SOLAR DRYING PRACTICES AND THEIR IMPACT ON TERRITORIAL DEVELOPMENT

Solar drying is one of the most ancient skills for food preservation and it still has its topicality. Moreover, with new food safety risks generated by climate change, the practices of drying of agricultural products can be a solution both to ensure good and healthy food for local population and as an important source of growth for economies territories. Preserving agricultural products ensuring a good standard allows their exploitation and commercialization over time, allowing significant gains for producers.

Solar drying consists essentially of an extraction process of an important part of the water contained in the product, which evaporates into the air of the place of drying, it becomes steam and exits outside. This process, adapted to the type of each treated crop can be done today at very different levels of technology, from the traditional way to rules adopted by the big industry. On an industrial scale, the technology to dry the products is based on such a high energy that the installation of systems that use renewable energy sources is a priority. From the perspective of small farmers, access to semi-industrial scale new technologies based on renewable energy represents an essential to enjoy the enormous potential of these practices.

According to studies by the FAO, about a third of the food for human consumption produced in the world today is lost or wasted throughout the supply chain, from initial agricultural production to final consumption. In low-income countries, 40% of food is lost primarily during the early stages of the supply chain, which refer to the post-harvest and processing. Drying of agricultural products can be one of the effective ways to reduce losses and achieve the objectives of food security and sustainable economic development.

Great progress has been made in implementing technologies to improve traditional air drying, to overcome their disadvantages:

- Exposure of products to insects, rodents, etc. and consequent loss;
- The low nutritional quality due to factors generated by this technology (loss of vitamins, risk of presence of pathogens, etc.);
- The direct dependence of this practice on the climatic conditions and the inability to take advantage during the rainy season;
- The long duration of the natural drying process and the large amount of work required by the farmers.

The wide range of manuals available on internet for the construction of improved solar drying systems demonstrates that different international organizations are giving importance to this subject, to support farming communities with easy access technologies. For example in the UNESCO website there is a guide to create a solar

dryer developed by the COSUDE Swiss Agency for Cooperation. FAO website presents different manuals for the implementation of solar drying systems for several agricultural products. The organization *Practical Action* from UK presents manuals for the construction and use of solar dryers of different types and an interesting bibliography in its website. In Gate International website there are documents for the construction and use of solar dryers. The energypedia site features a comprehensive online literature on solar dryers.

The ability to promote the drying process with an additional energy source clearly allows a greater effectiveness and guarantees a higher quality product and it saves the time required by traditional methods. Different organizations and companies produce dryers based on solar energy and ensure its installation in different countries. The cost of these technologies which is still high and difficult to reach by isolate producers may be assumed by a business plan or structure providing a service to a multiplicity of actors in the territory. For example, the Free University of Pereira in Colombia Free University of Pereira in Colombia, has implemented a solar dryer for coffee that reduces the two days drying time to 7 hours. The plant - which consists of parts purchased overseas- was built thanks to institutional and financial support from the Ministry of Economic Development and Competitiveness of the Government of Risaralda and the project considers to provide service to all coffee producers interested in seven municipalities of the territory.

These implementing services experiences in the territories to dry food by taking advantage of semi-industrial level technologies and renewable energy are of great interest in the opened prospects. Managed by local cooperatives and companies, they can bring benefits to a wide range of producers, muffling installation costs. Ensuring good quality drying processes of fish, meat, fruits and vegetables, coffee, cocoa, herbs and other products, these services can give an important contribution to improving territory food security while improving economic development. The ability to preserve products and market them in time ensures very significant added value levels for local economy.

Throughout the extensive literature on the most exploited solar drying methodologies it is emphasized the importance of implementing research and projects of these innovative technologies at medium scale in order to reduce costs and return them to the extent of interested producers.

To know more

Solar Drying in Practical Action

Manuals in Practical Action

Manual GRET for solar drying

Article in UNIDO website

Solar drying in Innotech-ing website

Brochures in Innotech-ing website

Solar Drying in energypedia

Planning a solar drying plant in Peru

Modern solar drying technology in Peru

Video about cacao solar drying in Ecuador

Manual GTZ on solar drying in Morocco

Manual Peace Corps

SALDAC website

Article in EcoPortal.net

Solar Drying in Ruralcat.net

Intitechsolar.com- Costa Rica

Solar drying of wood in México

Document CDER – Argelia

Solar drying in Zimbabwe

Solar drying in Hedon website

Solar drying in Ruralradio

Solar drying in RIAED network website

Solar drying for forage in France