Underutilized palm

Palmyrah (*Borassus flabellifer L.*) is a hardy, multipurpose palm species widely found in tropical regions, particularly in South and Southeast Asia. Every part of the Palmyrah palm is valuable. The fruits provide nutritious food; the sap is tapped for producing jaggery, sugar, and toddy; and the leaves, wood, and fibers are used for crafting mats, baskets, thatching, and construction materials. In India, Palmyrah is mainly distributed across the southern and eastern states, thriving in dry and semi-arid regions. Estimates suggest that there are about 102 million Palmyrah palms across India. Major concentrations are found in Tamil Nadu, Andhra Pradesh, Odisha, Gujarat, Bihar, Chhattisgarh, Telangana, Kerala, Karnataka and parts of Maharashtra and West Bengal. Sporadic occurrence of the palms reported from Jharkhand, Andaman Islands, Assam, Tripura and Uttar Pradesh. Tamil Nadu accounts for more than 50% of the total palmyrah population where the palm is deeply integrated into rural life and economy. In Andhra Pradesh, especially in the coastal belts and interior districts, it is widely planted for its sap and fruit. Odisha and West Bengal also have traditional uses of food, crafts, and toddy tapping. Owing to its natural adaptation to drought, poor soils, and high temperatures, Palmyrah is ideally suited for cultivation on marginal lands. Beyond cultivated stands, it often grows wild along roadsides, farmland boundaries, and coastal zones, significantly contributing to both ecological stability and rural economies.

The challenges in establishing palmyrah plantations are lack of propagation protocol for true to type planting material, long juvenile phase, dioecious nature, absence of clearly defined dwarf or better performing genotypes and lesser information on breeding behaviour. To enable systematic breeding in palmyrah, basic research on descriptor traits needs to be further strengthened, through in-depth germplasm characterization and better understanding of variability for growth, morphological among conserved accessions as well as genotypes from different palmyrah growing regions. Acknowledging the diverse value of Palmyrah, the Indian Council of Agricultural Research (ICAR) launched dedicated research under the All India Coordinated Research Project (AICRP) in 1995. The primary objective was the conservation of genetic resources through various strategies, such as field gene banks, *ex situ* collections, and *in situ* conservation, all focused on preserving the rich genetic diversity found across wild, semi-wild, and cultivated populations. In line with this initiative, two specialized research centres were

set up one at Killikulam (Tamil Nadu) and Pandirimamidi (Andhra Pradesh). The Killikulam centre conserve 272 accessions while the Pandirimamidi centre maintains 265 accessions. Research on in situ conservation is underway at Sabour and Konda Mallepally Centres of AICRP on PC at Bihar and Telengana states respectively. The palmyrah crop has been included as one of the mandate crops of ICAR-Central Plantation Crops Research Institute from 2023, considering its importance in plantation sector. Priority has been set to collect many more diverse and trait-specific accessions from both explored and unexplored areas (such as NEH region, Andaman and Nicobar Islands, Gujarat, Jharkhand, Uttar Pradesh, Chhattisgarh, Kerala, Maharashtra etc.) in addition to *in situ* conservation of trait-specific and novel palmyrah genetic resources.

- Collected 10 unique germplasm from identified palmyrah growing regions of Assam (2), Andaman (2) Gujarat (1), Chhattisgarh (1), Tamil Nadu (Pink type from Kallakuruchi (1), Tenkasi (1), and Kerala (1) and Vittal (1).
- The model descriptor developed and released for Palmyrah is the first standardized framework for its characterization and evaluation. It provides unified criteria for documenting morphological, reproductive and sap-yielding traits, enabling accurate germplasm assessment, comparison and selection across regions. The descriptor will greatly strengthen breeding, conservation and identification of elite palms.
- Seedling standardization work has also been undertaken, focusing on establishing uniform criteria for germination behavior, seedling vigour, leaf emergence pattern, root development and early growth traits of palmyrah seedling .