

## Extended Abstract

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<b>Paper Title</b>	<b>Farm-level sustainability assessment in Mediterranean environments: Enhancing decision-making to improve sustainability.</b>
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<b>Abstract</b>	<i>200 words max</i>
<p>In a typical and representative Mediterranean setting, farming systems have a significant economic role and thus it is important to develop tools for their sustainability assessment. Moreover, it is necessary for effective training and allocation of resources, to understand how farmers perceive effective decision-making impacts their farm's sustainability performance and evaluate their awareness and use of decision support tools (DST) for sustainable management.</p> <p>Twenty representative farms were selected from the National Farm Accountancy Data Network (FADN), for the regional unit of Argolida. To investigate sustainability on these farms an indicator-based method, RISE 3.0, was employed to evaluate the current situation, and semi-structured, phone interviews were used to identify and analyse patterns and attitudes within the data regarding decision-making, sustainability performance and DST with the help of thematic analysis.</p> <p>The results demonstrate that the decision-making process was poorly informed and not always evidence-based while the concept of sustainability was not well understood by most of the farmers. The sustainability assessment illustrated the specific strengths and weaknesses of farm businesses in the area, whereas the correlation of the RISE assessment with perceptions of farmers on decision-making and sustainability performance identified the challenges of moving towards more sustainable systems in typical Mediterranean environments.</p>	
<b>Keywords</b>	Farm management; Sustainability assessment; Decision-making; RISE; Northern Mediterranean
<b>JEL Code</b>	Agricultural Economics: Sustainable Development Q010
<b>Introduction</b>	<i>100 – 250 words</i>
<p>The research reported herein, investigates farmers' perceptions of the importance of effective decision-making in relation to the sustainability performance of their farming businesses. Farmers' behaviours and attitudes towards decision-making and the subsequent correlation with sustainability performance are presented in a case study for the Argolida region in the, Peloponnese, Greece. This paper evaluates the sustainability performance of farm businesses in this region and how farmers perceive that decision-making affects the sustainability performance of their farms.</p>	

Even though farm sustainability is an important concept in Greece and the Mediterranean basin there is a paucity of research which links sustainability assessment with thematic analyses exploring farmers' views and perceptions on decision-making, farm sustainability and DST awareness and use. To provide a new perspective on addressing the sustainability challenges in these environments a multi-method approach has been implemented and the findings outlined in this paper.

## **Methodology**

*100 – 250 words*

Several studies have examined sustainability assessment (SA) of agricultural production systems in the Mediterranean basin. Using a variety of frameworks for the assessment of farm businesses' sustainability, the performance of agricultural production systems has been evaluated and optimal practices have been proposed for enhancing the sustainability of these systems.

Building on and extending this, the research reported here assesses sustainability performance based on a sample of farm businesses in a southern region of Greece, an area with features typical and representative of the Mediterranean basin, using an indicator-based assessment method. The research then extends this to correlate the results of the SA to the attitudes and behavioural patterns of farmers that emerged from a thematic analysis, based on the outcomes of the semi-structured interviews with the same sample.

The research combines the use of the RISE 3.0 tool in Greece as an SA tool at the farm-level with effective evidence-based decision-making to enhance sustainability performance. This paper is focused on a case study of a Mediterranean area specialised in citrus and olive production. This farming system has a prominent role in terms of what is defined Mediterranean and hence Greek agriculture, composed of small size farms that are gaining importance in numerical terms and concentrating increasing shares of the total agricultural output, labour and land of the country, the region and worldwide.

## **Results**

*100 – 250 words*

The findings that emerged from the thematic and RISE 3.0 analyses fall under three key areas: effective decision-making, farm sustainability and the impact of DST's, all of which influence the future trajectories of the agricultural sector in the area.

There was some misalignment between the results of the two analyses. The findings of the thematic analysis suggested that effective decision-making and farm sustainability were linked, even though the findings from the RISE 3.0 assessment indicated that there is a lack of evidence-based decision-making. Furthermore, a lack of awareness and assessment of sustainability enhanced the notion that decision-making and farm sustainability were concepts unfamiliar to a majority of the sample.

Further, decision-making related to achieving the desired quality and quantity of production, along with marketing and the trading of produce, was claimed to be informed and in accordance with the advice of the agronomist/adviser. In fact, the RISE 3.0 analysis suggests that in each step of the production process, there is a lack of decision-making based on factual information and evidence from available data, such as soil analyses, nutrient demands estimations, GHG emissions, biodiversity advice and financial indicators.

In terms of agricultural practices, the main pattern observed was a routine based on experience and existing practices, rather than on evidence and planning. Decision-making was indicated as associated with financial sustainability, but the general lack of awareness of environmental sustainability hindered farmers' understanding of the change in processes required to strengthen the bond between the two.

### **Discussion and Conclusion**

*100 – 250 words*

Overall, this research identifies a gap of wider sustainability issues within the context of farm decision-making. Whereas farmers could articulate and understand the basis of economic sustainability they knew much less of the concepts of environmental and social sustainability. Farming systems were considered sustainable, as long as they were profitable. Distinctions between economic and other aspects of sustainability, were not made and this is an element that could be tackled through training and workshops that address the concept of agricultural sustainability. The findings highlighted that even though farmers believed their existing cultivation practices were in line with the preservation of the environment, the promotion of biodiversity and the protection of soil and water properties, the results of the sustainability assessment indicated that these were the factors that farmers should focus more attention on, closely to improve their overall farms' sustainability performance. The absence of adequate advisory services or the paucity of provision of independent advice, are also potential areas for improvement.

Orientation towards holistically addressing the practicalities of incorporating sustainability into the farmer decision-making process is of increasing importance as options for change narrow (i.e., climatic change, environmental degradation, water scarcity). The findings of this research via the sustainability assessment and the thematic analysis illustrates the need to encourage farmers and advisers to change their actions in order to enhance wider agricultural sustainability. One element of this is the formulation of educational and professional development frameworks and networks to facilitate and enable the change to more sustainable systems.