

## EVALUATING A GRAVITY-FLOW IRRIGATION DISTRICT TO IMPROVE WATER AND LAND PRODUCTIVITY: CASE STUDY OF LIS VALLEY, PORTUGAL

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### ABSTRACT

This paper presents the results of a research in progress Operational Group project integrated on the European Innovation Partnership for Agricultural Productivity and Sustainability. Its main objective is to improve the irrigation water management of Lis Valley Irrigation District through the innovation of the management process, aiming the natural resources conservation and a sustainable social and economical agricultural development. It has a gravity fed conveyance system supplied by Lis river and its tributaries, recharged by water pumping from rivers and drainage ditches. The Operational Group project has an experimental workplan focused on the monitoring of the collective supply network that includes the operative assessment and the inflow measurement of the district management sectors supply discharge, and the evaluation of the irrigated areas, agricultural and irrigation practices to identify water management problems and its feasible solutions. On-farm management is evaluated on experimental fields set in private farmers, considering sprinkler and microirrigation of vegetables, surface or sprinkler irrigation with fodder corn and permanent pastures, paddy rice, and drip irrigation of apple fruits. The water balance method was applied in 2018 in the control sectors, being the gross depths between 6470 and 9220 m<sup>3</sup>/ha, with an average of 7400 m<sup>3</sup>/ha, and the overall system efficiency between 53% and 72%, with an average of 69%. The pumping irrigation allocation recharge was 9,3% of total irrigation. The water quality analysis allowed to identify some risk situations regarding salinization and microbiological issues, justifying action to solve or mitigate the problems, especially at the level of the farmer's fields, according to the crops and the irrigation systems. The technological innovation is an element of the modernization of irrigation district which justifies the development of multiple efforts and synergies among stakeholders, namely farmers, water users association and the researchers, and which makes the integration of information to support the management a determinative target.

**Keywords:** Innovation, Operational Groups, EPI-AGRI, Lis Valley, gravity-flow irrigation district, irrigation water saving, irrigation modernization

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