

# Organic agriculture and the environment: Opinions of organic olive farmers on the island of Rhodes.

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## Abstract

This work, which is part of a wider investigation, is an attempt to explore the opinions of organic olive growers of the island of Rhodes on issues related to organic farming, the environment and olive cultivation, particularly, the opinions of organic farmers about environmental protection, environmentally friendly agricultural practices and scientific guidance. The research is a case study in the region of Rhodes island and was conducted between November 2015 and February 2016. The population of the survey consists of 33 currently active organic olive farmers. The data was captured with the use of a questionnaire. According to the findings, there is strong evidence that organic farmers are environmentally conscious and believe that the practices used in conventional agriculture, such as chemical fertilizers and pesticides have adverse effects on the environment. The research also found that one of the main reasons they chose organic olive cultivation is environmental protection. It is also of interest that respondents consider the presence of an agronomist important for the provision of consultancy and technical support in organic olive cultivation.

**Keywords:** organic agriculture, organic olive cultivation, Rhodes, olive farming

## 1. Introduction

Sustainable development is defined as the kind of development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987: 43). The three pillars and consequently the three dimensions, that prevailed in the context of international conferences are economic, environmental and social at the international, regional and national level and at the local and household level (UNESCO, 2005: 14 · Strange & Bayley, 2008: 26). The concept of sustainability, is an open and evolving term. It is characterized as multifaceted and far reaching (Seghezze, 2009 · Papavasileiou, 2015), manifesting as the basis for constructive dialogue in scholarly and pedagogical contexts (Hopwood, Mellor, & O'Brien, 2005 · Porter & Cordoba, 2009). The term "sustainability", which includes three distinct systems -Environment, Society, Economy-, allows us to understand how these systems interact (Korhonen, 2003), co-depend and influence each other. The three pillars of sustainability are

of equal importance, and culture is the agent linking balance and the lessening of contrasting concerns. (Duxbury, Gillette & Pepper, 2007). Agriculture in recent years with the development of technology and the rapid population growth, led to the production of more goods with less effort and greater profit, with great impact, however, on the environment and human health. In particular, the intensification of agriculture with the increasing use of pesticides and fertilizers contributed significantly to environmental pollution. As a response, sustainable agriculture, a new form of agriculture, has become prominent. Sustainable agriculture provides consumers with safe and healthy products, while minimizing adverse environmental impacts and promotes a way of agricultural production that conserves natural resources while at the same time allowing farmers to enjoy a good annuity. (Benbrook, 1991 · Gold, 2007). Sustainable agriculture has three main objectives, preservation of the environment in excellent condition, economic viability and social and economic equality. Simultaneously, sustainable agriculture seeks to conserve natural resources, promote rural economic development and ensure food production through sustainable balance between self-sufficiency and independence (Polyrakis, 2003 · Gold, 2009). In the Declaration on Environmental Education (1977) it was mentioned for the first time that "Training of farmers is essential for social progress and for improving the quality of life of farmers by increasing their production by using methods ecologically conscious". Since then a concerted effort has been made to educate farmers concerning the environment (UNESCO, 1978). The most representative form of sustainable agriculture is organic agriculture. Organic agriculture is defined as a productive agricultural system with mild cultivation, environmentally and human friendly (Janssen & Hamm, 2011). The most widely adopted definition of organic agriculture was developed by the International Federal of Organic Agriculture Movements (IFOAM): "Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved." (IFOAM, 2005). Organic farming is widely believed to be 'a kind of agriculture forbids the use of

chemical preparations'. This notion represents a negative approach to organic farming, because it refers to what organic farmers are not doing and not what they do. In organic agriculture, specialized knowledge is required, as very specific growing techniques are applied. Therefore, the transition from conventional to organic farming is a very jarring break in the habits of conventional farmers. It requires detailed planning and organization, in order to reduce mistakes (Sidiras, 2005 · Paull, 2011).

## 2. Methods

The objectives of this study is to record the opinions of organic olive growers on issues related to pesticides, chemical fertilizers, protection of the environment and to investigate the reasons that led them to organic olive growing, farming practices used in organic olive cultivation and education of farmers. The following research questions were formulated: What is the level of knowledge of the organic olive farmers on issues of sustainable agriculture and environmentally friendly farming practices? Which techniques and practices are applied by organic farmers in the organic olive farming? What are the reasons that led them to organic olive cultivation? Did they consult a qualified scientist and if so did they find his presence useful? What is their opinion about the need and importance of education in this field of agriculture? Our research was conducted on the island of Rhodes, where the majority of the agricultural production comes from olive farming and olive cultivation has been practiced for since antiquity. It is a case study that investigates organic cultivation of olive trees on the island of Rhodes. For this case study a questionnaire, has been developed and used as the main methodological tool. (Cohen, Manion & Morrison, 2011). Through this questionnaire's answers, we were able to draw data and information on the environment and organic olive cultivation. The population of the survey consists of 33 currently active organic olive farmers. The particular organic farmers are active in Rhodes and selected according to the organic farmers registers of the Department of Rural Economy and Veterinary of South Aegean Region in Rhodes. From the 33 organic olive growers, 21 are men (63.6%) and 12 women (36.4%). The young organic farmers are very few, as 11 are aged between 41-50 years (33.3%), 9 are between 51-60 years (27.3%), 8 are over 60 years old (24.2 %) and only 5 Organic farmers are aged between 31-40 years (15.2%). The correspondents education level is spread as follows: 14 are primary school graduates (42.4%), 7 are secondary school graduates (21.2%), as well as 7 high school graduates (21.2%). Finally, five organic farmers are college level graduates (15.2%).

## 3. Results

From this study some indicative results are evident. The first question –referring to whether beyond organic olive cultivation, respondents involved with other cultivations and what kind- the results show that the majority of the population (54.5%) also deals with conventional cultivations. The percentage of the population that declares dealing with other organic cultivations is significantly less (27.3%). Few olive organic farmers (15.2%) say that they deal with other organic cultivations beyond organic olive growing, but also with conventional cultivations. Finally, a

very small percentage (3.0%) responds that it has no other cultivation activity. The next question explores the opinions of organic olive farmers regarding the use of chemical fertilizers and whether they consider them to be harmful to the environment. The replies of the organic olive farmers show that more than half of organic farmers (60.6%) believe that chemical fertilizers are "quite" harmful to the environment and one in three organic farmers (33.3%) say that chemical fertilizers are "very" harmful to the environment. A small percentage (6.1%) believes that chemical fertilizers are "little" harmful to the environment. It is remarkable that none of the respondents replied that chemical fertilizers are "not at all" harmful to the environment. The next question referred to the use of synthetic chemical pesticides and on whether they are considered harmful to the environment. From the responses we see that most organic olive farmers (63.6%) believe that chemical pesticides are "very" harmful to the environment and a significant proportion (24.3%) of organic farmers believe that chemical pesticides are "quite" harmful to the environment. Few respondents (12.1%) believe that chemical pesticides are "a little" harmful to the environment, while none of the respondents replied that chemical pesticides are "not at all" harmful to the environment. In the same context, the next question is investigating whether and how synthetic chemical pesticides are harmful to humans. The results show that the majority of the olive organic farmers believe that synthetic chemical pesticides are "very" harmful to humans (51.5%). The percentage of the population that believes that it is "quite" harmful to humans was significantly less (27.3%). Few organic farmers (12.1%) believe that they are "moderate" harmful to humans and, finally, a small percentage of respondents (9.1%) believes that it is "a little" harmful to humans. It is worth noting that none of the organic farmers do not believe that chemical pesticides are "not at all" harmful to human health. Next, we tried to identify the reasons that led farmers to organic cultivation of olive. The question posed was open-ended, so olive organic farmers could give many answers they wanted. There were 86 responses collected. From the processing and aggregation of them, six categories emerged. The majority of the population (75.8%) turned to organic olive growing to contribute "to the protection of human health.". Another large proportion of these (66.7%) indicated that the reason they cultivate organic olives is to "protect the environment". Almost half (51.5%) of correspondents answered that they became organic olive farmers because of the "economic benefit" offered by organic olive cultivation. For the "production of better quality products" replied several of the respondents (36.4%) and for reasons of "innovation/competitiveness" a section of the population (27.3%). Finally, a very small percentage (3.0%) says that the reason that led them to the organic cultivation of olives is "contribution to sustainable development." Our next question asks organic farmers of olive of Research to indicate which cultivation techniques they use on their cultivations. In this question, the olive organic farmers could give more than one answer. Total answers given were 95. We noticed that "green manure" was applied by all organic olive growers of the island of Rhodes (100%). The next largest group was "animal manure", as it was applied by the majority of respondents (63.6%). A little more than half the olive organic farmers

(51.5%) responded that they apply "bio-pesticide formulations". The use of "traps for insect control" utilized a significant proportion of the farmers (48.5%). Another small percentage of those declared that they apply "compost fertilization" (12.1%). Finally, the same percentage (12.1%) stated it applies 'something else' for the organic cultivation of olive. Subsequently, organic farmers were asked if they consulted an agronomist for their cultivation. From the answers of the respondents we can see that the entire population (100%) answered in the affirmative. Then, organic farmers were asked to describe to what extent they consider useful the presence of an agronomist for their cultivation. Their responses showed that almost half the population under investigation (48.5%), considered it "quite" useful and a slightly fewer percentage (45.4%) considered it to be "very" useful. A small percentage (6%) of organic farmers considered the presence of an agronomist for the cultivation "moderately" helpful. The last question refers to the role of education and how much it is required for organic olive farming. The replies show that the organic olive farmers consider education on organic olive cultivation essential, since "very" replied the 63.6% of the research population, and the rest (36.4%) of the population declares that education on organic olive growing is "quite" essential. It is worth noting that the categories "moderate", "a little" and "not at all" had no answer.

#### 4. Conclusion

From the analysis of the results and based on the objectives and the survey questions, conducted with organic farmers olive island of Rhodes, some interesting conclusions can be drawn. Concerning the knowledge level of olive organic farmers in sustainable agriculture and environmentally friendly farming practices, they seem to know what farming practices benefit the environment and which are not. According to the research findings, it seems that organic farmers are environmentally aware and believe that the practices of conventional farming harms the environment and/or humans. Their point of view is that chemical fertilizers and synthetic chemical pesticides are harmful to human health and contribute to environmental degradation. Another finding that can be derived from the survey is that more than half the olive organic farmers of the island of Rhodes are also involved with conventional cultivations. Olive cultivation as traditionally practiced in Rhodes has many similarities to organic olive growing, so an olive grove can easily be converted to a grove certified as organic. Continuing, our researched tried to identify the reasons organic farming was chosen by the respondents. The reasons seem to be predominantly ideological, social, environmental and economic. The main reason for choosing to cultivate organic olives, is the belief that, by applying organic farming they can contribute to the protection of human health (themselves, their families, and consumers), the production of natural products and without using harmful for humans chemical formulations. Organic farmers, are shown to be environmentally aware, since another important reason practicing organic farming is that with this way of olive cultivating they believe that they contribute to environmental protection, as they are not using chemical fertilizers and pesticides. Still, the economic benefit and the expectation of a better income from organic olive growing was a reason to select organic

olive cultivation for almost half of the population investigated. Another reason for their choice is the fact that by choosing organic olive farming, they produce better quality products that are free from pesticide residues. The research also showed that some organic farmers chose organic olive growing for innovation and competitiveness reasons, such as claimed, organic olive growing are not widespread on the island of Rhodes and in local villages, and consider it as a good opportunity to exploit the land they hold, to produce a product that is unique, with a relatively high demand and the ability to "stand out" in relation to the most popular products of the olive. Finally, some growers chose organic olive cultivation, because they believe that sustainable development of rural areas is possible and, therefore, they want to contribute to this, with their option above. Through this research, there was an attempt to properly reflect the techniques and practices of organic olive farmers in the performance of organic olive growing. We conclude that all organic farmers apply "green manure", and in this way enrich the soil with beneficial elements for olive trees and also help to improve its structure. Still, several apply "animal manure" as an approved natural fertilizer for organic farming. Of course, almost half of all organic farmers surveyed, apply "biopesticide formulations" to protect against insects and diseases. Equally popular is the use of "traps for insect control" since in this way the insect population is controlled and decreased. We found "compost fertilization" to not be very widespread, perhaps because of the high cost or the lack of appropriate knowledge to produce compost by organic farmers themselves. Potentially, the time-consuming nature of the process, could be a deterrent to the production of compost. Finally, the responses of the organic olive growers show that they consider the presence of an agronomist important and particularly useful in their capacity to provide advice and technical assistance in the performance of organic olives. That is why the entire population responded that seeking agricultural advices from an agronomist to help and guide them in their olive cultivation with further knowledge and information they require. At the same time, their opinion about education in the specific field of agriculture is that information, education and training on organic olive growing is essential. We conclude, that organic farmers, realize that the factor "education" holds an essential role in their evolution and believe that there is lack of knowledge around the organic olive cultivation.

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