



## Towards a Premium Curry Leaf Product: Evaluation of *Murraya koenigii* Variants in Jaffna for Market and Export Readiness

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### Abstract:

Curry leaves (*Murraya koenigii*) are highly valued for their culinary and medicinal uses, yet the diversity of local variants remains under-explored. We investigated the morphological and genetic variation of curry leaf trees in Jaffna District, Sri Lanka, and assessed key biochemical properties to evaluate their potential for high-quality export. A survey and field sampling across 128 households (all divisional areas except Delft Island) recorded cultivation practices and plant characteristics. Notably, 83% of households used no fertilizers or agrochemicals, and only 20% reported any pest or disease issues (with occasional sightings of tortoise beetles, mites, ash weevils, and foliar diseases like white spot or leaf curl). Challenges in cultivation included seasonal leaf fall, fluctuations in leaf aroma, water scarcity, and occasional low yields due to pest or disease outbreaks or drought. We identified 22 distinct morphological variants of *M. koenigii*, distinguished by differences in leaf size, shape, texture, color, petiole and rachis coloration, and number of leaflets per rachis. Aroma intensity varied among variants (rated 4 to 9 on a sensory scale). ITS region sequencing revealed two genetic groups among these samples, each defined by a specific nucleotide substitution at positions 199 (C→T) and 434 (C→A) of the 531 bp sequence. Biochemical profiling showed significant variation in phytochemical and nutrient content: total phenolic content ranged from 20 to 50 mg/100g, iron from 8 to 40 mg/100g, and phosphorus up to 273 mg/100g in the most nutrient-rich variant. Sodium, potassium, vitamin C levels, and antimicrobial activity also differed across variants. These findings highlight the rich diversity of Jaffna's curry leaf germplasm and underscore its economic potential. Developing a robust export market for these high-quality curry leaf variants will require effective networking and increased awareness of their unique qualities.

**Keywords:** *Murraya koenigii*; Curry leaves; Morphological variants; Biochemical properties; DNA sequence

