CPCRI, Kasaragod, at Kavaratti Island. Mr. Sabith received training from KVK-Lakshadweep and LDCL on various aspects of producing quality coconut oil while maintaining the required standards.



Following the training, he produced 5,012 litres of coconut oil within a period of three months.

KVK-Lakshadweep provided support in several ways, particularly by facilitating his activities and connecting him with technical experts. Under the arrangement, Mr. Sabith paid a rent of Rs. 5,000 per month for use of the unit, employed labourers and met the electricity and other operational expenses.

The oil produced by the incubatee was handed over to LDCL, for which he received a margin of Rs. 30 per litre. LDCL took responsibility for marketing the final product.

The initiative undertaken by Mr. Sabith was widely appreciated by the UT Administration. The role of KVK-Lakshadweep was particularly important during the initial phase in supporting LDCL and facilitating the incubation process. The efforts of the Managing Director, LDCL, and the Factory Coordinator in designing the production arrangement for Mr. Sabith, providing the necessary facilities, establishing a dryer and facilitating payments upon delivery of the finished oil were also significant.

The successful utilization of the technical expertise of KVK-Lakshadweep by LDCL and the

UT Administration represents an important outcome of this initiative. The model was recognized by the UT Administration of Lakshadweep as a potential approach for replication. Based on this experience, the UT Administration subsequently initiated the outsourcing of oil mills on other islands.

Conclusions and Recommendations

Comparing the efficiency of oil expeller units in Lakshadweep with those on the mainland is challenging because of significant differences in resource accessibility and operating conditions. There is a considerable lag in the flow of technological innovations to the islands, which can largely be attributed to their geographical isolation.

Despite these constraints, entrepreneurs have successfully established and operated oil expeller units using information and resources available through their own networks. However, the sector continues to face critical gaps in technology, operations, maintenance, transportation and logistics.

To remain competitive and improve operational efficiency, island-based oil expeller

units require comprehensive technological and infrastructural upgrades across these areas. Government agencies such as the Department of Agriculture, KVK-Lakshadweep, Department of Industries and Department of Rural Development should work in convergence to support these enterprises.

Bridging the gaps in technology and extension support should be given priority. Strengthening coconut production and productivity, improving the availability and management of raw materials, facilitating access to modern machinery and drying technologies, improving transportation and logistics, and providing technical support for machinery maintenance would contribute significantly to the sustainability of oil expeller enterprises in Lakshadweep.

A coordinated institutional approach involving development agencies, research institutions, financial institutions and local entrepreneurs is therefore essential for strengthening the coconut enterprise sector and ensuring the long-term sustainability of oil expeller units in the Lakshadweep Islands. ■

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