Lyophilisation

A sustainable economic alternative for local indigenous communities in the Colombian Amazon

Angela Maldonado & Thomas Lafon – Fundación Entropika

1. Cultivation

Ají maicito is a variety of chilli pepper well cultivated in the area of Leticia, capital of the Colombian Amazon, and is harvested throughout the year. For this example run, around **60 kilograms** of Ají were transported by mule from **the Israelita indigenous community** to Leticia (approximately 40 kilometers).

1

2. Transport

Shortly after arriving to Leticia, the chillies are **refrigerated for 24 hours** and transported to the **lyophilisation facility in Bogotá** the next day. There, the fruits that have **not been damaged in the transport are hand-picked and their stem removed**.

2

Entropika & the Process of Lyophilisation

Fundación Entropika is an **NGO located in Leticia, Capital of the Colombian Amazon**. It is a small group of dedicated conservationists that aim to **contribute to the long-term conservation of tropical biodiversity** by facilitating local **community-led projects**, establishing education and research programmes whilst working closely with the local indigenous people, as to **tackle conservation issues**.

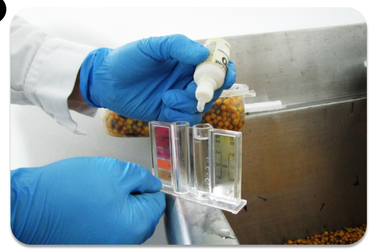
Lyophilisation, or freeze-drying, is the **sublimation/removal of water content from frozen food**. The basic process was known to the ancient Peruvian Incas of the Andes and is used mainly to **preserve food from decomposing**, which is essential in extremely humid places like the Amazon rainforest. Freeze-drying the **surplus of fruits**, if made into a liable trade, would offer the **indigenous and other local communities** with an **additional source of income**. This would in turn aim at **replacing their current revenue of the illegal trade of wildlife**. An example of this process can be seen in the pictures of this poster, where "Ají maicito" (the Amazonian yellow chilli) was freeze-dried.

Lyophilisation can be applied to a wide variety of Amazonian fruits

3. Preparation

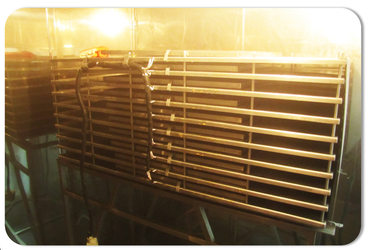
The lyophilisation process begins with **weighing of the Ají**. These are then **washed and disinfected** thoroughly. A test is performed to **avoid remnants of chlorine**.

3



4. Lyophilisation

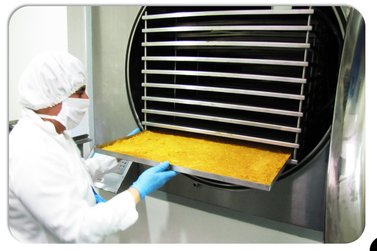
The next step is to put the fruit in a **high speed cutter**. The cut pulp is then placed in the **freezer for 24 hours**. Finally, the now frozen pulp is put in the lyophilisation device where, at very low temperature and pressure, **water is extracted from the solid (ice) and becomes gas (water vapor), without passing through the liquid state**.



4

5. Final Product

After the lyophilisation cycle, **more than 95% of the water has been extracted** from the original chilli pulp. It is then **once more cut at high speed** and the resulting **yellow chilli powder is finally bottled in glass flasks**.



5

Conservation in action
www.entropika.org