



Riga



MICROIRRIGATION PLASTIC PIPES AND DRIPPERS WITH ANTI-MICROBIAL AND ANTI-ROOTS FUNCTIONALITIES

RIGA project aims at implementing new irrigation systems based on standard polyolefin grades with new functionalities such as anti-microbial and anti-roots. Such innovative properties allow increasing their functionality up to the end of their shelf-life and contribute to water saving in comparison with the current systems in the market.

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eco-innovation
WHEN BUSINESS MEETS THE ENVIRONMENT



Specific objectives of RIGA project

- ✓ Study and selection of suitable additives with anti-microbial and anti-roots properties to introduce into polyolefins during melt process;
- ✓ Set up of best dosing system of selected additives and of screw design for masterbatch manufacture with the selected additives. Optimization of process parameters to avoid product degradation;
- ✓ Processing of masterbatch by extrusion (pipes) and injection (drippers) to adjust the process to the new additives;
- ✓ Assessment of the functionality and the effect duration of the new additives. Optimization of the amount and the type of additives as well as process parameters;
- ✓ Validation of pipes and drippers obtained. Assessment of their final properties, once exposed, with regards to correlated aspects such as soil quality, water quality or plant growth;
- ✓ Recycling study of the pipes and drippers and environmental/economic/legislative study.

Actions and means involved

The main goal of this project is to scale up the process and technologies related to the production of micro-irrigation systems (pipes and flat drippers) obtained through extrusion and injection technology for agriculture crops.

✓ Main requirements of micro-irrigation products will be defined, based on the information of current product limitations, an optimization and adjustment of the compounds based on previous experience from partners and taking into account the main problems defined (narrow processing window of the anti-root additives). In this way, several characterizations will be done by AIMPLAS and GALLOPLAST to know the additives properties in order to be adapted to the industrial equipment. Optimized masterbatches will be scaled up with the help of GALLOPLAST.

✓ Thanks to the information collected flat pipes and drippers will be obtained. The extrusion process will be tested and optimized at industrial level in IRRITEC facilities to obtain the pipes. The drippers will have the same dimension and injection moulding cycle time than actual drippers to ensure their functionality. Moreover, the complete micro-irrigation system will be obtained in an integrated pipe extrusion line.

✓ The final products will be validated in soil by CERSAA with the help of PCG and PCS to verify that functional characteristics remain stable throughout its lifetime. A control procedure and a contingency plan to solve future problems in field trials is planned.

✓ Exploitation of project results will take in consideration IPR (Intellectual Property Rights) and the development of a business plan with regards to the following aspects: 1. Masterbatch industrialization, 2. Micro-irrigation system manufacturing and 3. Replication along the whole commercialization chain.

✓ Dissemination activities will target dedicated actions addressed to manufacturers (particularly SMEs) to promote the growth of the industrial implementation of the products developed in the project.

Expected results

- ✓ Definition of the the requirements and production of PE masterbatches with suitable anti-algae and anti-microbial additives;
- ✓ Production of pipes and drippers with innovative properties at pilot and industrial level along with the drafting of the relevant technical data sheets;
- ✓ Validation of pipes and drippers in field condition through dedicated demonstrative trials;
- ✓ Set up of guidelines for the cultivation of vegetable and ornamental crops that envisage the adoption of the innovative micro-irrigation pipes and drippers;
- ✓ Quantification of the environmental and economical impact deriving from the adoption of the innovative pipes and drippers also through L.C.A. studies;
- ✓ Monitoring and assessment of knowledge and results generated by the project to be protected and exploited;
- ✓ Development of a business plan in order to support market introduction of the obtained innovative products;
- ✓ Set up of the most appropriate tools in order to increase the visibility of the project and maximize the dissemination of its outcomes.

Main environmental objectives of RIGA project

- ✓ Reduction of plastic wastes generated in the agricultural sector through an extended use of drippers and pipes;
- ✓ Reduction of greenhouse gas emission thanks to the extension of the shelf life of the products developed for crop irrigation;
- ✓ Elimination of toxic substances from superficial water bodies with specific regards to herbicides;
- ✓ Reduction of water consumption thanks to the optimization of water distribution (reduced pipe maintenance and clogging).

Budget and duration

Riga Project started on 1st July 2014 and will last until 31st December 2016.

TOTAL BUDGET	1.282.647 €
European Commission contribution	641.322 €
Beneficiaries' contribution	641.325 €

