*Cooperation for innovation: Operational Groups*

# Innovations in postharvest treatments against insects in rice and pulses


## Summary

This project aims to reduce the incidence of insect presence in seeds for human consumption (cereals and pulses) through the application of radio frequency, an energy-efficient and waste-free strategy, which at the same time would reduce the application of pesticides and avoid its prevalence in the final product.


## Objectives

The RF-Insect project represents an important step in reducing the risk of developing insects in rice, using a physical technology that leaves no residue. The aim of the project is to develop a system to reduce the rate of infestation in grains. This solution can be applied to seeds and nuts, and will be optimized for the case of rice.
To achieve this aim, the following partial technical objectives will be addressed:
a) Define the specifications and technical requirements of the RF equipment.
B) Design and build on the basis of these specifications and requirements a semi-industrial scale pilot prototype to be able to perform the different validation tests.
C) Validate breeding systems for insects of interest (Sitophilus oryzae, Oryzaephilus surinamensis and Tribolium confusum) in order to obtain a sufficient number of eggs, larvae and adults to be able to evaluate the effectiveness of the treatments.
D) Carry out preliminary tests for the destruction of insects by means of microwaves (2.45 GHz) and construction of mathematical models for the prediction of the effect of microwaves in the survival of the 3 species of interest.
E) Carry out insect elimination tests on the radio-frequency pilot prototype to determine the effectiveness, including trials of penetration of the treatment.
F) Evaluation of the level of infestation in the products of Arrossaires del Delta de l'Ebre to be able to define the intensities of treatment necessary to guarantee the stability of the product.
G) Physical-chemical and sensory evaluation of the changes that radiofrequency treatments can produce in rice, compared to untreated products.
H) Disseminate the results and elaborate proposals for the exploitation of the technology and products developed.

## Conclusions

The development of innovative and more sustainable methods for the elimination of insects in seeds intended for human consumption should allow agri-food companies to incorporate technologies that are currently not available in our field, and to comercialize high quality products.
The appearance of insects in rice packaging causes a significant damage on the one hand to the image of the producing partners and of the cooperative, and on the other hand the real loss of part of the product represents an unwanted food waste. So far the prevention strategies of this problem have gone through the use of chemicals (synthetic or of natural origin), but this solution has as a drawback the risk of persistence of waste of the products used, often with difficulties associated with the limitation of authorized products and their application doses, as well as insect resistance in these types of products.
The development of strategies that minimize the use of pesticides and, consequently, the risks

associated with their consumption, represent a great improvement, especially if the alternatives can be energy efficient, and contribute to minimizing the carbon footprint of industrial activities that are associated with the commercialization of agri-food products.

## Operational Group Leader


Entitat: **ARROSSAIRES DEL DELTA DE L'EBRE I SECCIÓ DE CRÈDIT, SCCL**

E-mail de contacte: **joan.tomas@arrossaires.com**

Tipologia d'entitat:


## Keyword-category

Food quality / processing and nutrition

## Territorial scope

***Province***: Tarragona

***County***: Baix Ebre

## Project dissemination *(publications, seminars, multimedia...)*

## Project website

## Other project information

## Project period

Starting date (month-year): Març 2017

End date (month-year): Setembre 2017

Project status: *Finalised*

## Approved budget

| | |
|---|---|
| **Total budget:** | **16.870,00 €** |
| *Funding source DARP:* | *6.731,13 €* |
| *Funding source EU:* | *5.077,87 €* |
| *Own funds:* | *5.061,00 €* |

## With the support of:


Project funded by Operation 16.01.01 (Cooperation for innovation) of the Rural Development Program of Catalunya 2014-2020.

*Ordre ARP/96/2016, de 27 d'abril, per la qual s'aproven les bases reguladores dels ajuts a la cooperació per a la innovació a través del foment de la creació de grups operatius de l'Associació Europea per a la Innovació en matèria de productivitat i sostenibilitat agrícoles i la realització de projectes pilot innovadors per part d'aquests grups (operació 16.01.01), i es convoquen els corresponents a 2016.*

*Id. projecte: 111 2016*