

BENEFITS

LIFECITRUS project takes on the recycling of a type of waste that nowadays is **neither being reused nor recycled**, just, at best, it is directly used in animal feeding. However, the high content of water in the fruit residues (between 78% and 82%) means **high transport costs** and leakage of contaminating liquids. The process could be implemented at the waste source, widening the value chain of the citrus processing, ensuring the use of the by-product in the same industry and minimizing the generation of waste. **Exceptional properties and composition of the innovative ingredient can substitute additives** (pectins, anti-rust acids...) in the production of fruit jams by achieving full utilization of the citrus fruits as well as entire or partial substitution of the chemical additives used in the manufacturing process. It would come up with a new distinctive product with excellent sales perspectives offered to the consumers.

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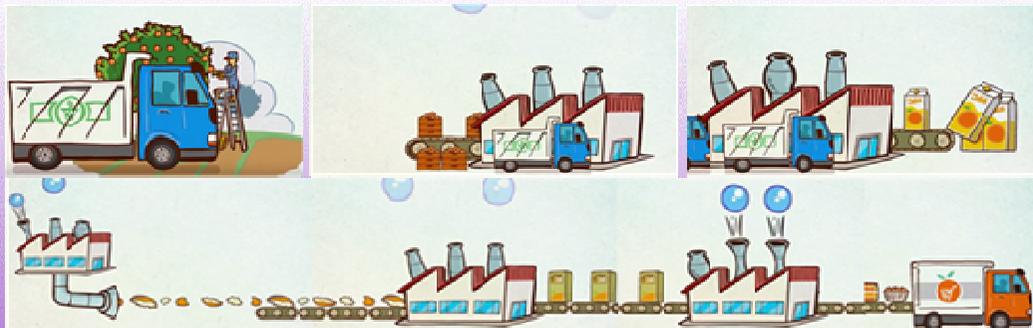
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RECYCLING OF CITRUS INDUSTRY SCRAP INTO NATURAL ADDITIVES FOR FOOD INDUSTRIES

LifeCitrus



LifeCitrus

LIFECITRUS PROJECT

(LIFE14 ENV/ES/000326)

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LIFECITRUS PROCESS

The Mediterranean basin is one of the **largest producer and exporter of citrus in the world**, including fresh processing as well as juices and citrus concentrate companies. This sector generates citric by-products that can be valued at the company itself to obtain new natural ingredients. **The challenge of LIFECITRUS** is to obtain purees from citrus rind that can be applied to all types of food and does not alter its organoleptic properties. This requires different stages of grinding, washing and enzymatic inactivation. Since there is no product similar to that obtained in the market, its inclusion in the elaboration of new foods has been tested.



Foods such as preserves and jams have been developed due to the **gelling ability of the puree**, but also vegetable creams, pastry and bakery products, and products with low caloric content. For these “novel foods” a nutritional analysis has been carried out, in accordance with **EU Regulation 1169/2011**. In addition, **sensory analysis** has been performed to evaluate the acceptability of food through a panel of consumers.

VIABILITY OF THE PROCESS

According to the results obtained, the by-products of the citrus processing can be valorized within the industry itself through a technically feasible process. The **location of the recovery plant** can be a fundamental factor. Companies with a high production of citrus by-products are the main beneficiaries of the LIFECITRUS process. On the other hand, from the market research (which was carried out) it can be observed that the potential consuming companies of the puree product show a **lack of knowledge** about other currently marketed natural ingredients, which could be substitutes for the pectin.

This issue represents the **success factor** of placing on the market an ingredient as the proposed puree once disclosed its characteristics and properties. The price of commercial powdered pectin has been determinant to obtain a positive result as a **net profit**. In order to disseminate the innovative process and the use of the new ingredient to citrus juices and oil industries, fresh producers and marketers and other foods companies, the LIFECITRUS partners have contacted both companies and relevant associations at regional, national and international level. A series of **technical workshops** have been organized for explaining the **feasibility and the opportunities** for the industrial stakeholders.

Thanks to this effort, several agri-food companies are developing tests in the demonstration plant to learn more about the process and are attending training programme at CTC's staff.

