

# Assessing Input Use Efficiency of PGI Potatoes - Abstract

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## Summary

Kato Nevrokopi potatoes were characterized in 2002 as Protected Geographical Indication - PGI products, due to their unique qualitative characteristics that rise from the elongated cold period in the cultivation region. Taking into consideration current CAP's suggestions about economic development, environmental protection, and support of rural communities, IoPotato aims to evaluate inputs' use efficiency of Kato Nevrokopi potatoes' cultivation for providing to the point solutions for minimizing the operational and environmental cost of this process.

More precisely, special focus was given on acquiring field data related to potato cultivation like temperature, air humidity, leaf humidity and soil moisture which are critical points for decision making from the farmers' side. In order to achieve this, three meteorological stations have been installed, transferring hourly data for the above-mentioned parameters. Collected data are stored and processed in a cloud system. Through this process, each farmer has access to his profile, while agromanagers can obtain an overview of the region. Furthermore, in cooperation with EAS Dramas farmers' cooperative, field data regarding to the amount and monetary values of all variable cost expenses (seed potatoes, plant protection products, fertilizers, irrigation, energy and labor), as well as the quantity and price of the final product have been collected. Data Envelopment Analysis (DEA) was used to assess input use efficiency of the production protocol of Kato Nevrokopi potatoes. It has to be stated that input-oriented approach was used to minimize the environmental impact through the used inputs and to reduce the capital intensity for potato farmers. Particular attention was given to slacks computation, highlighting excessive use of resources for each farmer. In this way, farmers can produce a PGI product with the least environmental impact, which can be key elements for creating a diversified product and entering in premium markets.

Results indicate that only few potato farmers achieve high-efficiency scores, while the majority of them have to redesign their production protocol. Acquired results were transferred to local farmers in a simplified version, showing to them their potential for further inputs minimization. Collecting and storing environmental and economic data year by year provides the opportunity to gradually improve the technical efficiency of used resources. In this way, EAS Dramas cooperative can design a resilient production protocol to climate change and sharp price increases. All in all, IoPotato implements an interdisciplinary approach between academics, agromanagers and farmers to promote integrated farming techniques with the use of contemporary agricultural tools, contributing to the achievement of sustainability in the agricultural sector.

## Keywords

Data Envelopment Analysis, DEA, PGI, potato, efficiency, agriculture

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