

## Culantro: A Much Utilized, Little Understood Herb

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Culantro (*Eryngium foetidum* L., Apiaceae) is a biennial herb indigenous to continental Tropical America and the West Indies. Although widely used in dishes throughout the Caribbean, Latin America, and the Far East, culantro is relatively unknown in the United States and many other parts of the world and is often mistaken and misnamed for its close relative cilantro or coriander (*Coriandrum sativum* L.). Some of its common names descriptive of the plant include: spiny or serrated coriander, *shado beni* and *bhandhania* (Trinidad and Tobago), *chadron benee* (Dominica), *coulante* (Haiti), *recao* (Puerto Rico), and fit weed (Guyana).

Culantro grows naturally in shaded moist heavy soils near cultivated areas. Under cultivation, the plant thrives best under well irrigated shaded conditions. Like its close relative cilantro, culantro tends to bolt and flower profusely under hot high-light long days of summer months. Recent research at UVIAES has demonstrated that it can be kept in a vegetative mode through summer when treated with GA<sub>3</sub> sprays.

The plant is reportedly rich in calcium, iron, carotene, and riboflavin and its harvested leaves are widely used as a food flavoring and seasoning herb for meat and many other foods. Its medicinal value include its use as a tea for flu, diabetes, constipation, and fevers. One of its most popular use is in chutneys as an appetite stimulant. The name fitweed is derived from its supposedly anti-convulsant property. The presence of increasingly large West Indian, Latin American, and Asian immigrant communities in metropolises of the US, Canada and the UK. creates a large market for culantro and large quantities are exported from Puerto Rico and Trinidad to these areas.

Culantro is increasingly becoming a crop of international trade mainly to meet the demands of ethnic populations in the developed countries of the West. Large immigrant communities in London, New York, and Toronto represents a vast potential market for the herb. One exporter from Trinidad alone packages and air freights up to 2.4 t of fresh culantro weekly to the US. In 1988, Puerto Rico reportedly produced 165,000 kg of culantro for a value of \$201,000 (Dept. of Agriculture 1988). The herb is used extensively in the Caribbean and in Asia particularly in India and Korea. It is used mainly as a seasoning in the preparation of a range of foods, including vegetable and meat dishes, chutneys, preserves, sauces, and snacks. Although used in small quantities, its pungent unique aroma gives the characteristic flavor to the dishes in which it is incorporated and this is responsible for its increasing demand among ethnic populations. Culantro is also widely used in herbal medicines and reportedly beneficial in the treatment of a number of ailments (Wong 1976).

### NOMENCLATURE

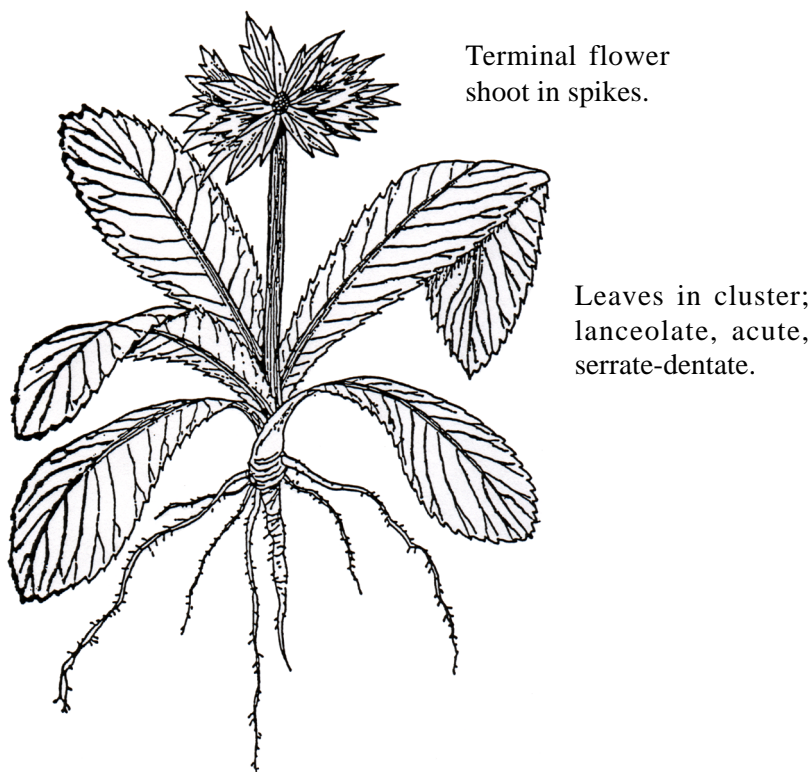
The derivation of culantro and recao, by which the plant is commonly known in Central America, is unknown but many of its names outside its natural habitat compare it to the common coriander or cilantro, e.g. Hindi *bhandhanya*, broad *dhanya*, or coriander, and Thai *pak chi farang* "foreign coriander." The botanical genus name *Eryngium* is derived from the Greek sea holly, *Eryngium vulgare*, and its specific name comes from the Latin *foetidum* meaning stink or bad odor; its smell is sometimes equated to a crushed bedbug. Some of the common names of culantro in the Caribbean area are: *shado beni* (Trinidad), *chadron benee* (Dominica), fitweed (Guyana), *coulante* or *culantro* (Haiti), *recao* (Puerto Rico) (Seaforth et al. 1983; Morean 1988; Seaforth 1988). Names in different languages include: *langer koriander* (German); *ketumbar java* (Malay); *pak chi farang* (Thai); *ngo gai* (Vietnamese); *culantro*, *racao*, *recao* (Spanish); *bhandhanya* (Hindi), and long leaf or spiny coriander (English).

*Eryngium* comprises over 200 tropical and temperate species (Willis 1960). Most are spiny ornamental herbs with thick roots and fleshy waxy leaves with blue flowers in cymose heads. *Eryngium foetidum* is a tap-rooted biennial herb with long, evenly branched roots (Fig. 1). The oblanceolate leaves, arranged spirally around the short thick stem, form a basal rosette and are as much as 30 cm long and 4 cm broad. The leaf margin is serrated, each tooth of the margin containing a small yellow spine. The plant produces a well-branched cluster of flower heads in spikes forming the characteristic umbel inflorescence on a long stalk arising from the center of the leaf rosette (Morton 1981; Moran 1988). The calyx is green while the corolla is creamy white in color.

## ECOLOGY AND CULTURE

Culantro is native to continental tropical America and the West Indies (Adams 1971). It grows naturally throughout many Caribbean islands including Trinidad and Tobago, where it is abundant in forests particularly in disturbed areas as in slash and burn sites. The herb is also commonly found along moist or shaded pathways and near cultivated areas where heavy soils predominate (Seaforth et al. 1983; Morean 1988). Although the plant grows well in full sun most commercial plantings occur in partially shaded moist locations. Shaded areas produce plants with larger and greener leaves that are more marketable because of their better appearance and higher pungent aroma. In a study on the effects of light intensity on growth and flowering of culantro, a significant delay in flowering and increased fresh weight of leaves were found in plants grown under 63% to 73% shade (Santiago-Santos and Cedeno-Maldonado 1991). Shaded plants also had fewer inflorescences with lower fresh weight. Although culantro grows in a wide variety of soils, it does best in moist well drained sandy loams high in organic matter particularly under full light. Precise fertilizer recommendations have not been made but high nitrogen fertilizers or manures promote leaf growth. Plants are usually started from seed which germinate in about 30 days, and for home or backyard gardens can be cultivated in containers or wooden boxes. For such cultivation, a slow release fertilizer such as Osmocote (14-14-14) can be incorporated in the soil mix at the rate of 1.8 kg/m<sup>3</sup>.

Like many of its relatives, culantro tends to bolt and flower profusely under long day conditions resulting in reduced leaf growth and market value, and increasing costs for flower pruning. In a study to reduce bolting and increase leaf:flower size, ProGibb (PG) 4% a vegetative growth promoter was applied in increasing concentrations as a foliar spray to 1-month old culantro plants grown under 54% shade in a poly greenhouse (Ramcharan 1998). While leaf length increased with increasing levels of PG, leaf dry weight increased up to the 150 ppm PG level but was reduced at 200 ppm. Concomitantly, both fresh and dry weights of inflorescences were reduced by increasing levels of PG. Flowers produced in treated plants were less woody and spiny and leaf-like in appearance, making them easier for pruning. Pro Gibb 4% at 100 ppm concentration was therefore found to be optimum for maximizing leaf production and minimizing flower growth in culantro.



**Fig. 1.** The culantro plant, *Eryngium foetidum*.

Culantro is relatively pest- and disease-free but the author has seen root knot nematodes on plants that have been grown for 2–3 years in box containers. A leaf spot problem which appears to be bacterial black rot (*Xanthomonas* sp.) has also been observed on such long-lived plants. Anecdotal reports mention that the flower heads are attractive to ladybugs, green lacewings, and other beneficial insects. Plants around the garden have also reportedly provided excellent defense against aphids.

While there are few reports on cultivation and fertilizer requirements for culantro, there has been considerable research on postharvest techniques for the herb. In a refrigerated storage trial, Sankat and Maharaj (1991) found that unpackaged culantro became unmarketable within 4 days of storage regardless of temperature. Storage at 10°C extended shelf life up to 2 weeks and chilling injury was observed at 3°C after 8 days in storage. In another postharvest study, the combination of polyethylene packaging, gibberellic acid (GA<sub>3</sub>) in a 200 ppm dip treatment and reduced storage temperature (20°–22°C) extended the shelf-life of culantro up to 22 days (Mohammed and Wickham 1995). Freeze drying of harvested leaves is another alternative being considered to extend postharvest life.

### CULINARY USES AND NUTRITIONAL VALUE

The appearance of culantro and cilantro are different but the leaf aromas are similar, although culantro is more pungent. Because of this aroma similarity the leaves are used interchangeably in many food preparations and is the major reason for the misnaming of one herb for the other. While relatively new to American cuisine, culantro has long been used in the Far East, Latin America, and the Caribbean. In Asia, culantro is most popular in Thailand, Malaysia, and Singapore where it is commonly used with or in lieu of cilantro and topped over soups, noodle dishes, and curries. In Latin America, culantro is mostly associated with the cooking style of Puerto Rico, where recipes common to all Latin countries are enhanced with culantro. The most popular and ubiquitous example is *salsa*, a spicy sauce prepared from tomatoes, garlic, onion, lemon juice, with liberal amounts of chiles. These constituents are fried and simmered together, mixed to a smooth paste and spiced with fresh herbs including culantro. Salsa is usually consumed with tortilla chips as an appetizer. Equally popular is *sofrito* or *recaito*, the name given to the mixture of seasonings containing culantro and widely used in rice, stews, and soups (Wilson 1991). There are reportedly as many variations of the recipe as there are cooks in Puerto Rico but basically sofrito consists of garlic, onion, green pepper, small mild peppers, and both cilantro and culantro leaves. Ingredients are blended and can then be refrigerated for months. Sofrito is itself the major ingredient in a host of other recipes including eggplant pasta sauce, cilantro garlic butter, cilantro pesto, pineapple salsa, and gazpacho with herb yogurt.

Culantro is reported to be rich in calcium, iron, carotene, and riboflavin. Fresh leaves are 86–88% moisture, 3.3% protein, 0.6% fat, 6.5% carbohydrate, 1.7% ash, 0.06% phosphorus, and 0.02% iron. Leaves are an excellent source of vitamin A (10,460 I.U./100 g), B<sub>2</sub> (60 mg %), B<sub>1</sub> (0.8 mg %), and C (150–200 mg %) (Bautista et al. 1988). On a dry weight basis, leaves consist of 0.1–0.95% volatile oil, 27.7% crude fiber, 1.23% calcium, and 25 ppm boron.

### MEDICINAL USES

The plant is used in traditional medicines for fevers and chills, vomiting, diarrhea, and in Jamaica for colds and convulsions in children (Honeychurch 1980). The leaves and roots are boiled and the water drunk for pneumonia, flu, diabetes, constipation, and malaria fever. The root can be eaten raw for scorpion stings and in India the root is reportedly used to alleviate stomach pains. The leaves themselves can be eaten in the form of a chutney as an appetite stimulant (Mahabir 1991).

### CONCLUSION

Although used widely throughout the Caribbean, Latin America, and the Far East, culantro is still mistaken for and erroneously called cilantro. The herb is rapidly becoming an important import item into the US mainly due to the increasing ethnic immigrant populations who utilize it in their many varied dishes from around the world. It is closely related botanically to cilantro but has a distinctly different appearance and a much more potent volatile leaf oil. Recent research to prevent bolting and early flowering will increase its

leaf yields and consequently its demand. Successes in prolonging its postharvest life and storage under refrigeration will undoubtedly increase its export potential and ultimately its popularity among the commonly used culinary herbs.

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