

## Agave syrup production – a sweet tradition goes solar

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- Topics:** - Local solar food processing technologies  
- Local marketing / grassroots projects / village industries  
- What is solar food ? / definition and quality standards ?

### Abstract

Solar food is a new kind of food and a new type of cooking in Mexico. Ten years ago it was very difficult to find any kind of solar stoves Mexico. In a very small scale the sun is now directly used for cooking in families with different kinds of solar stoves but solar cooking is still an unknown form of cooking in Mexico.



### Introduction

A group of women in the village San Andres (Mexico) started about 15 years ago with the production of a sweet agave syrup. They formed a cooperative to make the syrup of the juice of the green agave. For this purpose they need a huge amount of energy to cook the juice and concentrate the syrup. To heat up their big cooking pots they used big gas stoves.



After some no satisfying attempts to process the syrup with small solar stoves (SK-14) in 1999, new efforts in 2005 with Schefflerreflectors were successful. In 2008 started the production of solar agave syrup with six 10m<sup>2</sup> Schefflerreflectors in a new kitchen building.

## Background

### 3.1 The Agave

The green agave, the Maguey, is one of the oldest plants cultivated in Mexico.

The culture of the Ñhahñus, the native people living the altiplano about 200 km in the north of Mexico City, is aligned with the cultivation of this agave which is one of the few plants growing in this semi-desert region. Every part of the plant gives a use to the people and that is the cause why you can find large plantations of magueys in the altiplano.

All the families in the village San Andres have plantations of magueys and the majority of the people earn their money with selling "pulque" in the towns nearby. Pulque was the "agave beer" of Mexico and in former times selling pulque was a good business.



The Maguey needs about 7 years to grow up and then you can extract about 1 up to 8 Liters of the juicy liquid "Aguamiel" of each Maguey each day. The pulque is a result of fermentation of the aguamiel and it contains a little amount of alcohol - like beer. In present every day its difficult to sell pulque because it has to compete with beer and beer is aggressively advertised even in the smallest village.

### 3.2 Woman cooperative

About 15 year ago a group of 25 women in San Andres started to search for alternatives to help the economy of their families.

They learned to make the agave syrup of the aguamiel of the green agave instead of pulque. In former times agaves syrup was the most important sweetener in North and Central America. After the arrival of the Spanish 500 years ago they substitute the agave sweetener for sugarcane which they brought with them from Europe and started huge plantations in Cuba and Mexico.

For the women in San Andres the production of agave syrup was successful and they could find a small regional market for their product. When they started with the production, they worked in the private kitchen of one member of the cooperative. Later they build a small kitchen with big gas stoves where they can cook the aguamiel and they bottle the agave syrup. The women have the aguamiel and the time to work - the biggest expenses were the purchase of gas for the cooking process.



## Project

### First Solar Cooking attempts

In 1999 the women made some tests with the solar cooker Sk-14. It was their "first contact" with solar cooking. They learned that it's possible to concentrate the aguamiel with solar energy and that you can make the agave syrup with this "new" gratis energy. But in the analysis they saw some disadvantages.

On the one hand the amount of aguamiel you can cook with the type of solar cooker Sk-14 is small . On the other hand they are accustomed to cook very clean what is difficult outside the kitchen in the desert where it is very dusty. And other important fact was that the woman did not want to stand outside the kitchen directly in the sun. So they continued with the use of their gas stoves. In 2005 we made a new attempt with an 8m<sup>2</sup> - Schefflerreflector and this attempt had more success. After some time of testing, evaluation and providing confidence the woman decided to change to solar energy with Schefflerreflectors.



### 4.2 New Solar Kitchen

The NGO Globosol from Switzerland helped helped with an interest-free credit to build six 10m<sup>2</sup> San Andres which was installed in 2007/2008 and starts working in august 2008. The Woman can cook each sunny day up to 250 liters of aguamiel with the Schefflerreflectors. That is the average of the amount of aguamiel they cook with gas on one day. As they save money in cooking gratis with the sun instead of using gas, they use this saved money to pay back the credit they got from Globosol.

The six Schefflerreflectors are installed outside and they woman can cook inside the kitchen. The sun is concentrated to a secondary reflector downside the cooking pot, so the cooking process is the same like in a gas stove. It was not difficult for the women to learn how to cook with the solar energy because the design of the Schefflerreflector allows them to cook like they habitual cook in their gas or fire stoves at home - all the heat is coming from downside to the cooking pot.



They only had to learn how to adjust and how to clean the Scheffler reflectors, but this was no bigger problem. The solar agave syrup is brighter than the syrup cooked with gas which is darker because more sugar is caramelized. The flavor of the solar agave syrup is sweeter and you can use it for cooking and sweating without changing the original taste of the food. So the new solar-agave-syrup is a really new product with new properties and a better quality.

## Conclusion

The new solar kitchen is a very important step to the future of the women . Cooperative - the gas prizes are still very low in Mexico (about 60% lower than the World average). The women of the cooperative have a "solarfood product" - but up to date they sell it like a "normal" product - like the gas produced agave-syrup. They primary reason that they are cooking with the sun is that they need no more money for buying gas - so they lowered the production costs. That anyone would buy the agavesyrup because it's a "solar product" is very abstract and hardly to understand for them because they don't have any selling strategy an no experience in marketing of products. But with the first clients who order especially "solarsyrup" the woman will see that they have a very special product which is unique in the world.

The solar installation in San Andres is the first small industry project performed by the mexican company Trinysol which started 3 years ago with the production of Schefflerreflectors and solar hot water system in the state of Hidalgo, Mexico.

