

Vienna 2019 Abstract Submission

Title

Design of a tool for evaluation of economic performance for the changes in environmental practices at the plot and farm scale: Winegrowing case

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Keywords

Economic performance, scaling change, IPE2Vit, Wine production, Technical scale, Environmental practices, Decision support tool.

Research Question

This work seeks to find a solution to evaluate the impacts of the change in agricultural practices on economic performance at the plot and farm scales.

Methods

A decision support tool allowing the assessment of the economic performances of vineyard practices both at the level of the plot and the farm was performed.

Results

The main results obtained at the end of this work converged on the development of the tool IPE2Vit: Indicators of Economic Performance of Plots and Farms in Viticulture

Abstract

Design of a tool for evaluation of economic performance for the changes in environmental practices at the plot and farm scale: Winegrowing case

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Abstract

The scientific and technological developments observed during the 20th century in agriculture have made France the leading agricultural country in the European Union with 18% of European agricultural and agri-food products. Wine production alone accounts for nearly 15% of the value of total production (CNIV, 2017).

The first phase of this agricultural revolution was marked by mechanization, genetic progress, the massive use of chemical inputs and increased yields of factor productivity. With the rise of environmental and human health concerns, questions about the sustainability of this intensive production model are increasingly being asked. These issues are now fully embedded in the debate on the environmental impact of agriculture, where public policy reforms and growing consumer demands have enhanced wine growers' awareness on the importance of changing farming practices to meet environmental requirements and improve products quality. This awareness is accelerated by the negative impacts of intensive winemaking practices on the eco-system, production costs and wine quality.

However, the change in practices has remained limited due to many institutional, social, technical and economic reasons. Despite a variety of agri-environmental institutional instruments, the majority is imposed by the government according to an up-down strategy. These environmental approaches are often considered inefficient and do not perfectly match the needs of farmers and available resources for productions.

Indeed, the implementation of this change depends not only on the demonstration of the environmental benefits of winemaking practices, but also by the impact on the economic performance of the farms.

Despite the development of environmental impact studies of vineyard practices, studies on economic performance are limited and often carried out either at the scale of the agricultural parcel or at the scale of the farm and do not allow for an assessment of effects of the change in practices or the interactions and dynamics that may exist in the wine production system.

Therefore, it is necessary to the assessment of the economic determinant of change in wine farming practices and to provide winegrowers with quantified economic evidence on the economic performance of their farms considering the interactions between its various activities.

In this context, the present work seeks to clarify the notion of economic performance and to find a solution to the different methodological constraints that make it possible to evaluate the impacts of the change in practices on economic performance at the plot scale, but also at the farm scale.

The objective of this research is to provide a decision support tool allowing the assessment of the economic performances of vineyard practices both at the level of the plot and the farm. In this work, we have reviewed both the scientific literature on economic performance and the existing evaluation tools for the definition of economic indicators and their methods of calculation. We have constructed environmental and economic databases for the study of indicators on different scales: plot and farm.

The main results obtained at the end of this work converged on the development of the tool IPE2Vit (Indicators of Economic Performance of Plots and Farms in Viticulture), as a decision support tool that allows to evaluate the impact of changes in environmental practices on economic performance at the technical scale as well as at the farm one.

The consistency and robustness of this tool of economic performance assessment (IPE2VIT tool) was assessed by field tests. In fact, a series of real data and simulation scenarios of practices changes were collected nearby representative farms of the Pays de la Loire vineyard in France chosen according to the regional network observatory INOSYS typology. The data are collected with quantitative surveys in the form of a closed questionnaire from the representative farms and the simulation scenarios are determined with a simulation game with the viticulturists according to his need, the availability of resources and materials that allows him to modify its technical itineraries. Then the case studies are presented to illustrate the effects of changes in winemaking practices on the economic performance of plots and farms.

The IPE2VIT tool is characterized by the simplicity of its use making it accessible for both winegrowers and wine advisors. Through the results of its simulations the user can quickly appreciate the effects of effects of changes in practices and action levers. The tool facilities the risk management associated with the adoption of environmental practices and therefore enhances the adoption of environmental practice of winemaking farms.

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