



A woman with chayote in Chiquimula, Guatemala. Credit: G. Meldrum/Bioversity International

## Chaya: Mayan vegetable enriching diets year round in Mesoamerica

Chaya is a focus crop of the programme “Linking agrobiodiversity value chains, climate adaptation and nutrition: Empowering the poor to manage risk” that is supported by the International Fund for Agricultural Development (IFAD), the European Union (EU) and the CGIAR Research Programmes on Climate Change, Agriculture, and Food Security (CAAFS) and Agriculture for Nutrition and Health (A4NH)

Chaya (*Cnidoscolus aconitifolius*)—also known as Mayan spinach—is an evergreen shrub that was domesticated by Mesoamerican peoples in pre-Columbian times. Today, chaya is grown throughout the Mesoamerican region, including Central America, Mexico, Cuba, and the southern United States. It is typically cultivated on a small scale in gardens and field margins for household use. Due to its high nutritive value, tolerance to heat and drought, and minimal care requirements, this tasty native super-vegetable can support more nutritious food systems in Mesoamerica.

micronutrients, including protein, vitamin A, niacin and vitamin C. Compared to spinach (*Spinacia oleracea*), chaya contains twice as much protein and vitamin A and over six times as much vitamin C. In addition, chaya is a good source of calcium, iron, thiamin, and riboflavin. Uncooked chaya leaves contain cyanogenic glycosides but these toxic substances are broken down during cooking and other processing steps. The nutrient content (e.g. vitamin C) is also affected by these processes.

### General features

Chaya shrubs reach an average height of 3-5 meters. The leaves vary in size, shape and texture depending on the variety and can be harvested at any time of year. Four varieties—estrella, mansa, plegada, and picuda—have significant regional differences in their dispersion. Chaya can grow in low light, non-irrigated, and poor soil conditions, but to thrive, it should be watered once or twice a week during the dry season and receive direct sunlight. The plants can be established at any time of year by cuttings. Although chaya is quite resistant, it is still vulnerable to pests. In particular, lace bugs, rust, and phytophagous mites can cause discoloration or inhibit leaf growth.

### Nutrition

Compared to other dark green leafy vegetables, chaya contains much higher amounts of several macro- and



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## Processing

Due to spines on the stems, it is recommended to use rubber gloves when harvesting chaya leaves. Processing the leaves for consumption generally involves washing, chopping or shredding, drying, boiling, and/or other cooking preparations. Fifteen minutes of boiling is sufficient to reduce cyanogenic glycosides in the leaves to safe levels for consumption. Blending also lowers cyanogenic glycoside levels, although the blended leaves must be allowed to sit for several hours if they are to be eaten without heat treatment. Drying the leaves also reduces their toxin levels, and enables longer term storage. Care should be taken to avoid too much heat in the drying process and exposure of the product to dust and insects, which can reduce nutrient content and the quality of the final product.

Chaya is traditionally used in a variety of dishes. Larger, more mature leaves are used as wraps. The leaves are often combined with other vegetables or meat in soups and stews. Infusions and teas to leverage the medicinal or therapeutic properties of the plant are made by immersing the leaves in boiling water.



Nutritious recipe workshop. Credit UVG/S. Maselli

### Tortillas con chaya

#### Ingredients

½ pound chaya leaves  
1 pound corn dough  
1 pinch salt

#### Preparation

Start by finely grinding chaya leaves. Mix the ground chaya leaves with the corn dough, and add salt. Make the tortillas and cook on the comal until brown. The tortillas may also be made into nachos. To do this, cut the tortillas into small triangular pieces, and continue to toast on the comal.

Credit: Pereira, N. and Fernanda Maldonado, M., 2016. *Manual de preparacion de alimentos a base de chaya*. Guatemala: Universidad del Valle de Guatemala



Cooking with chaya. Credit: Rose Robitaille/Bioversity International

Factsheet and literature review  
by Victoria Rose



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