

Karthigai maavoli from palmyrah palm - A tradition in transition

Kala Samadharmam^{a,*}, Ayyanadar Arunachalam^b, Suresh Ramanan^b, Aswini Krishnan^c & K Kumaran^d

^aICAR-Indian Institute of Soil Water Conservation, Research Centre, Kota 324 002, Rajasthan, India

^bICAR-Central Agroforestry Research Institute, Jhansi 284 003, Uttar Pradesh, India

^cAC & RI-Tamil Nadu Agricultural University, Coimbatore 641 003, Tamil Nadu, India

^dAC & RI, Tamil Nadu Agricultural University -Trichy 620 001, Tamil Nadu, India

*E-mail: kalaforestry@gmail.com

Received 08 May 2024; revised 20 August 2025; accepted 08 September 2025

Palmyrah is a significant tree, has an ethno-scientific and umbilical connection with Tamil culture. Thus, its products have an intimate social linkage with culture, including birth to death related rituals. Due to this, it is designated as a State Tree of Tamil Nadu. Karthigai festival commemorates the birth of the Tamil god Karthikeyan. A hand-rotating, homemade firecracker known as Karthigai *Maavoli* is an inevitable component of the Karthigai festival celebration. Tamil people have been celebrating the Karthigai festival for centuries, dating back to the Sangam period. The palmyrah male tree spadix charcoal powder is a main ingredient for making *Maavoli*, it is a non-explosive homemade firework/cracker, which is a highly safe and ecofriendly product. The invention of chemical fire crackers is a reason for the homemade fire crackers to lose their sparkle. The younger generation is increasingly unfamiliar with traditional firework-making, its performance methods, and cultural ties to the Karthigai festival. Due to the younger generation's inexperience, interest and lack of documented information about *Maavoli*, people are burning bicycle tires rather than *maavoli* bags, which are hazardous to the environment. Hence, an effort and study made with objective to document materials for *Maavoli* preparation, validation and compilation of relevant information on status of *Maavoli* celebration by literature survey and interviews with rural people in the selected district of Tamil Nadu. The manuscript also indicates on possible ingredient to make an ideal *Maavoli* bag. This new ingredient in *Maavoli* bag is first time reported here for exposure and wide communication.

Keywords: Celestial tree, Charcoal, Karthigai deepam, *Maavoli*, Palmyrah, Spadix

IPC Code: Int Cl.²⁵: F42B 4/04

Karthigai Deepam is one of the oldest festivals or *peruvizha*, celebrated by the Tamil people. References to the Karthigai Deepam festival and the lighting of lamps are found in the works of the renowned Tamil poetess Avvaiyaar and in Sangam literature dating from the 2nd to 5th centuries CE. The *Aganaanooru*, a book of poems from the Sangam Period (200 B.C. to 300 A.D.), contains one of the first mentions about *Maavoli* celebration as custom connected to Karthigai festival. As a part of the festival, a stunning show of light and sparks by making and spinning handcrafted firecrackers out of palm flowers and other materials. Thus, *Maavoli* bags are traditional hand-rotating firecracker made of Palmyrah spadix charcoal powder. As part of festivities, the *Maavoli* is skilfully rotated in various patterns using a strong fibrous rope from palmyrah leaf stalk. Made from male palmyrah spadix charcoal and designed as a non-explosive craft,

it is exceptionally safe. This ancient custom is attested to be an artwork that is around three thousand years old. The palmyra tree is essential to religious rituals and deep cultural roots with the Tamil people, palmyrah palm is known as "Katpahatharu (Celestial tree)" in Tamil culture. Hence, Tamil Nadu government officially designated Palmyrah as the state tree in 1978. The southern districts like Thoothukudi, Tirunelveli, Virudhunagar, Sivaganga, and Ramnad contain about 50% of Tamil Nadu's 51.9 million palm trees; Thoothukudi district alone contains a significant portion of 10 million palm trees. This palm's natural range includes Bangladesh, Malaysia, Thailand, Indonesia, Pakistan, and a few African nations¹. According to 1990s estimates, India had about 80 million palmyrah palms, followed by 10 million in Indonesia, 2 million in Thailand, and 11 million in Sri Lanka. The Palmyrah tree, symbolizing South Indian traditional knowledge and evoking the deep connection of an umbilical bond, stands

*Corresponding author

prominent in cultural heritage for its multifaceted uses. Revered as the “tree of life,” its traditional applications are deeply woven into the fabric of Tamil communities, reflecting a long-standing, sustainable relationship with nature.

The palmyrah palm (*Borassus flabellifer* L.), native to Tropical Africa and Indo-Malaysia, has existed since prehistoric times. Used for over 4,000 years for writing and preserving texts, it has become a symbol of Asian culture. Belonging to the ancient Palmae family, it is considered older than most flowering plants². According to Davis and Johnson³, palmyrah palm is a dioecious evergreen with a single stem reaching 30 meters in height. According to Jana & Jana⁴, palmyrah palms can live for more than a century. A fruit has three or two seeds, and a mature tree may produce 200 to 300 fruits a year. The palmyrah palm has a dark stem surrounded by thick adventitious roots at its base. Mature trees trunk bear small petiole scars, and their wood resembles coconut palm wood but is darker. The crown holds 30-40 large, induplicate, highly costapalmate leaves, each 1-1.5 m in diameter and divided into 60-80 segments about 3 cm wide at the base. The robust petiole, 0.6-1.2 m long, has serrated edges. The palm first flowers between 12 and 20 years of age, enabling sex identification. Its circular fruit measures 15-20 cm in diameter and weighs 1-1.5 kg⁴. Germination occurs 45-60 days⁵ after planting, with the first leaf appearing around 100 days. Seed treatments have reportedly increased germination rates from 15-20% to 73-89%⁷⁻⁹. The palm is also tapped for fresh sap (*padaneer*) and wide array of items are made out of weaving its leaves. A well-known Tamil song in India honors this palm as a “tree of life” and lists 801 applications in many fields, demonstrating its many applications^{4,11}. It yields wood, fruits, sap, stems, petioles, and leaves for food, beverages, furniture, building materials, and handicrafts. Tender fruit pulp is soft, sweet, jelly-like, and rich in vitamins A and C; seedlings have edible starchy roots¹²; and fresh sap is high in B-complex vitamins¹³. Many parts possess diuretic and anti-helminthic properties, and its products are used in traditional cooking and as natural sweeteners^{14,15}.

Palmyrah – The foundation of Maavoli ITK

The male palmyrah spathe is the core ingredient in Maavoli preparation. Beyond fireworks, palmyrah leaves are used for decorations and torans during festivals, and its jaggery is made into sweet

kozhukkattai for offerings. Every part of the tree has cultural, ecological, medicinal, and economic value. It is drought-resistant, withstands severe weather, and was hailed by Mahatma Gandhi as a remedy for poverty. Palmyrah has a deep tap root system capable of storing large amounts of water, which replenishes groundwater. This is why ancient communities planted them around rivers, tanks, and wells. They can transform arid land into fertile areas¹⁶.

Tamil poetry mentions Karthigai Deepam and Maavoli from the Sangam era

A Sangam-era Tamil verse beautifully captures the festive spirit: The poem, in essence, describes the season after the rains, when the skies clear and the moon shines bright-its “little rabbit” motif glowing again. The “six fish” constellation appears in the deep night. Lamps are lit in the streets, garlands are hung, and fruits are offered, as the ancient town gathers in joyful celebration. The reference to Maavoli-radiating bright light-evokes the ceremonial grandeur of the occasion. The final line, “the autumn is tired, the mother is coming,” poetically marks the transition to a sacred, renewing time, perhaps symbolising the arrival of divinity or the festive season¹⁷. Indian temple sculptures from second century BCE show Palmyra tree. Major temples like Tiruppanandal, Tiruppanangkadu, Tiruppanaiyur, Tirumazalpadi and Tirukkurungkudiin Tamil Nadu, have this palm as “Sthala Vrksas” (Deity tree). Both Buddhists and Hindus revered this tree. With such deep-rooted cultural and ritual uses, it is unsurprising that the Palmyra is celebrated across communities¹⁸. The word *Maavoli* seems to have evolved from *Maa-oli* meaning “great light.” The fact that this custom has been in practice since ancient times can be understood from its depiction in rock paintings¹⁸. He noted that the Aikuntam rock paintings in Krishnagiri district, Tamil Nadu, serve as evidence of the significance of the Maavoli ritual and its long-standing practice in tradition.

Recent years, palmyrah trees are being destroyed at a rate never seen before, despite this. The palmyrah trees in these land parcels are also sacrificed when land sharks and real estate brokers swap fertile agricultural fields or sand dunes. The destruction of palmyrah male trees are targeted for brick kiln fuel is a tragedy that we are currently experiencing^{19,22}. More remarkably, palmyrah palm land usage is a significant carbon sink with substantial potential for biodiversity

conservation²¹. Conservation of male palm trees directly impact on availability of raw material with this kind indigenous technology to sustain with future generation. Hence in this paper, authors explored and documented factors and figure relevant to Maavoli preparation celebration, reasons for decline, and emphasis given to male palmyrah tree conservation to revive our ancient treasure.

Materials and Methods

Materials

The primary raw material for Maavoli preparation is the male spathe of the palmyrah palm, a dioecious species whose sex can be identified only during flowering, which begins after 12-15 years. The male inflorescence is a springly branched spadix enclosed

in a spathe, produced twice a year-in January and September. Each palm yields 5-10 inflorescences annually, with each inflorescence carrying 2,00,000 - 250,000 florets and producing around 30 kg of dry spadix per year. Fresh male flowers are fed to cattle, but the high tannin content (8.7%) makes the dried form unpalatable without mixing. For Maavoli preparation, 2-3 kg of dried male spadix is collected, placed in a 45-50 cm-deep sandy pit, and burned carefully to 70-80% before covering with dry sand for cooling (Fig. 1). The charcoal is then cleaned, powdered, and mixed with sawdust and bio-degradable annatto dye-coated crystal sea salt in the ratio of 250 g charcoal: 150 g sawdust: 100 g salt to prepare a 500 g batch. This mixture is packed in stitched cotton bags (Fig. 2). The innovative inclusion of dye-coated sea salt crystals-reported for the first

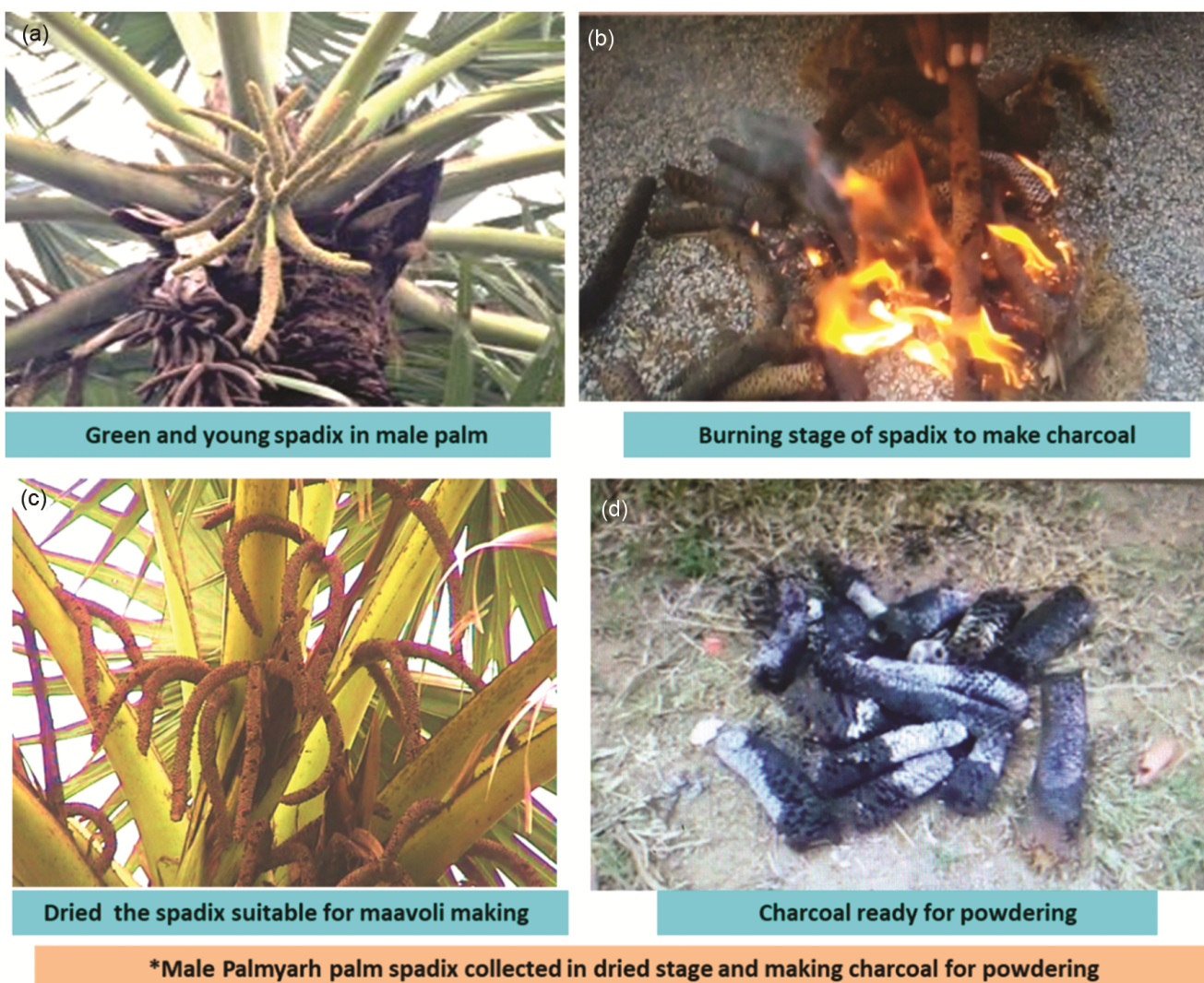


Fig. 1 — Male Palmyrah spadix collected and ground for Maavoli

time-enhances the display by producing vivid colours, altering spark dispersion, and creating a distinctive crackling sound, thus adding both visual and auditory appeal to this traditional, eco-friendly firework used during Karthigai Deepam.

After preparing the Maavoli bags, a sturdy stand is fashioned from strong palmyrah leaf petioles, 40-50 cm long, split up to 20 cm to insert the bag, and secured with cloth or jute twine. A two- to three-cubit rope is tied at the centre for rotation. The bag is ignited and spun above the head in both directions, producing vivid black-golden sparks and colourful bursts, accompanied by the festive chant “Mavalio Mavali” song (Fig. 3). Traditionally played in village and town streets during the Karthigai Deepam festival between 7-8 p.m., after evening pooja, the *Maavoli* is more than a firework-it is a joyful blend of song, dance, and communal celebration, making the night a spectacular and memorable sight.

Methodology

The study was conducted in selected villages across southern Tamil Nadu to document the traditional practice of Maavoli preparation and playing, as well as to assess awareness, technical knowledge, and interest levels among different age groups. The Maavoli circumambulation ritual is still practiced in certain districts, including Sivaganga, Ramanathapuram, Tirunelveli, Madurai, Tiruvannamalai, Villupuram,

Mayiladuthurai, Vellore, and Salem. Primary data were collected through field surveys in representative villages in Tamil Nadu, targeting participants from four age groups: below 19 years, 20-40 years, 41-60 years, and above 60 years. Structured questionnaires and oral interviews were employed to gather quantitative and qualitative data on knowledge of Maavoli preparation techniques, familiarity with playing methods, interest in practicing the ritual during Karthigai Deepam, and awareness of its cultural and environmental significance. A key informant interview was conducted with Mr. K.M. Samadharmam, a senior resident of Kurunthampattu village in Sivagangai District, who provided detailed information with proper consent on preparation methods and playing steps. The lead author’s personal childhood experiences in Maavoli preparation and performance were also incorporated as supplementary information.

To provide cultural and ecological context, a comprehensive literature review was undertaken in both English and Tamil. Sources included university proceedings, institutional repositories, and academic databases such as Scopus, PubMed, and Science Direct, supplemented by general search engines for vernacular and grey literature. A structured search strategy was employed using keywords such as “Palmyrah tree,” “palmyrah products,” “Karthigai Deepam,” and “Maavoli,” combined with Boolean operators (AND, OR, NOT) to refine results. Citation



Fig. 2 — Uniqueness in main ingredients for Maavoli bags mixture for glorious lighting: (a) Charcoal powder of Male palm spadix, (b) Saw dust, (c) Sea salt as crystal form, (d) Annatto seed dye, (e) Seed dye mixed salt crystals, (f) Maavoli bag with complete mixture of ingredients

tracking was used to locate both historical and contemporary works. All collected information was cross-verified for accuracy and originality. The study was conducted with the consent of participants, with careful attention given to respecting cultural perspectives and authentically representing traditional knowledge.

Results

Maavoli (also called Maa Oli) is a traditional Tamil firework game once popular across Tamil Nadu. In earlier times, people made their own Maavoli pai (a

palmyrah-based firecracker), lighting them at night after evening lamps and spinning them through the streets. It was believed that spinning the Maavoli could ward off problems. Deeply tied to the palmyrah tree's cultural and spiritual significance, Maavoli reflects Tamil Nadu's heritage and nature-worship traditions. This study compiles data from various sources to document Maavoli preparation, playing techniques, and cultural relevance, supported by technical and systematic analysis. Despite being organic, non-toxic, and eco-friendly, the practice has

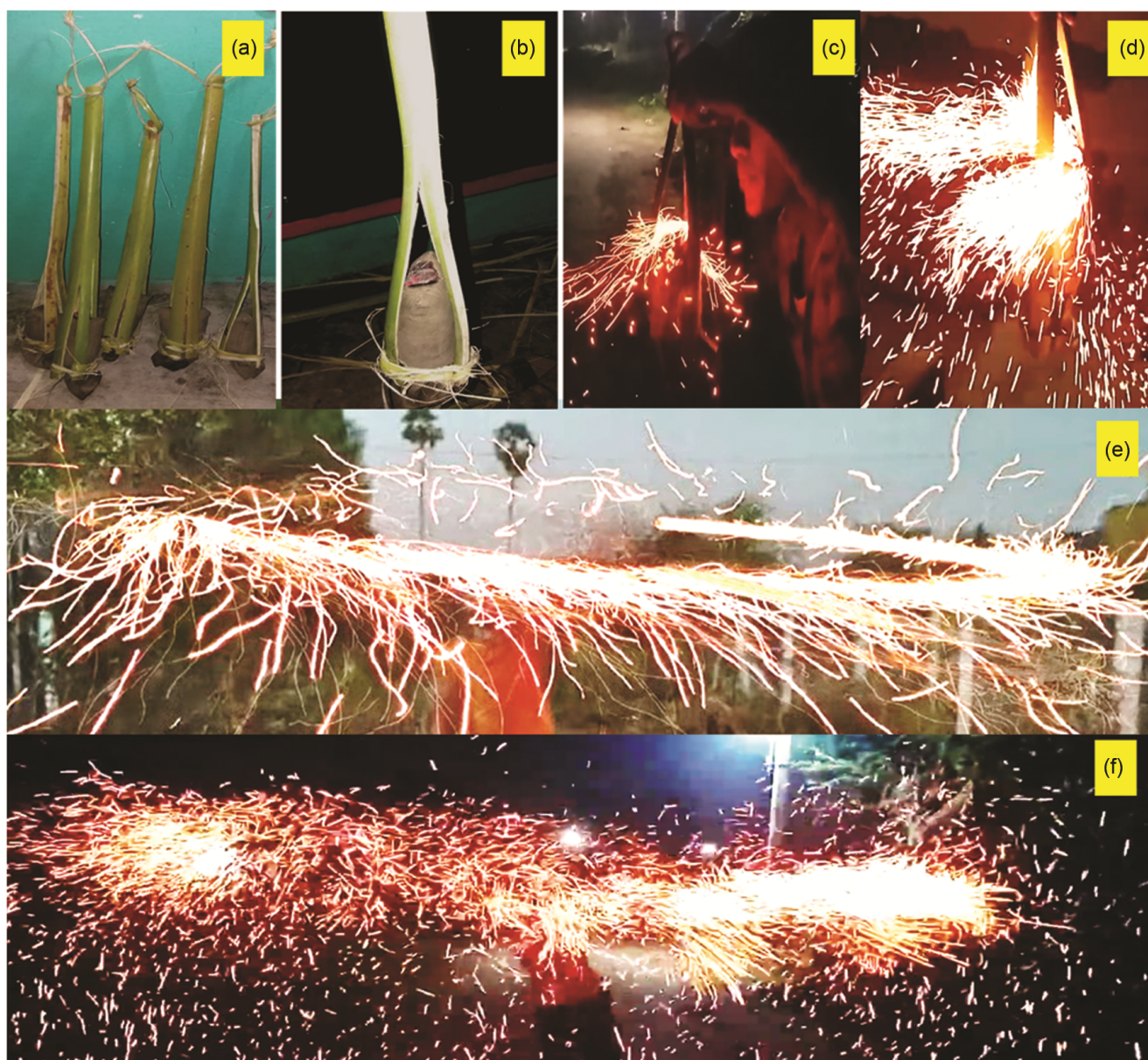


Fig. 3 — Stepwise process of flame up the Maavoli firework and Maavoli Spinning in Streets: (a & b) Palmyrah palm leaf stalk used for stand and rope making for easy hand rotation of Maavoli, (c & d) blowing steps by hand shaking to make ignition for light emitting, (e & f) day view and night view of colourful patterns of light

been fading since the 1990s, especially among younger generations. A survey conducted in selected southern Tamil Nadu villages (Fig. 4) revealed that only 9% of children (<19 years) knew the preparation method and 26% knew how to play. Among youth (19-40 years), the figures were 21% and 46%, while middle-aged individuals (41-60 years) showed 56% and 65% knowledge respectively. Those above 60 years had 100% familiarity, indicating that the tradition was widely enjoyed before 1990 (Fig. 5).

Another finding from the survey (Fig. 4) also emphasised that younger people preferred industrial chemical crackers over Maavoli, mainly due to a lack of technical know-how, reduced awareness of cultural significance and the dominance of mass-produced fireworks during the Karthigai Deepam festival. Today, Maavoli survives only in a few rural pockets, at risk of disappearing entirely. More than a simple homemade

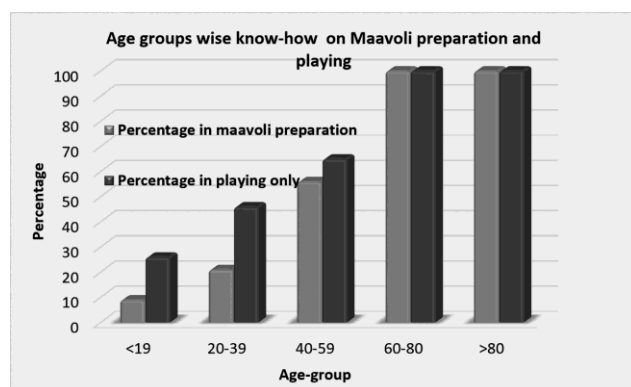


Fig. 4 — Age-wise survey results on knowledge and playing interest in maavoli firework

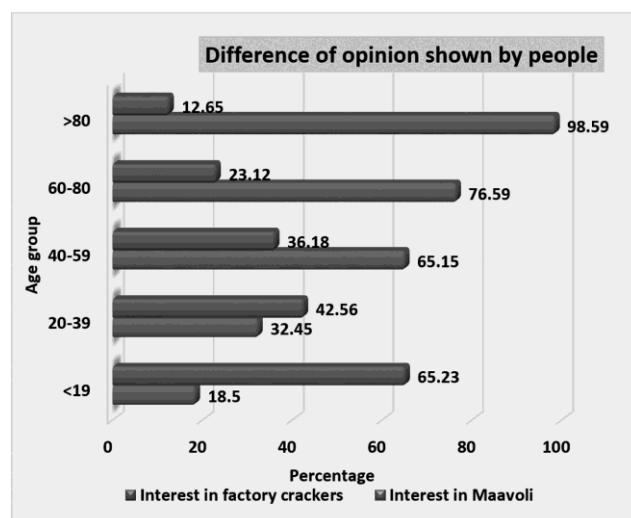


Fig. 5 — Age-wise survey comparison of preference for Maavoli firework and factory-made crackers

firework, it is a form of traditional ecological knowledge and a celebration of nature with natural resources-now endangered by modern practices (Fig. 5). This could support the importance of this traditional knowledge on Maavoli firework preparation, when there is not any environmental risk and a higher chance of a safe and fun gaming. It is expected that our native ITK on homemade fireworks game won't be ineffective. This ITK should be transferred or pass on to make awareness among kids, teens, and adults to play it to celebrate holidays in a distinctive and vivid way with our socio-cultural connections.

Discussion

Maavoli Sutharathu is a part of the Karthigai Deepam festival, marking the end of the monsoon season and the onset of winter. Despite its distinctiveness, cultural heritage, and eco-friendly nature, the Maavoli firework and its main raw material- the Palmyrah tree are rapidly disappearing from Tamil Nadu. The conservation of male Palmyrah trees is critical, as their spathes are the primary material used in preparing Maavoli. However, in recent decades, Palmyrah trees have been destroyed at alarming rates for real estate development, sand mining, and fuel for brick kilns. Due to lack of awareness, younger generations give little importance to the Maavoli tradition. In some areas, they burn polluting bicycle tyres instead of using Maavoli bags. Unlike such practices, Maavoli making uses no harmful materials and is entirely safe for people and the environment. A few elderly people in remote southern Tamil Nadu villages still prepare and play Maavoli during Karthigai Deepam, passing the skill to their grandchildren. This paper aims to revive awareness of this indigenous firework among youth and the wider public, ensuring that the tradition continues for future generations.

Cultivation cum conservation practices and benefits

Palmyrah conservation efforts include bund plantations, wasteland afforestation, and farm pond planting. Bund plantations involve planting trees along agricultural embankments and water bodies, aiding soil conservation, providing shade, food, nesting sites for pest-controlling birds, and green manure for paddy fields. Wasteland afforestation converts barren land into green areas, improving biodiversity with minimal maintenance. Farm pond planting combines water conservation and agroforestry by planting Palmyrah around ponds. Palmyrah also serves as a natural

biofence, windbreak, and long-term economic asset. Once established (within the first year), it requires little care, survives extreme drought, and can bear fruit in 15-30 years. Its resilience and versatility make it indispensable for environmental sustainability and cultural preservation.

The pastoral community in Tamil Nadu uses a palmyrah enclosure to safeguard their livestock; the prawn fishers use palmyrah baskets for traditional fishing, the Chettinadu traders too used colourful palmyrah baskets called *kottans* for their storage, etc. The weaving of palmyrah (palm leaf) baskets, known as Kottan, was a leisure time engagement for the affluent Chettiar women and found pride of place in every Chettiar activity - from ritual and ceremony to daily use. With changing lifestyles within the community, Kottan lost its place, only to be revived in recent years²⁰. And, historically, mature palmyra leaves were used in ancient times to record tamil literary works. This paper aims to provide an overview of palmyrah's distribution, narrates linkage with social rituals celebration, maavoli firecracker preparation followed by cultivation aspects and its nutritional benefits and restorative qualities, and ecological implications on rural and social subsistence and rituals.

More remarkably, palmyrah palm land usage is a significant carbon sink with substantial potential for biodiversity conservation, according to the conclusions of a study by Gnanavelrajah *et al.*²¹. Supporting this land use system may help areas dealing with comparable ecological issues implement sustainable climate mitigation and adaptation plans. It is possible that the Palmyrah land use will be covered by the carbon credit schemes. Compared to coconut and other palm species, palmyrah palm land uses have a larger potential to contribute to climate change adaptation and mitigation due to its numerous applications, advantages, and exceptional environmental adaptability²².

Social linkage palm tappers with palmyrah tree

Nature in Focus' article "A tree that transcends time" highlights the palmyrah tree, and examines ways to guarantee the survival of the palmyrah tree and the livelihoods it sustains, which have been essential to generations of palmyrah climbers for sustenance and cultural customs of the people throughout the year¹⁶. That's why it is referred as the celestial tree¹⁸. While tree tappers pray to their beloved palmyrah every time they begin tapping, the occasion of Karthigai Deepam, the Hindu festival of lights, is even more special. The

whole family comes together to cook *panaiolaikozhukatai*, which is a sweet dish made of rice flour and palm jaggery, steamed in palmyra leaves. While the kids were thrilled to light up the maavalis, or handmade, environmentally friendly crackers fashioned with palmyra flowers, we witnessed the hot treats melt away in front of us during the celebration. According to Pandian, this native firework had all but vanished into torpor. However, without swirling these starry maavalis, the Deepam festivity in this neighbourhood would not be complete. Palmyra climbers never harvest tender shoots and make sure that photosynthesis is not disrupted. They omit the final palai or spathe for pollination even when they are tapping the sap or toddy for fruit and seed production to cope up its self-sustainability. In the heart of South India, a quiet but successful campaign to protect the endangered palmyra palm is gaining momentum. This tall tree, renowned for its resilience and numerous uses, is being brought back to life in the Tamil-speaking area and culture one seed at a time. The palmyra, frequently referred to as the "Tree of Life," has long provided people with food, shelter, and income. Its roots replenish groundwater and stop soil erosion. This tree was a lifeline in parched regions.

Budding of sale option for Maavoli bags in local market and scope for scale-up Maavoli business in future

Lastly, we believe that "Maavoli" is more than just a homemade firework game; it represents our traditional knowledge and practice of using natural resources to worship nature. The dried spadix of the male palmyra tree is one type of pure and valuable product derived from palmyra plants. The small bags of Maavoli is prepared by villagers was sold for 10 rupees and the large one for 20 rupees in Avalurpettai and Valathi, Melmalaiyanur local market in Villupuram district. Similar way, there is a high scope for rejuvenation of homemade fire cracker using this documented ITK steps for future marketing by village people for their livelihood, income generation and sustenance.

What is significance pertaining in male Palmyrah palm conservation?

The male Palmyrah tree plays a vital role in Maavoli preparation and pollination of female trees, with its timber traditionally valued for house construction and indigenous boat making. While the sweet sap (Neera) of Palmyrah is mainly extracted from the larger female flowers, the smaller male flowers are unsuitable for this purpose, leading to higher rates of male tree destruction. Protecting male Palmyrah trees is therefore

essential to sustain both the Maavoli tradition and the species' reproductive cycle. Female trees contribute directly to local economies through Neera extraction, while male trees are crucial for preserving biological and cultural heritage. Palmyrah trees as a whole are naturally adapted to local conditions, enhance climate resilience, provide wildlife habitats, improve ecosystem services, strengthen regional economies, and are suitable for carbon credit schemes. Investing in the protection and restoration of native Palmyrah trees can bolster carbon sink, climate resilient crop, support local livelihoods, and increase biodiversity-provided the right trees are planted in the right places.

Way forward

The revival of the Palmyrah Palm calls for a holistic approach that combines conservation, livelihood enhancement, and cultural preservation. Efforts must focus on large-scale planting of new seedlings, protection of existing trees, and promotion of Palmyrah-based farmer producer organizations (FPOs) and self-help groups to support tappers and farmers. Research and development on improved varieties, processing technologies, and product diversification will strengthen its economic potential, particularly in arid and water-scarce regions where its deep roots enhance groundwater recharge and prevent soil erosion. At the same time, the living and health conditions of palm climbers must be prioritized, alongside public awareness campaigns on the nutritional and health benefits of Palmyrah products. A notable example is the massive Palmyra seed plantation drive initiated in 2021 in the Ramanathapuram District, led by the District Rural Development Agency (DRDA), which planted 17, 71,840 seeds across 993 locations in 429 village panchayats within 12 hours, coinciding with the 153rd Gandhi Jayanthi reported in the Hindu²³. The Palmyra Plantation Drive is more than a conservation project- hope, tradition, and resilience. As these young leaders plant trees, they are also planting the seeds of a sustainable future, one where the legacy of the Palmyra Palm will continue to thrive for generations to come. The revival of the Palmyra is not just about environmental conservation; it's about reviving an economy that thrived on the tree's many gifts. There's even more at stake. The Palmyra Palm has the potential to become a valuable agroforestry resource, particularly in the arid regions of South India. Its deep roots and ability to survive in dry climates make it a perfect fit for areas facing water scarcity. By reintroducing it into their communities, NGOs, the

Rotaractors are showing that conservation and economic development can go hand in hand. Reviving traditional and eco-friendly practices- such as the culturally rooted Maavoli firework made from dried spadix- can reconnect younger generations with their heritage while offering sustainable alternatives to harmful modern substitutes. By integrating conservation with economic empowerment and cultural continuity, the Palmyrah Palm can once again stand tall as a symbol of resilience, livelihood, and sustainability for future generations.

Conclusion

The traditional Maavoli firework, crafted from the dried spadix of the male Palmyrah tree, is a unique value-added product with deep cultural roots in Tamil Nadu and, to some extent, Sri Lanka. Despite its organic, eco-friendly, and non-toxic nature, this heritage practice is fading among younger generations. The Palmyrah, an ancient treasure and more than just a tree, now faces serious decline - particularly the male palms, which are often cut down due to their limited utilization compared to female trees. Reviving Maavoli not only preserves cultural identity but also highlights the need to protect male Palmyrah trees. This paper seeks to create awareness about the preparation, technique, and cultural significance of this traditional firework during Karthigai Deepam celebrations.

Acknowledgements

Research was supported by the Indian Council of Agricultural Research, Department of Agricultural Research and Education, Government of India. We acknowledge Late Thiru. Km. Samadharmam for his sincere narration on Maavoli knowledge, experience sharing and rendering assistance in various capacities during documentation of Maavoli and survey work at Kurunthampattu village in Sivaganga-District of Tamil Nadu from 2024-2025.

Conflict of Interest

Authors declare that they do not have any conflict of interest.

Author Contribution

KS- Conceptualization, Data collection, manuscript preparation, Documentation, AA-Guidance, supervision and Review, SRR- literature & data collection and editing work and AK and KK- Review collection, survey, data collection and editing work.

Informed Consent

The photographs and information in this documentation were taken with the full knowledge and prior informed consent of the related persons and participants. Permission was clearly obtained from the concerned individuals and community members involved in survey. Information taken from other sources has been properly cited in reference section.

Data Availability

The data used to support the findings of this paper are included within the article, and will be made available upon reasonable request.

References

- 1 Siju S & Sabu K K, Genetic resources of Asian palmyrah palm (*Borassus flabellifer* L.): a comprehensive review on diversity, characterization and utilization, *Plant Genet Resour*, 18 (6) (2020) 445-453. <https://doi.org/10.1017/S1479262120000477>.
- 2 Prance S G & Nesbitt M, *The Cultural History of Plants*, 1st ed., (Routledge, New York), 2012. <https://doi.org/10.4324/9780203020906>
- 3 Davis T A & Johnson D V, Current utilization and further development of the palmyra palm (*Borassus flabellifer* L., Arecaceae) in Tamil Nadu state, India, *Econ Bot*, 41 (2) (1987) 247-266. <https://doi.org/10.1007/BF02858972>
- 4 Jana H & Jana S, Palmyra palm: Importance in Indian agriculture, *Rashtriya Krishi*, 12 (2) (2017) 35-40.
- 5 Morton J, Notes on distribution, propagation and products of *Borassus Palms* (Arecaceae), *Indian Econ Bot*, 42 (1988) 420-441.
- 6 George J, Karun A, Manimekalai R, Rajesh M K & Remya P, Identification of RAPD markers linked to sex determination in palmyrah (*Borassus flabellifer* L.), *Curr Sci*, 93 (8) (2007) 1075-1077.
- 7 Ravindran K M & Ramanan S S, Shortening seed germination time for *Borassus flabellifer* using compost pit seed pretreatment, *Curr Sci*, 119 (8) (2020) 1249-1251.
- 8 Tomlinson P B, *The Structural Biology of Palms*, (Oxford University Press, New York), 1990. <https://doi.org/10.1093/oso/9780198545729.001.0001>
- 9 Srivastava A, Bishnoi S & Sarkar P, Value addition in palmyra palm (*Borassus flabellifer* L.): A potential strategy for livelihood security and poverty alleviation, *Rashtriya Krishi*, 12 (1) (2017) 110-112.
- 10 Masilamani P, Rathika S, Indurani C & Venkatesan S, Seed dormancy and germination behaviour of Palmyrah: A review, *Agric Rev*, 46 (2) (2023) 180-189.
- 11 Arulraj S & Augustine B J, *Underutilized palms*, In: *Underutilized and Underexploited Horticultural Crops*, Peter KV (ed), (New India Publishing Agency, New Delhi), 2008.
- 12 Pandey M M, Rastogi S & Rawat A K, Indian herbal drug for general healthcare: An overview, *Int J Altern Med*, 6 (1) 1-12.
- 13 Pattanaik C, Reddy C S & Dhal N K, Phyto-medicinal study of coastal sand dune species of Orissa, *Indian J Tradit Know*, 7 (2008) 263-268.
- 14 Anuradha Srinivasan, Karthigai Deepam: The Light of the Gods, Available online: www.sangam.org (Accessed on 23/09/2023).
- 15 Swaminathan, Palmyra tree worship in India-and Sri-Lanka, Available online: www.tamilandvedas.com (Accessed on 22 May 2024).
- 16 Tamilselvi K & Manimekalai N, Influence of palmyra tree in water access sanitation and Hygiene, *Intl J Noval Res Dev*, 18 (10) (2023) 192-195.
- 17 Pooja Sundar, Two day festival held in Tamil Nadu to Create Awareness Palm Trees - News18, Available online: www.news18.com (Accessed on 14 May 2025).
- 18 Maharaasan R, Cultural Aesthetics and Politics, *Athi Publications*, Available online: https://maharasan.blogspot.com/2016/12/blog-post_41.html (Accessed on 15 March 2025).
- 19 Krishnaveni T R S, Arunachalam R, Chandrakumar M, Parthasarathi G & Nisha R, Potential review on Palmyrah (*Borassus flabellifer*, L.), *Adv Res*, 21 (9) (2020) 29-40.
- 20 Visalakshi Ramaswamy, M.Rm.Rm. cultural foundation – Palmyrah Products Available online: <https://www.mrmrmculturalfoundation.com/> (Accessed on 15 April 2023).
- 21 Gnanavelrajah N, Shrestha R P, Schmidt-Vogt D & Samarakoon L, Carbon stock assessment and soil carbon management in agricultural land-uses in Thailand, *Land Degrad Dev*, 19 (2008) 242-256, <https://doi.org/10.1002/ldr.838>.
- 22 Gilon Catherine, Pattabi Raman & Balasubramaniam, A tree that transcends time, Nature in Focus online source - Available online: www.natureinfocus.in (Accessed on 23 May 2025).
- 23 The Hindu. Ramanathapuram sets a world record by sowing more than 17 lacs palmyrah seeds, Madurai print published in 2021 Available online: www.thehindu.com/news/cities (Accessed on 03 June 2024).