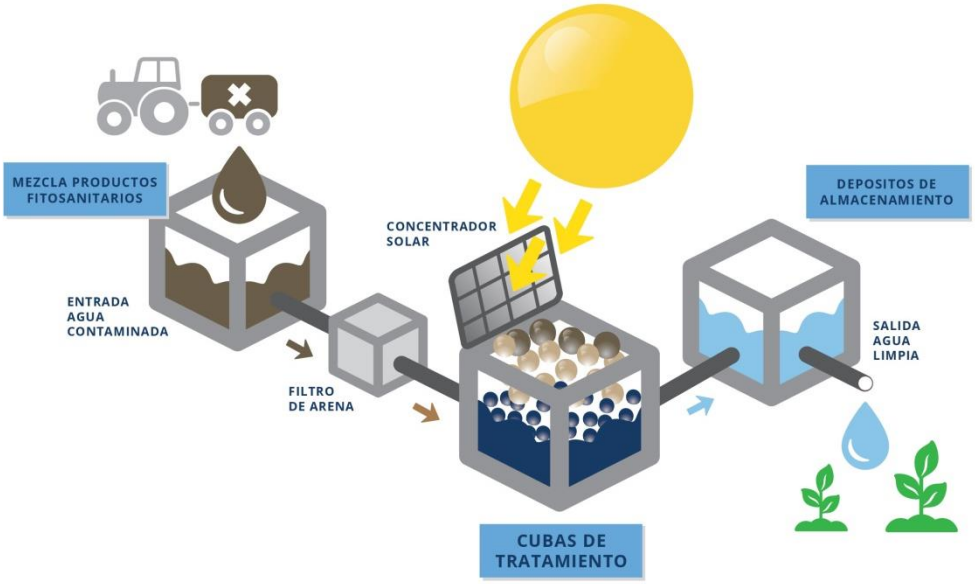
LIFE AQUEMFREE

DESCONTAMINACIÓN EN FINCA DE AGUAS RESIDUALES CON PRODUCTOS FITOSANITARIOS PROCEDENTES DE REMANENTES, ENJUAGUES Y LIMPIEZAS MEDIANTE FOTOCATÁLISIS SOLAR.

IN-FARM REMEDIATION OF AGRO-WASTE WATER WITH PESTICIDES FROM REMNANTS, CLEANING AND RINSE BY SOLAR PHOTOCATALYSIS.

LIFE13 ENV/ES/000488



After-LIFE Communication Plan

Región de Murcia
Consejería de Agricultura y Agua

Instituto Murciano de Investigación y Desarrollo Agrario y Alimentario imida

UNIVERSIDAD DE MURCIA

Novedades Agrícolas

FECOAM

The project LIFE- Aquemfree

In-Farm remediation by solar photocatalysis of agro-waste water with pesticides from remnants, cleaning and rinse

Project background

During 2012, 91,983 tonnes of pesticides were applied in Spain, of which 8,429 tonnes were applied in Murcia. A total of 250,055 hectares was cultivated in 2012 in Murcia, and more than 60,000 cubic meters of agrowaste water were produced (average 240 litres/ha), in particular from the cultivation of crops to which pesticides are intensively applied.

The EU Directive on the Sustainable Use of Pesticides (2009/128/EC) requires Member States to adopt measures to ensure that the activities of professional pesticide users and, where applicable, distributors do not endanger human health or the environment. But no real solution was available enabling farmers to manage pesticide residues, though there are some recommendations and uncomplete systems.

Project objectives

The project demonstrated a technically, economically and ecologically feasible method by which pesticide residues contained in the waste water produced by farms are neutralised. The use of innovative equipment allows pesticide remnants in containers and treatment tanks, as well as rinse water from tanks after cleaning of machines and equipment to be dealt with.

The project implemented a pilot waste-water decontamination facility tested on five farms. AQUEMFREE system is based on solar photocatalysis degradation process. The system uses solar energy (UV irradiation), sodium peroxodisulphate ($Na_2S_2O_8$) and a catalyst (TiO_2 and ZnO). The catalyst is recovered at the end of the process for its re-use. Treated waste water is no longer contaminated.

Project results

The main result of the project was the development of an on-site waste-water decontamination plant able to completely degrade pesticides without generating any other residue. The main expected long-term achievement of the project is the implementation of the AQUEMFREE system in medium-size and large farms, which would provide a solution for 80-90% of this environmental problem, at least in Mediterranean farms thanks to their solar irradiation conditions.

Some conclusions of AQUEMFREE economical and environmental assessment	
ECONOMIC ASSESMENT	More efficient on large farms or across associations of farmers Simple system to implant Possible new lines of business in green economy Very low cost repercussion on fruit and vegetable production: increase of 0.05 to 0.16% Commercial differentiation for producers: environmental marketing
ENVIRONMENTAL ASSESMENT (Life Cycle Analysis)	16 types of environmental impacts reduced between 40 and 60% Impact on climate change (CO_2 equivalent): 43% reduction The potential toxicity of treated remnants decreases considerably in comparison with untreated remnants and is above 84% in all cases. Depending on the farm and the impact category taken into account (human toxicity and aquatic toxicity), this reduction can reach values of almost 100%

Dissemination strategy

Several communication activities were carried out over the course of the project in order to increase dissemination and transfer of results to end users and groups of interest.

Dissemination activities	
NOTICEBOARD	Positioned in 26 different locations
PRESENCE IN THE MEDIA	6 press releases 18 articles 4 televised reports 2 radio interviews
EVENTS	36 workshops on pilot equipment farms 18 national and international tradeshows 23 scientific and technical congresses 21 networking activities 6 events were organised
PUBLICATIONS	3 scientific articles 3 technical articles 11 oral presentations 11 posters
NEWSLETTER	7 (over 1,700 registered users)
PROJECT WEBSITE	www.life-aquemfree.eu
PROMOTIONAL VIDEOS	http://www.life-aquemfree.eu/videos/

After LIFE Communication Plan

The After LIFE Communication Plan aims to ensure the dissemination of the project achievements after the project finishes. A technology transfer approach is adopted in order to expand the use of the innovative AQUEMFREE System. Based on the technical and economic viability results, a pool of actions is planned with three leading objectives: Dissemination of results, Commercial promotion, Governance.

Actions include all the steps leading to the registration of the Intellectual Property Rights (IPR), the commercial promotion of the AQUEMFREE System, the inclusion of AQUEMFREE in the regional training programs of the Rural Development Plan, the setting of further projects for further technological or scientific advances of the system, traditional dissemination activities, and governance issues.

The activities are foreseen for 3-5 years after the completion of the project, targeted to the stakeholders: farmers, companies and associations, technicians, students, public advisors, decision makers.

ACTION 1: Intellectual Property Rights
DESCRIPTION
Registration of IPR to make possible the availability of the AQUEMFREE technology to final users, on non-discriminatory and reasonable commercial conditions.
INVOLVED PARTNERS
Novedades Agrícolas, S.A.; IMIDA; Universidad de Murcia.
OBJECTIVES
Commercialization of the technology.
TARGET AUDIENCE
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EXPECTED TIME AND BUDGET
IPR is granted and limited to a maximum period of 20 years. Expected costs: 3.000€ (2018) and 1.500€ (2019-2023)

ACTION 2: International promotion
DESCRIPTION
Participation in commercial exhibitions in Spain (Fruit Attraction), Germany (Fruit Logistica), China (Hong Kong Asia Fruit Logistica), and others.
INVOLVED PARTNERS
Novedades Agrícolas, S.A.
OBJECTIVES
Commercialization of the technology.
TARGET AUDIENCE
Farmers, companies and associations, technicians, public advisors and political representatives.
EXPECTED TIME AND BUDGET
Periodic exhibitions and contacts with potential customers. Expected costs: 1.800€

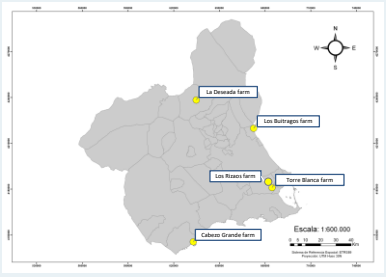
ACTION 3: Training courses
DESCRIPTION
Training courses organized by the Regional Government as activities included in the Rural Development Program will include a theoretical part and a practical workshop in the farms where the AQUEMFREE plants were implemented and running during the project.
INVOLVED PARTNERS
IMIDA and Universidad de Murcia.
OBJECTIVES
Dissemination of project results and Commercial Promotion of the technology.
TARGET AUDIENCE
Farmers, technicians, students, public advisors.
EXPECTED TIME AND BUDGET
One course/workshop per year. Expected costs: 1.000€

ACTION 4: New development and transfer projects
DESCRIPTION
In order to go in depth in the optimization of the AQUEMFREE system, develop new applications of the technology, and facilitate a wider transfer, new projects can be undertaken in different scopes such us: European Innovation Partnership in Productive and Sustainable Agriculture; R&D project (INIA) in the Agriculture National Plan of Research and Development: *Regeneración de aguas contaminadas por plaguicidas mediante fotocatálisis solar* ***para su empleo en irrigación*** *de cultivos hortícolas* (RTA2015-00073-00-00). Collaboration with Fundación Cajamar, Estación Experimental Paiporta.
INVOLVED PARTNERS
Novedades Agrícolas, S.A.; IMIDA; Universidad de Murcia.
OBJECTIVES
Dissemination of project results and Commercialization of the technology.
TARGET AUDIENCE
Farmers, companies and associations, technicians.
EXPECTED TIME AND BUDGET
2-3 years each project. Total budget of the project (INIA): 82.000 euros

ACTION 5: Dissemination and networking
DESCRIPTION
This action includes the traditional dissemination methodologies in order to ensure a wider transfer: website, leaflets, radio and TV, technical and scientific articles, participation in congresses, and networking activities with other Life projects (LIFE 17 project LIFE PureAgroH_2O have contacted IMIDA)
INVOLVED PARTNERS
Novedades Agrícolas, S.A.; IMIDA; Universidad de Murcia.
OBJECTIVES
Dissemination of project results and Commercialization of the technology.
TARGET AUDIENCE
Farmers, companies and associations, technicians.
EXPECTED TIME AND BUDGET
Periodically: 5 years for the website; yearly for congress participation and scientific articles (linked to project INIA in Action 4), during 3 years.

ACTION 6: Governance
DESCRIPTION
Promotion of the inclusion in the national legislation the AQUEMFREE System as a preferential available technology to eliminate or degrade pesticide residues in water (Royal Decree 1311/2012).This action requires the political support already expressed by two General Directors of the Regional Government, as relevant interlocutors with the Spanish Ministry of Agriculture.
INVOLVED PARTNERS
IMIDA.
OBJECTIVES
Governance.
TARGET AUDIENCE
Decision makers.
EXPECTED TIME AND BUDGET
Continuously during 3 years.

Project Identity

In-Farm remediation by solar photocatalysis of agro-waste water with pesticides from remnants, cleaning and rinse	
LOCATION	5 farms in Región de Murcia (Spain) 
CODE	LIFE13/ENV/ES/000488
DURATION	48 months: July 2014 to June 2018
TOTAL BUDGET	€ 1,863,566
LIFE CONTRIBUTION	€ 911,356
PROJECT WEBSITE	www.life-aquemfree.eu

Project Beneficiaries	
COORDINATING BENEFICIARY	
IMIDA Instituto Murciano de Investigación y Desarrollo Agrario y Alimentario	C/ Mayor S.N. La Alberca 30150 Murcia - Spain *Scientific coordinator*: Dr. José Fenoll Serrano jose.fenoll@carm.es *Technology Transfer*: Fulgencio Contreras López fulgencio.contreras@carm.es
ASSOCIATED BENEFICIARIES	
Novedades Agrícolas, S.A.	
Departamento de Química Agrícola. Universidad de Murcia.	
FECOAM Federación de Cooperativas Agrarias de Murcia.	