

Vilayati Tulsi: an invasive plant threatening the native biodiversity of Lunawada forest, Gujarat



Mesosphaerum suaveolens (L.) Kuntze. © Mayur Patel.

Pignut or Vilayati Tulsi
Mesosphaerum suaveolens (L.) Kuntze. (= *Hyptis suaveolens* (L.) Poit.) is a herbaceous plant native to tropical regions of Mexico and tropical America (Murthy et al. 2007; Sharma et al. 2009; Padalia et al. 2014; GBIF 2021). It is an invasive species in tropical parts of Africa, Asia, and Australia (GBIF 2021). *Mesosphaerum*

suaveolens prefers wet and warm areas for growth and spread (Padalia et al. 2014).

Furthermore, this plant can tolerate dry periods. *Mesosphaerum* was first reported in India by Hooker in 1885. He had reported its occurrence in Deccan peninsula, Cachar, and Nicobar Islands. Further studies have

also reported its invasion from different parts of the country, viz., Andaman & Nicobar Islands (Yoganarasimhan 2000), Vindhyan plateau (Sharma et al. 2009), Himalayan foothills (Padalia et al. 2013).

A recent study in the Doon Valley and Siwalik foothills has estimated that an area up to 11 km² has been invaded by

Mesosphaerum, primarily along riverine areas, forest edges, and open areas (Padalia et al. 2013). This suggests that the plant has been spreading across India. In summer season the plant's aboveground parts dry up and fall down, but they vigorously re-sprout at the beginning of the subsequent rainy season. The growth of *Mesosphaerum* is intense and it rapidly covers extensive areas after the rains (Afreen et al. 2018). In Gujarat, *Mesosphaerum* was first reported by Santapau (1953) and later by Shah (1978).

Pignut has been now vigorously growing and creating survival threat to other plant species. It inhibits growth of other ground flora by creating physical barrier as it occupies land by growing at a fast rate. It has been spreading in Gujarat as an invasive plant, occupying different types of areas like road sides, railway tracks, forest clearings, grasslands, edges of wetlands, and also in wetland areas typified by rocky and arid substrates (Murthy et al. 2007). This plant also produces some chemicals which inhibit seed germination of other native plant species (Islam & Kato-Noguchi 2017).

During a random field visit to Lunawada we found that this species has now occupied all the terrestrial habitats and it has spread across the entire dry deciduous forest. It sheds its leaves and old branches in summer season and along with other grasses and herbs occurring in dried condition speeds up the forest fire.

Furthermore, the forest is juxtaposed with surrounding villages as well as agricultural fields which experience frequent fire events. In

summer the Pignut enhances the fire spread in the forest due to its high abundance making it very difficult to control.

Due to the fire this forest has been losing its native biodiversity, especially ground flora and native trees. This forest represents tree diversity consisting of *Tectona grandis* (abundant), *Holarrhena pubescens*, *Diospyros melanoxylon*, *Pterocarpus marsupium*, *Terminalia elliptica*, *Boswellia serrata*, *Wrightia tinctoria*, *Dalbergia latifolia*, *Butea monosperma*, *Aegle marmelos*, *Terminalia anogeissiana*, *Phyllanthus emblica*, *Albizia odoratissima*, and *Holoptelea integrifolia*.

In 2020, during our field survey we visited Nani Zanzari and Mori Zanzari forests, the field-level forest officials informed us that the Vilayati Tulsi has been spreading even in the interior forest areas. Our own field work and information from the forest officials have shown that this plant is now inhibiting the growth of other species of plants. The invasion of this exotic species might be leading to loss of native and economically and ethno-medically important plant species. Besides it also enhances forest fires in dry seasons.

This species is not useful for livestock as fodder. For the humans, the odour of this plant sometime causes sneezing, coughing, and other allergies related to respiratory system. There is an immediate need of removing this alien species from the forest of Lunawada forest to save its native floristic diversity.

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