Assessment of sustainability in organic and conventional farms in Tunisia

The case of olive-growing farms in the region of Sfax

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Abstract— **This research has been carried out to study the sustainability of the Tunisian olive-growing farms and to compare the sustainability level of organic with conventional farms. A survey was conducted with 62 olive growers in the region of Sfax in Tunisia. First, a diagnosis of the situation of the farms was undertaken comparing between organic and conventional farms. Second, an empirical analysis was achieved to asses the sustainability of organic farms versus conventional farms following the French "IDEA" method developed by Vilain [1] [1].**

The "IDEA" indicators showed a greater ranking for the organic farms. The analysis indicated the sustainability of organic farming on the three scales adopted; ecological scale, through the soil fertility and reduction of pollution, socio-territorial scale through employment creation, reinforcement of the spirit of collective work and the products quality, and finally on the economic scale by enhancing profitability, responding to demand and prices allowing organic farming adopters to reach better incomes.

Keywords— **sustainability, organic farming, Tunisia.**

I. INTRODUCTION

The agricultural sector is often criticized, regarding environmental pollution, food safety or economic performance. This was the origin of the development of new production techniques, such as organic farming, given its impact on environment, human health and the agricultural ecosystem, on the one hand, and considering its principles which tend towards the none use of the chemical products, the conservation of biodiversity and the natural resources and the production of healthy products on the other hand. It aims at improving the environment, economic and social sustainability of the production and the post harvest process on the farms [2]. Thus, can we say that organic farming constitutes a sustainable production practice?

The sustainability concept, implementation of the agricultural development concept, comes to take into account the whole dimensions (economic, social and environmental dimensions) and to define a comprehensive framework [3].

In addition, a farm is considered sustainable when it reaches an income level that allows respectful practices of the environment and contributes to the social integration of the farms [4]. However, this concept remains rather vague and some questions may rise: How to evaluate the sustainability of a farm? How to be located in the sustainability approach?

In Tunisia, the assessment of the farms sustainability approach is relatively recent and the experiments carried out in this field, in spite of their importance, remain limited and did not exceed the descriptive character.

This study represents an attempt to asses the sustainability level for Tunisian olive-growing farms. The purpose is, through some indicators based on the French "IDEA" method suggested by Vilain [1], to compare the sustainability level for organic olive-growing farms to conventional farms.

II. METHODOLOGY

In order to evaluate the olive-growing farms sustainability compared to conventional farms, some sustainability indicators were used based on the French "IDEA" method.

A. The "IDEA" (Farm sustainability indicators)

There are many definitions for sustainability. All of them cover environmental, social and economic trilogy of the sustainable development (fig. 1).

[1] IDEA : Indicateurs de Développement des Exploitations Agricoles/ Agricultural Farms Sustainability Indicators.

The sample was composed of 62 farmers, 32 organic farmers and 30 practice conventional farming. An economic analysis was carried out aiming at evaluating sustainability of these farms and to ensure comparison between organic and conventional mode of production.

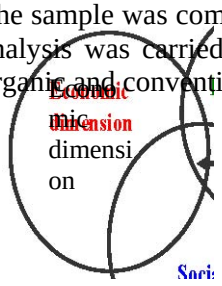

Fig. 1 Representation of the sustainable development dimensions.

The "IDEA" method gives scores to the practices and the farmer behaviour. It is structured in objectives gathered within three scales of sustainability. Each one of these three scales is subdivided into three or four components. The starting assumption is to quantify the various components of an agricultural system by allotting them a quantified mark, then to incorporate information obtained to get a score of the farm for each of the three scales qualifying sustainability: an agro-ecological scale, a socio-territorial scale and an economical scale [5].

B. Data Sources

This research was conducted in the region of Sfax (Tunisia). Since its introduction in Tunisia, organic farming showed a considerable development in this area reaching 74 806 hectares in 2005. The organic olive-growing area reached 47 000 hectares in 2006 and represent 63% of the total organic farming area. The survey conducted covered technical, social and economical aspects that are necessary to analyse farmers' situations, response and attitudes towards organic farming.

III. RESULTS

A. The agro-ecological sustainability indicators

The agro-ecological sustainability component involves some indicators characterizing the effect of agricultural activity on environment.

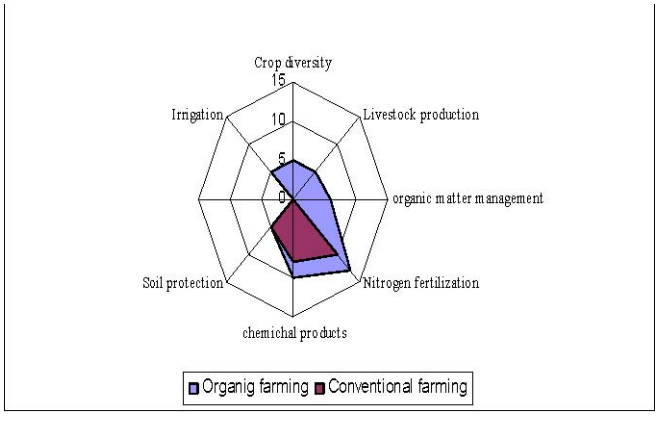

Fig. 2 Evaluation of agro-ecological sustainability of organic and conventional farms.

B. The socio-territorial sustainability indicators

This indicator characterizes the degree of farm insertion in the society, evaluates the life quality of farmers and the importance of services they offer to society. It informs on the role of farms in employment and their contribution in the human well-being.

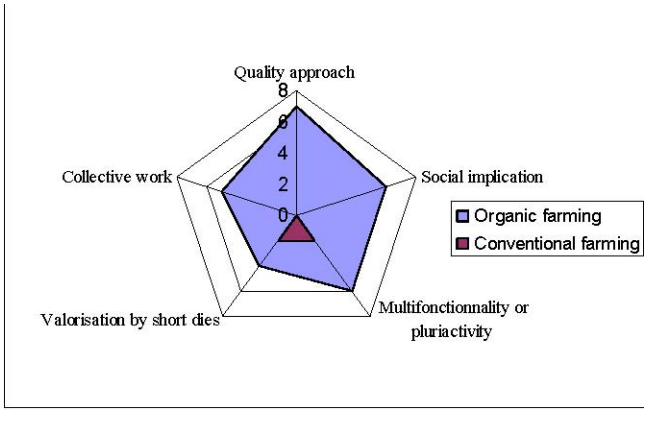

Fig. 3 Evaluation of socio-territorial sustainability of organic and conventional farms.

C. Economic sustainability indicators

The economic scale of sustainability results indicate the technical and financial orientations of the production system, analyzes the economic results beyond the short run and the economic risks. This dimension has been studied by the agricultural economists who usually use many economic and financial management ratios. Indeed, the continuity of a production system depends on economic viability but also on economic independence, transmissibility and efficiency.

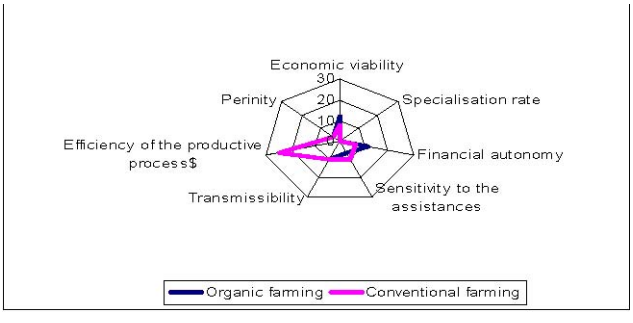

Fig. 4 Evaluation of Economic sustainability of organic and conventional farms.

The "IDEA" method applied to Tunisian olive-growing farms showed that economic sustainability indicators for organic farms have higher values than the conventional farms. Nevertheless, this economic sustainability level for organic farms is limited by sensitivity to assistances and subsidies.

As a conclusion, the "IDEA" indicators showed a higher ranking for organic olive-growing farms on the three sustainability dimensions.

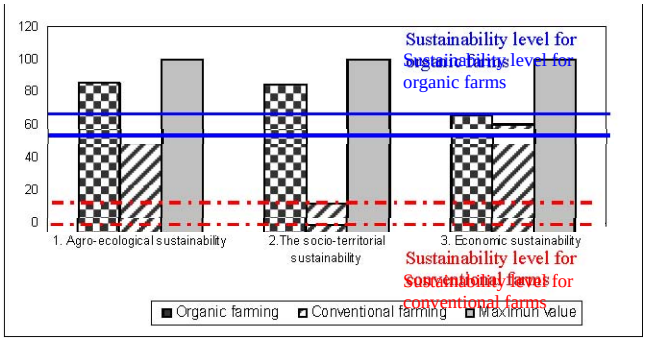

Fig. 5 Evaluation of sustainability by the "IDEA" method.

IV. CONCLUSIONS

This research aims to study Tunisian olive-growing farms sustainability and to compare the sustainability level between organic and conventional farms using based on the French "IDEA" method.

This research has the specificity of taking into account ecological, human and economic factors compared to the traditional economic analyses which were limited only to economic factors, and ecological analyses often limited to environmental factors. The methodology used combines ecosystem, social well-being, economic efficiency, and farmers' incomes.

The Tunisian olive-growing sector is confronted with a great challenge to be respectful for environment, preserve natural resources, maintain production for future generations, allow safe and sufficient food, maintaining social and human equity and to be socially acceptable, and economically profitable.

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