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Chinese Potato: a corm with potential in the Colombian Pacific

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An ancient crop

"Chinese potato" is the name given in some parts of Colombia to the plant species *Colocasia esculenta*, in other parts of the country this same plant is known as mafafa or malanga. It is worth mentioning that in other parts of America plants of the genus *Xanthosoma* are grown under the name Chinese potato. Both the genus Colocasia and the genus *Xanthosoma* belong to the botanical family Araceae, the first originating from Southeast Asia, and the second, originating from America. To differentiate one genus from another, the easiest way is through the shape of the leaf, which is peltate in *Colocasia* and sagittate in *Xanthosoma*.

The Chinese potato is a plant that produces a type of bulb or underground tuber called a corm that is highly edible for human and animal consumption. The corm is a word derived from "kormos", from ancient Greek referring to the trunk of a plant. The corm is similar to the onion bulb or potato tuber, where the base of the plant stem is underground and thickens or swells forming bulbs or tubers that serve to store water and nutrients for the plant (Figure 1). The bulbs of the Chinese potato form at the end of the stem, with a whole appearance when cut into slices, while those of the onion are modified leaves that are visible as scales or layers when the bulb is cut crosswise. The corm bulb, like that of the onion, ends on top of a plate or base from which roots can sprout.

Some researchers believe that the Chinese potato was one of the first plants cultivated by humans in the Neolithic period, approximately eight thousand years ago. The Chinese potato is originally from the Indo-Malaysian region from where it spread to East and Southeast Asia, the Pacific Islands and Africa, and then to the Caribbean and the Americas. In Colombia, the Chinese potato grows in the warm and humid areas of the interior and in the humid areas of the Pacific coast region. It is in this area where the largest cultivated area is found because the plant adapts very well to the edaphoclimatic conditions present there, that is, annual rainfall over 3000 mm, flooded sites, soils with pH between 4.5 - 6 and an average annual temperature of 27 °C.

Uses and benefits of Chinese potato

The main use of the Chinese potato is for human or animal consumption. The rhizomatous part or corm is especially consumed (Figure 1). The leaves and petioles can also be consumed. The corms are consumed cooked, fried, sliced or in the form of flour, while the leaves and petioles can be used as a previously boiled vegetable. From a nutritional point of view, the Chinese potato is rich in fiber, calcium, potassium, iron, vitamin A, vitamin B1, vitamin B2 and vitamin C. The Chinese potato is superior to the potato in nutritional value, since it contains a higher proportion of proteins, calcium and phosphorus. The vitamin B content in the corm of the Chinese potato is equivalent to that of cabbage and twice that of the potato. The Chinese potato also contains higher amounts of B complex than whole milk. In the corms, the starch of the Chinese potato is present in very fine grains that make them easily digestible for both humans and animals.

Figure 1. Chinese potato corms. Taken from Cundumí (2016).

Chinese potato starch is used in the food industry in the production of baby food, as it is a product that can be consumed by individuals allergic to

cereals. Chinese potato starch is also used as an ingredient in the production of pasta and meat products such as sausages. As for animal feed, the results of research carried out in the region show that silage based on Chinese potato has the potential to become a substitute for commercial concentrate in fish feed, significantly reducing production costs per feed. Similarly, silage from Chinese potato corms also has great potential for feeding pigs. This product can be incorporated into the diet of these animals even in the initial stages where the conditions of the gastrointestinal tract are more difficult. Additionally, there are reports that show that Chinese potato silage is quite stable and can be stored for periods of time longer than six months without requiring refrigeration. It is worth mentioning that one of the advantages of the silage production process is that it is economical because it does not require much infrastructure.

Production

Chinese potato production in Colombia is concentrated in the departments of Cauca, Valle del Cauca and Nariño, totaling a cultivated area of 1 016 hectares in 2013, with a production of 7 154.5 tons and an average yield of 7.1 t/ha.

Chinese Potato Cultivation

From an agronomic point of view, the Chinese potato is considered an annual plant with a biological cycle of seven to ten months. This cycle can be divided into three periods: the first includes the period from sprouting to the appearance of the primary corms; the second involves rapid foliage growth and maximum leaf development; finally, there is rapid growth of secondary and tertiary corms and the consequent senescence of the foliage. The planting material used for the production of Chinese potato includes small corms or cut sections of large corms, cormels or cut sections of large cormels, and stem cuttings corresponding to the apex of the corm (1 cm) and 15 - 25 cm of the lower part of the petiole.

In Colombia, the cultivation of Chinese potatoes is not technical, so the preparation of the land is done manually and is generally practiced in so-called stubble lands, which are prone to flooding and have an irregular relief. The preparation consists of clearing all the weeds with a machete, cutting the bushes and then cutting all the material into smaller pieces so that the decomposition process is facilitated and organic matter is added to the soil. Finally, the holes are dug for planting. The best planting distances for Chinese potatoes are 1 m x 1 m and 0.80 m x 1 m (Figure 2). It is worth noting that shorter planting distances reduce the yield of corms per plant, but result in higher yields per hectare compared to longer planting distances. Weed control is carried out from the third month after planting, and continues to be carried out frequently due to their rapid growth.

Figure 2. Chinese potato cultivation using short planting distances. Taken from Cundumí (2016).

Fertilization

Regarding crop fertilization, it is advisable to apply localized organic fertilizer in the furrow (15 – 18 t/ha). Depending on availability, different sources can be used such as chicken manure, pig manure, vermicompost, compost. Biofertilizers (mycorrhizae and growth-promoting microorganisms) can also be used using the doses suggested by the supplier. For the use of mineral fertilizer 0,5 – 0,6 t/ha de (N – P_20_5 – K_20) can be applied 60 – 70 days after sowing.

Harvest

The Chinese potato is harvested when the lower leaves of the plant turn yellow and when the cormels close at the top. In the Pacific region of Colombia, the harvest is done manually, by pulling the plant with force or with the help of a machete cutting the lateral roots of the corm; in other places, tools such as a hoe or a shovel are used.

A recipe with Chinese potato

Chinese Potato Croquettes

Ingredients:

* Three Chinese potato corms
*One egg
*Parsley
*Garlic powder
*Salt

Preparation:

Peel the Chinese potato and grate it, add the egg and the rest of the ingredients, mix everything with the help of a fork until it forms a homogeneous dough, with the pan very hot fry on both sides, drain on absorbent paper.

Bibliography and Related Links

Caicedo, Q., Rodríguez, B., & Valle, R. (2013). Una reseña sobre el uso de tubérculos de papa china (*Colocasia esculenta*) conservados en forma de ensilaje para alimentar cerdos. Revista electrónica de Veterinaria 15(1): 1-11.

Carabali B.M. (2017). Influencia del drenaje sobre el crecimiento y producción de la papachina (*Colocasia esculenta*), en condiciones ambientales de Buenaventura D.E. Valle del Cauca. Tesis de Agronomía no publicada, Universidad del Pacífico, Buenaventura D.E, Colombia.

Cundumí J.I. (2016). Efecto de la aplicación de abono orgánico y de la densidad de siembra en el crecimiento y la producción de papachina (*Colocasia esculenta* L.) en Buenaventura D.E. Tesis de Agronomía no publicada, Universidad del Pacífico, Buenaventura D.E, Colombia.

Lozada A.F. (2005). Producción del cultivo de papachina utilizando dos métodos de propagación asexual bajo cuatro niveles de fertilización orgánica, http://repositorio.espe.edu.ec/bitstream/21000/5423/4/T-ESPE-IASA%20I-002856.pdf, visita a la página 29/03/17

Martin A. F. (2012). Cultivo de la papa china y pelma, Ecuador, provincia de Morona Santiago. Manual técnico. https://es.slideshare.net/INGPAKOWPN/cultivo-de-la-papa-china-y-pelma-ecuador-provincia-de-morona-santiago-mts-ingfrancisco-martin-armas. Accessed 29/06/19.