2007

Rural development and sustainable agriculture in the European Union Mediterranean: a case study on olive oil production in Kefalonia, Greece

Amaris Lunde

Western Washington University

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RURAL DEVELOPMENT AND SUSTAINABLE AGRICULTURE IN THE EUROPEAN UNION MEDITERRANEAN: A CASE STUDY ON OLIVE OIL PRODUCTION IN KEFALONIA, GREECE

by

Amaris Lunde

Accepted in Partial completion

Of the Requirements for the Degree

Master of Science

Moheb A. Ghali, Dean of the Graduate School

Advisory Committee

Chair, Dr. Nicholas Zaferatos

Dr. Gigi Berardi

Dr. Grace Wang
MASTER’S THESIS

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RURAL DEVELOPMENT AND SUSTAINABLE AGRICULTURE IN THE EUROPEAN UNION MEDITERRANEAN: A CASE STUDY ON OLIVE OIL PRODUCTION IN KEFALONIA, GREECE

A Thesis
Presented to
The Faculty of
Western Washington University

In Partial Fulfillment
Of the Requirements for the Degree
Master of Science

by
Amaris Lunde
August 2007
Abstract

Rural depopulation is a post-war phenomenon in Western Europe, strongly associated with agricultural abandonment to which isolated and poorer areas are most vulnerable. Such agricultural communities have remained marginalized due to a lack of resources to restore them, but also due to market and governmental forces which have encouraged industrial agriculture, thereby rewarding large-scale agricultural operations and rendering the small traditional agricultural practices nonviable because of their inability to compete. The Greek Ioanian island of Kefalonia was once home to a hillside subsistence community known as Farsa, which was emblematic of traditional agricultural practices. The effects of World War II and a devastating magnitude 7.3 earthquake in 1953 led to the mass exodus from the village and the island as a whole. Today, most villages have been restored on the island. There remain a few, including Farsa, that remain in ruins today. It is the intention of the community of Farsa, as well as the municipality of Kefalonia, to rebuild old Farsa village, under the principles of sustainable development. The purpose of this research is to identify one agricultural activity that would be an appropriate and integral part of a sustainable village, offering economic, social, and environmental benefits to the community. The social science approach of phenomenology guided this case study to gather information form the greater area of Kefalonia concerning how the population currently farms olives and produces olive oil. Interviews were used to extrapolate information on the current practices olive oil producers use, the cultural ties to olive oil, and the economics of producing olive oil. Based on the findings of the research, olive oil production in the area is deeply ingrained in the local culture and current practices are congruent with environmental sustainability. What needs to occur for olive oil production to be economically sustainable is a collaborative effort in meeting input costs, in marketing, and in distribution so that the production of olive oil creates a net gain for producers. The research explores an alternative business model that will ensure the environmental, social and economic sustainability of olive oil production in the community of Farsa. It is the proposition of this research that a sustainable system of olive oil production will lend to the greater sustainability of Farsa village, revitalizing the community, and guarding it from future marginalization.

Keywords: sustainable agriculture, rural development, European Union, Greece, Common Agricultural Policy (CAP), Kefalonia, Farsa, olive oil, economic viability, environmental preservation, social wellbeing, cultural heritage, cooperative, phenomenology
Acknowledgements

The conception of this research idea, the execution of the research work and the completion of the written thesis were all dependent on the leadership of Professor Nicholas Zaferatos. His innovative hands-on project in an agricultural community in Greece was what attracted me to doing graduate work. The program that he created in Kefalonia for sustainable development made my visit on the island possible and enabled me to make essential connections with olive oil farmers in Kefalonia. His conviction to dedication to the redevelopment of Farsa village put due pressure on me to complete a written document as contribution. However, I would not have been able to study olive oil production on the island without the hospitality and enthusiasm of the community of Farsa and the wider population of Kefalonia. I would also like to give special thanks to Vassilis Voutsinas for his great insight into the community of Farsa and for facilitating some of my interviews. My research work would not have been the same without the aid of Katerina Perraki, who assisted me in travel, interpretation and generating ideas for my research work. Thodoros Chianis gave his valuable time to help me research works written in Greek as well as interpreting interviews. From Huxley College, there were many people who helped including Dr. Gigi Berardi who offered invaluable insight into the composition of a master’s thesis; Dr. Grace Wang who offered her expertise in surveying, guiding my research approach; Stefan Freelan and Tyson Waldo who patiently walked me through Geographic Information Systems; Dr. Troy Abel who worked with me on policy. Thank you to all of my editors, who are too many to list.

I would like to thank Ezra Lunde for helping finance my travels to the island and encouraging me to set out to conduct the research. Thanks to Andrew Lunde for introducing me to nature. The support and patience of Kristi Fealko and Cynthia Zaferatos were also invaluable to the completion of this work. Charles and Catherine Lunde deserve a thank you for supporting and encouraging me throughout the process of this research work.
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Chapter I: Introduction

1.1 Statement of the Problem
The Greek Ionian island of Kefalonia was once home to a hillside subsistence agricultural community known as Farsa. The effects of World War II and a devastating earthquake in 1953 measuring 7.3 on the Richter scale led to the mass exodus from the village and the island as a whole. The island’s population was dramatically reduced from 100,000 to 25,000 following the war and earthquake. Since the earthquake, most of the villages on the island have been rebuilt. However a few, such as Farsa, remain in ruins due to socio-economic and topographic constraints that prevent them from being feasibly redeveloped. Rural depopulation is a post war phenomenon in Western Europe strongly associated with agricultural abandonment to which isolated and poorer areas are most vulnerable. Such agricultural communities have remained marginalized due to a lack of resources to restore them, but also due to market and governmental forces which have encouraged industrial agriculture, thereby rewarding large-scale agricultural operations and rendering the small traditional agricultural practices non viable because of their inability to compete.

Today, Greek policies are attempting to mend the problems found in these marginalized rural communities. As part of the European Union’s reformed Common Agricultural Policy (CAP), Greece receives aid in redeveloping its countryside within the principles of
rural development and sustainable agriculture. Under the umbrella of such policies, the community of Farsa is currently working to reclaim the village, applying sustainable development principles.

Farsa village is representative of rural communities referred to in EU policy as “less favored areas” (LFAs) or, more commonly, as marginalized rural communities. Such areas, comprised primarily of agricultural communities, had suffered from depopulation and remain marginalized communities due to the noncompetitive nature of small-scale agriculture. Such communities are characterized by traditional agricultural practices that have low-impact on the environment. However, their practices are not economically viable because they are unable to produce at the quantities that would allow them to sell at
competitive prices. International and national governmental bodies are recognizing that to become economically viable, these lagging agricultural communities will require the attention of supportive policy.

Since the early 1980s, rural development policies of the United Nations (UN), and later the EU, have progressively been based on the principles of “sustainable development” as a response to the problems in marginalized rural areas. Sustainable development aims at integrating environmental preservation, social wellbeing and economic viability in developing communities. EU policies in rural development aim at "strengthening the viability and competitiveness of the agricultural sector, improving the living conditions and economic opportunities in rural areas, and promoting good environmental practices" (EC, 2006).

Of all the European Mediterranean countries, Greece suffers the largest rate of land abandonment (Syrrakos, 2005), depriving the agricultural communities of viability. In response, Greece has prioritized the revitalization of the countryside. The Ministry of Rural Development and Food identified several policy objectives (at the new millennium) to promote the development of agriculture, the competitiveness of Greek products and the even restructuring of the countryside. The plan for the restructuring of the countryside employs economic and social integration in agriculture. This intervention seeks to make Greek agriculture “attractive, modern and viable” for rural communities (Ministry of Agriculture, 2000).

Islands in the Ionian Sea mirror the diversity of unfavorable conditions found in other island and coastal areas throughout Greece which face depopulation and, hence, are the primary target areas of rural development policies (Dimara and Skuras, 1999). In accordance with the Greek national objectives to restore vitality into rural communities, the prefecture of Kefalonia is working to restore the life to its rural communities that faced destruction and remain in ruins. In 2005, the community of Farsa and the municipality of Argostoli began collaborating with
the non-profit NGO, A World Institute for a Sustainable Humanity-Hellas (AWISH) and AHA International to host an academic program in sustainable community development with the focus of rural redevelopment of the village of old Farsa. The program, sponsored by Huxley College of the Environment, Western Washington University along with other American Universities, combines student work in planning, environmental studies and policy with practical application in community development. The research conducted for this thesis contributes to the sustainable agriculture component of the overarching sustainable development research project of Huxley College and AWISH-Hellas in the Farsa case study community.

1.2 Objectives
In conjunction with the University program, this thesis seeks to contribute useful knowledge towards a redevelopment strategy that is sustainable for the community of Farsa. Essential to the sustainability of the redeveloped village is the integration of several economic and cultural components, or what has been termed ‘pluriactivity’ (Giourga and Loumou, 2006). More specifically, this thesis focuses on the emblematic olive tree, *Olea europaea*, and the production of olive oil as one of several supporting activities for the redeveloped rural community. It is also the ambition of this work to go beyond the parameters of Farsa and provide a portable model for olive oil production that can be applied in other Mediterranean rural communities.

1.3 Research question and thesis statement
Based on a model of sustainable development which seeks the integration of environmental, social, and economic variables in a community, the question of concern to this research is: As a rural development strategy for the case study Village of Farsa, can a system of olive oil production be devised that:
1. has no negative impact on the environmental surroundings,
2. is consistent with the local culture
3. is economically viable
Within the case study, several key variables for drawing the model are assessed. The main categories of examination in the research work were:

1. the typical characterization of the case study olive groves including the topography, size of plots and number of trees, cultivars of olive trees and the yield from each;
2. the current maintenance practices including tilling, pest control, fertilization and irrigation;
3. the cultural significance of olive oil in Kefalonia today and in historic Farsa;
4. the economy of Kefalonian olive oil production including costs and benefits of producing oil, government support, and the resource potential of the agricultural region of old Farsa; and
5. other Kefalonian agricultural production models.

Answering questions with respect to these variables will help uncover the current local conditions and lend to possible approaches in developing an olive oil system that could function as a an integral part of sustainable development of Farsa village. This research begins with the thesis that conditions supporting a sustainable olive oil production system exist in Farsa because of the current low-impact, culturally conducive practices of olive oil production on Kefalonia, complimented by reformed European Union and Greek policies that support rural development and sustainable agriculture.

1.4 Case Study Setting
Kefalonia is a Greek island located in the Ionian Sea off the southwestern coast of mainland Greece, at 20°30' E, and between 38°12' and 38°18' N. The largest of the Ionian Islands, with a total area of 781 square kilometers, it lies to the south of the islands of Lefkada and Ithaca, and to the north of the Island of Zakynthos,
opposite the mouth of the Gulf of Corinth. The island is mountainous, with peaks running from the most northerly cape to the extreme south. Mt. Ainos is the highest of the mountains, with its tallest peak at 1,626 meters (AWISH hellas, 2005). Kefalonia is just to the east of a major tectonic fault, where the European plate meets the Aegean plate at a slip boundary, making the island prone to earthquakes.

Kefalonia’s history with earthquakes The first recorded earthquake was in 1867 (AWISH-Hellas, 2005), while the most recent and most devastating earth quake occurred in 1953. This particular earthquake was comprised of 4 successive tremors, the third and most destructive hitting the island on August 12. With a tremendous force of 7.3 on the Richter scale, this quake left nearly the entire island in rubble. The epicentre of the quake was directly below the southern tip of the island. The entire island was raised as a result of this quake by 60cm and remains that much higher to this day. This can be seen in water marks on rocks around the coast. Combined with WWII, the earthquake of 1953 resulted in a mass exodus from Kefalonia. The 1990 census documented that there were 100,000 inhabitants on the island. After the earthquake there were one-fourth as many, at 25,000. Though the majority of villages are restored, several remain in ruins still today. Farsa is one community that is the target of a municipal and international effort toward sustainable redevelopment.

History of Farsa The first historical record of Farsa dates to 1678 under the name “Farissà” in a tax board that is kept safe in the record office in Venice today (AWISH hellas, 2005). During the Venetian occupation (1500 –1797) and the English occupation (1809 –1864) of Kefalonia, Farsa and seven more settlements (Kourouklata, Faraklata, Davgata, Dillinata, Razata, Prokopata and Messarata) on the island formed the Potamianata Region (AWISH hellas, 2005). Farsa towers over the Bay of Argostoli of the Ionian Sea, on the foot hills of the mountain Hali. The village is perched on a hill that rises 200 meters from the sea. The remnants of the original village lie ten kilometers by road from Argostoli, the capital of
Kefalonia. Because of its location and the fact that the road was never restored, lack of accessibility kept Farsa from being rebuilt in its original location. Some of the original inhabitants rebuilt homes on the plain directly below their old village, establishing a village known as new Farsa. Since 1999, the village of new Farsa has been one of ten villages belonging to the municipality of Argostoli.

Farsa’s history is characteristic of the island as a whole. It suffered from the earthquakes and WWII. In the 1867 earthquake, ten houses were reported as destroyed. At that time Farsa hosted a population between 450 and 500 inhabitants. According to the 1889 census, there were 486 people registered in the village of Farsa: 211 males and 275 females. Further destruction occurred by unnatural means in 1943, when the German air force bombed the village during the German-Italian conflict. At that time Farsa become a place of execution of the Italian prisoners of war. Hardly recovered from the World War II, Farsa was hit again by the devastating earthquake in 1953. Like the rest of the island, the inhabitants of old Farsa escaped to Athens or other parts of Greece; those Farsans who remained on the island live primarily in village of new Farsa.

1.5 Chapter layout
The following chapter is the literature review. This chapter gives context to the research work by identifying issues of rural abandonment as well as providing an operational definition to the term “sustainable development” as implied by the European Community (EC) and the scholarship of academic journals. Chapter II also includes policy considerations to reveal how the United Nations, European Union and Greece have together served to shape agricultural practices as well as what strategies they have designed to promote sustainable rural development in marginalized rural communities such as Farsa. Chapter III follows to describe the research approach used in this thesis and the methodology employed. Chapter IV presents the results of the case study. Chapter V concludes the thesis with an assessment of the research findings and recommendations for further research as well as further development work in the case of Farsa and olive oil production.
Chapter II: 
Literature Review and Policy Considerations

This chapter is composed of two sections. The first section is a literature review. This section begins by contextualizing the problem of rural abandonment and industrialized agriculture, then gives definition to the terms sustainable development and sustainable agriculture, introduces the phenomenon of rural abandonment in Greece, and discusses the characteristics of olive oil production in the EU and in Greece more specifically. The second section of this chapter begins by discussing the creation and evolution of the CAP and its role in shaping EU agriculture, specifically in the olive oil sector. It then considers policies specific to Greece since the mid 20th century. Finally, the chapter concludes with an assessment on EU regulations which aim to improve the competitiveness of rural areas by emphasizing the maintenance and preservation of the environment and rural heritage.

2.1 Rural abandonment and industrialized agriculture
Socio-economic forces and governmental policy have encouraged the intensification of agriculture and have aggravated the trend toward abandonment of remote agricultural communities in mountainous regions. Traditional practices that represent sustainable agriculture are threatened by the changes in the intensity of farming which have characterized Mediterranean agricultural sectors during the whole post-war period and in particular by the combination of abandonment and intensification processes (Caraveli, 2000). The intensification of agriculture has resulted in high productivity and economic profitability, but has led to the abandonment of small agricultural communities and the sustainable agricultural practices embedded in their tradition. This change from small-scale production to large scale production has contributed to the general marginalization of those small agricultural communities.
The resurrection of agriculture in remote agricultural regions of the EU is essential to the survival of those communities and to the movement toward sustainable agriculture. However, as stated by Caraveli (2000) the continued viability of low-yielding dryland cultivation that is typical in these remote farming communities continues to be under serious threat because of its inability to compete on the global market. This inability to compete renders remote agricultural systems unable to provide a livelihood for agriculturalists. The challenge then is to identify an agricultural system appropriate for these areas that not only has a neutral effect on the ecological surroundings but that is simultaneously economically viable. Sustainable agriculture embodies economic viability and social well being along with environmental preservation.

The case study examines olive oil production in one particular remote agricultural community in order to examine the viability of olive oil production as an economic activity supporting the rural development strategy in a Mediterranean region. The role of olive oil in the redevelopment of the village of Farsa is looked at under the umbrella of rural development and sustainable agriculture. This section examines the literature pertaining to sustainable agriculture and rural development and the problems associated with the intensification of agriculture and rural abandonment. These issues will be examined from the global perspective of the United Nations, from the multi-state level of the European Union, and at the national level of Greece.

*Causes of marginalization* - In Greece, as in many EU Member States, two phenomena have been identified as the major causes of the continued marginalization of remote agricultural communities. First, EU policies geared toward industrialization in agriculture and parallel efforts by the Greek government to grow its industrial sector during the post war era (Syrrakos, 2005; Hassapoyanes and Daskalopoulou, 1999) have led to the migration of people from the countryside into industrial cores. Second, the industrialization of agriculture rendered small mountainous farms unable to compete with intensified agricultural
practices on lower elevations and led to a depopulation of those areas (Caraveli, 2000).1

The motivations underlying the intensification of agriculture have been primarily economic. Agricultural production can be expected to move where it is most productive. Agricultural land is abandoned when it fails to generate an adequate income for households and businesses and when farmers are unwilling or unable to modernize their agricultural practices (MacDonald et al., 2000; Euromontana, 2000). The inability of small traditional farming communities to adapt to the modernization of agriculture has been attributed to limitations of the physical environment such as steep terrain, dry climate and climatic instability (Caraveli 2000); the small size of agricultural plots (Hassapoyanes and Daskalopoulou, 1999); isolation (Euromontana, 2000); and resistance from local people (Campagne et al., 1990; MacDonald et al., 2000). The results of the case study illustrate that olive oil production in Kefalonia is limited by these same factors.

**Environmental and social repercussions of industrialized agriculture** - Though the reason that agriculture has concentrated in the plains has been predominantly economic in nature, the repercussions on rural communities have not been restricted to economics. Their physical restraints, climatic conditions and geographical remoteness make these mountain areas of Europe representative of an extreme case of economic and social vulnerability (Conti & Fagarazzi, 2005) while abandonment is associated with land desertion and spontaneous forestation which pose a threat to the rich diversity of flora and fauna that would typically

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1 This research is primarily concerned with the challenges faced by small mountainous agricultural communities in the EU Mediterranean. Low economic competitiveness (Caraveli, 2000) and socio-economic pressures (MacDonald et al., 2000) led to the migration of populations from mountainous Mediterranean regions and the abandonment of their agricultural activities. As agriculture became more economically viable in the more fertile plains, people either migrated to the plains to farm there, or moved to cities to find work in other sectors. Caraveli (2000) discusses the economically- and policy-driven trend toward the intensification of agriculture in the EU Mediterranean countries. She states that, “the model of economic growth which Mediterranean agricultural sectors have followed in the post-war period has led to the creation of only certain pockets of intensive farming mainly following the most easily accessible flat and coastal routes of the continental part of these countries, while leaving the inaccessible mountainous and insular regions in the shadow of this development process” (Caraveli, 2000, p. 235).
characterize European mountain areas (Conti and Fagarazi, 2005). Euromontana, the European multi-sectoral association for cooperation and development of mountain territories, calls the mountain areas in Europe “a reservoir of diversity of environments and culture” (2000). Euromontan (2000) brings attention to the environmental value as well as to the environmental fragility of remote agricultural communities within the EU:

"The mountain regions of Europe are a heritage belonging to our continent, which cannot be discarded without harm to our society, or to Europe. These lands are rich, but fragile. This is their special characteristic. They are rich in their natural resources, the beauty of their landscapes, their varied flora and fauna, their unique ecosystems, well-known parks, and their vital sources of water, air, minerals etc. They are rich in their history, their culture, and their inhabitants who have well understood how to combine their knowledge with new ideas."

Numerous studies including European Community Report on Sustainable Agriculture (EC, 2000) conclude that the general state of European agriculture is of the domination of intensified production leading to certain negative effects to the environment and to rural communities (EC, 1999). Under its Sustainable Development Strategy, the EU aims at a high level of environmental protection, social equity and cohesion, and economic prosperity (EUROPA, 2006). In promotion of sustainable development, the EU addresses the economic, social and environmental challenges of sustainability by strengthening the viability and competitiveness of the agricultural sector, improving the living conditions and economic opportunities in rural areas, and promoting good environmental practices (EC 2006).

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2 The EU Council (2006) recognizes the environmental problems associated with agriculture (including olives) that were augmenting in the 1980s and 90s. For example, nitrogen surplus in water ways was especially a problem within the Member States during the 1980s (EU Council, 2006). Problems of ammonia emissions, eutrophication, soil degradation and decline in biodiversity were also persistent in many areas (EU Council, 2006). These environmental threats occur predominantly within large-scale agricultural practices with high chemical inputs.
2.2 **Definitions of sustainable development**

Sustainable development, in its broader sense, rests on the principle that present generations must meet the needs of the present without compromising the ability of future generations to meet their needs. Authors commentating on sustainability integrate a concern for the well being of natural and human resources. Concern for human resources concentrates on social responsibilities such as working and living conditions of laborers, the needs of rural communities, and consumer health and safety both in the present and the future. Complimentary to this, stewardship of land and natural resources involves maintaining and enhancing the vital resource base in the long run (Mediterranean Agronomic Institute of Chania; 2003).

Because many socio-economic and environmental issues are intertwined in a society’s food production, and because many developing regions are farming communities, EU policy has categorized sustainable agriculture with rural development. As each agricultural system is a combination of wider societal forces and local conditions, a precise definition for sustainability remains elusive (Stenholm and Waggoner 1990). Stenholm and Wagoner (1990) admit that sustainability is only a target toward which one can aim.³

The very term sustainable development reveals a focus on development, which has been the focus of policies that have presented the very problems that sustainable development, as a movement, attempts to solve today. The aim of sustainable development remains to be the achievement of economic stability, however taking into consideration the overall human and environmental well being. Many authors describe development and agriculture as sustainable when they are able to meet the needs of the present without compromising the ability of

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³ Though criticized by some, the ambiguity of the concept of sustainability is embraced by others. Kates et al. (2005) state: “This malleability allows programs of environment or development; places from local to global; and institutions of government, civil society, business, and industry to each project their interests, hopes, and aspirations onto the banner of sustainable development” (Kates et al., 2005, p.8).
future generations to meet their own needs (e.g. Kates et al. 2005; Duesterhaus, 1990).

As with the broader concept of sustainable development, sustainable agriculture emphasizes the need to promote the health of human and natural resources simultaneously. In other words, the concept of sustainability recognizes the interdependency of people and their natural surroundings. Feenstra (1997) identifies sustainable agriculture as a system that includes concerns for social equity and that recognizes the interconnectedness of the individual farm and its workers, the local ecosystem, and communities affected by this farming system both locally and globally.

Economic and social vitality Embodying the principles of a holistic approach to development, sustainable agriculture concerns itself simultaneously with economic vitality, environmental preservation and social equity (Stenholm and Wagoner, 1990; Duesterhaus 1990), straying from the isolationist tendency to focus only on the ability of a food system to produce at its maximum capacity. Instead of being based purely on high productivity and net financial gain, sustainable agriculture considers economic vitality as the “long-term increase in the value to the community” (Kirschenmann, 2001). Practices that attempt to meet current and future societal and environmental needs are measured by their ability to maximize the net benefit to society when all costs and benefits of the practices are considered (Tilman et al., 2002). “If society is to maximize the net benefits of agriculture, there must be a fuller accounting of both the costs and the benefits of alternative agricultural practices, and such an accounting must become the basis of policy, ethics and action” (Tilman, 2002, p. 671).

Tightly integrated with the economic components of agriculture are social needs. Feenstra (1997) identifies the need for consideration of social responsibilities including the needs of rural communities. The economic returns of an agricultural activity must be locally concentrated so that the local economy is strengthened. Further, to be sustainable, the route of development should be
determined by the cultural tendencies and needs of the local population (Bowler, 1998).4

*Environmental health* A sustainable agricultural system is one that is not reliant on high chemical input or mechanization that threatens environmental or human health (Kirschenmann, 2001). The conflicts between environment and development were first acknowledged by the United Nations in the 1972 Stockholm Conference on the Human Environment (Kates et al., 2005). The concept of sustainable development was built upon at the 1982 World Commission on the Environment and Development conference called by the General Assembly of the United Nations. Chaired by the Prime Minister of Norway, Gro Harlem Brundtland, the commission took the name of the “Brundtland Commission”. The report that materialized from this conference, “Our Common Future”, was published years later in 1987. The report from the Brundtland Commission gained recognition as the first international address of sustainable development. Within the report, Brundtland proclaimed:

“The environment does not exist as a sphere separate from human actions, ambitions, and needs, and attempts to defend it in isolation from human concerns have given the very word "environment" a connotation of naivety in some political circles. The word "development" has also been narrowed by some into a very limited focus, along the lines of "what poor nations should do to become richer," and thus again is automatically dismissed by many in the international arena as being a concern of specialists, of those involved in questions of "development assistance." But the "environment" is where we live; and "development" is what we all do in attempting to improve our lot within that abode. The two are inseparable” (Kates et al., 2000).

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4 Bowler refers to this development strategy as endogenous growth, because it comes from the inside out rather than being imposed from an outside force, such as a more developed nation.
The evolution of sustainable development  Once established as a global priority, sustainable development would be a topic of discussion for many UN commissions to come. Within policy and planning discourse, sustainable development conjoins the concepts of sustainable agriculture and rural development. As stated above, most lagging rural areas are dependent on agriculture as their main livelihood. With the industrialization of agriculture, the inability of small farming communities to compete has perpetuated the marginalization of these communities. The agricultural communities become less attractive to younger generations due to their lack of economic opportunity, and the communities lose their population to regions with more developed economies. Therefore, international bodies such as the United Nations have recognized the link between development and agriculture.

In 1992, the United Nations held the first Earth Summit in Rio, making sustainable development one of its guiding principles in international policy. More than 178 governments representing developing and developed nations alike met to adopt a plan known as Agenda 21, calling for action at the global, national and local level in "every area in which there is human impact on the environment" (UN 2006).

Chapter 14 of Agenda 21, titled "Sustainable Agriculture and Rural Development" or SARD, defines sustainable development as "the management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations" (FAO, 2006). Following Rio, the UN established a Commission on Sustainable Development (CSD) to monitor progress in implementing Agenda 21 and the Food and Agriculture Organization (FAO) was designated as Task Manager for SARD. The FAO is an international forum composed of developed as well as developing countries for the purpose of negotiating agreements and policies within fisheries, forestry and agriculture. Since its creation in 1945, FAO has
focused primarily on developing rural areas. With the Rio Summit and the resulting SARD charter, the concept of sustainability would now be the focus of FAO efforts in rural development. The SARD concept defined at the Rio Summit and adopted by FAO would act as a paradigm for holistic development. In its Trainer’s Manual, (1995, Vol. 1), the FAO had further developed the parameters of SARD from its creation in Agenda 21, Chapter 14, now defining it as “the management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations.”

By virtue of being focused on development as opposed to preservation, the concept of sustainability designated by Agenda 21 and the FAO emphasizes technological advancements that aim to support human needs for the longest possible time. With sustainability in mind, the United Nations and the FAO go beyond their commitment to meet human needs for the longest possible time by acknowledging the interconnectedness of humans with their environment and the multiple elements that must be considered to achieve sustainability. As the Task Master of SARD, the FAO simultaneously acknowledges the needs of particular rural communities, and the necessity to curb human effects on the environment. The agency calls for a process within agriculture and rural development that is environmentally sustainable, economically viable, socially just, culturally appropriate, humane, and productive over the long term. As part of chapter 14 of Agenda 21: Promoting sustainable agriculture and rural development, the objectives of the sustainable agricultural program include the improvement of farm productivity in a sustainable manner, an increase in diversification,
efficiency, food security and rural incomes, while ensuring that risks to the ecosystem are minimized (UN Agenda 21: Chapter 14).  

Sustainable agriculture and rural development policies are a response to problems faced by lagging agricultural regions. On an international level, the majority of these regions are within the parameters of developing countries. However, the United Nations acknowledges the poor state of rural areas in developed nations as well as developing nations (see UN Agenda 21: Chapter 14: 14.2) and the importance of restoring agricultural lands in order to revitalize their communities. Within the EU, policies for rural development came in response to problems associated with agricultural abandonment that was emblematic of the post war and has been escalating in the past few decades (Caraveli 2000; Syrrakos, 2005).

2.3 Rural abandonment in Greece

Of the European Mediterranean region, Greece is the country most touched by land abandonment. In the post-war period, there was an enormous rural exodus of approximately 1.5 million people (Syrrakos, 2005). Men of working age sought employment in other countries including Germany and the United States, or moved to metropolitan areas of Greece, primarily Athens. In response to international market pressures, the priority of the Greek government was to develop the urban sector through rapid industrialization of the economy

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To ensure the acting power of SARD, the FAO has made effort to specify criteria it intends on meeting. The FAO Trainer’s Manual, Vol. 1, “Sustainability issues in agricultural and rural development policies” (1995) defines SARD as a process that:

- Ensures that the basic nutritional requirements of present and future generations, qualitatively and quantitatively, are met while providing a number of other agricultural products.
- Provides durable employment, sufficient income, and decent living and working conditions for all those engaged in agricultural production.
- Maintains and, where possible, enhances the productive capacity of the natural resource base as a whole, and the regenerative capacity of renewable resources, without disrupting the functioning of basic ecological cycles and natural balances, destroying the socio-cultural attributes of rural communities, or causing contamination of the environment.
- Reduces the vulnerability of the agricultural sector to adverse natural and socio-economic factors and other risks, and strengthens self-reliance.
A study based in five communities in Ionia (Louloudis, et al., 1984) revealed that a lack of infrastructure and a lack of economic activities, alternative or complementary to agriculture, led to the gradual depopulation and marginalization of these areas. Rural depopulation signaled the need to reform the countryside, and between the 1960’s and 1981 – the year Greece became a full member of the EU - the national agricultural policy adopted price supports designed to reduce economic class and regional divisions and to generally raise the standard of living in the countryside. Still, between 1961 and 1991, continued emigration reduced the agriculture population by more than half, from 45% to about 17% (Syrrakos, 2005). The effects on the rural landscape were apparent, with the total cultivable land area decreasing by 10.5% in the period of 1987-1993, (EUROSTAT, 1997). Despite these great losses of rural populations through the 1990s, 39% of the total income in Greece came from agriculture in 2005 (Syrrakos, 2005). Such a large percentage of income from a deteriorating area of cultivated land indicates high productivity levels, which in turn indicate intensification of crops and high-input practices.

Today it is a top priority of the Greek government to redistribute its national population back to the abandoned countryside. The Ministry of Rural Development and Food identified at the new millennium several policy objectives to promote the development of agriculture, the competitiveness of Greek products and the restructuring of the countryside. The plan for the restructuring of the countryside concentrates on an integrated economic and social intervention which seeks to make Greek agriculture “attractive, modern and viable” (Ministry of Agriculture, 2000). Current policy reflects the growing national goal for the modernization of rural Greece. Fueled by the opportunities offered by the global economy, the nation hopes to bring jobs and life back into the countryside.
2.3 Olive oil in the EU and Greece

The 1981 accession of Greece into the EEC\(^6\) was significant for the olive oil sector. As of 2000, there were 1,025,748 hectares of olive groves covering the Greek landscape (EC, 2000). In the period of 1991 to 1996, the country produced an annual average of 307,000 tons annually, which accounted for 16% of the total world production (EC, 1996). In 2002, the production increased to 430,000 tons. Beaufoy (2000) attributes the significantly augmented production level to a number of factors, including: a) the intensification and mechanization as well as the use of external inputs and irrigation, b) improvements in olive cultivation, c) the sufficient net income compared to other crops due to the high level of CAP support and high olive-oil prices and d) the lack of opportunities for other crops because the agro-climatic conditions.

An investigation of olive oil production through case study analysis is valuable in order to further understand the state of rural development and sustainable agriculture in other rural communities in Greece and throughout the EU Mediterranean region. Because olive oil production has been a practice since the ancient Greeks and the Romans, it is deeply embedded in the nutritional, historical and cultural identity of the Mediterranean. The olive tree is emblematic of the European Mediterranean, its cultivation dating back to ancient times (Loumou and Giourga 2002). Olive oil production is representative of EU agriculture at large because it is a significant activity in five Member States. The EU is the leading world producer of olive oil, accounting for 80% and consuming 70% of the world’s olive oil (EC, 2002) and much of EU policy refers specifically to olive oil production. This topic was chosen for this research over other relevant agricultural activities because of a number of variables that make it ideal for study. Understanding olive oil production is instrumental to a greater

\(^6\) The European Economic Community (EEC) was established in 1957 under the Treaty of Roam. Originally only 6 members (Belgium, France, Italy, Luxembourg, the Netherlands, and West Germany), the aim of the EEC was the eventual political union of its members. It was later renamed in 1992 under the Maastricht treaty in 1992 to the European Community (EC). The European Community eventually became the European Union (EU). In this thesis, the EEC and the EC refer to what is now known as the European Union.
understanding of agriculture in the Mediterranean region, because of the important role it plays in the environment, economy and culture. Olive trees are environmentally beneficial to the surrounding ecosystems because they help prevent soil erosion, provide habitat for birds and insects, and require little water to survive. On the other hand, certain practices in olive tree cultivation and oil production present concerns to the ecological surroundings. Culturally, olive oil is significant because it has been practiced since the Ancient Greeks and continues to bind the Mediterranean regions in cultural identity and in cuisine. Economically, olive oil is significant because the Mediterranean and specifically the EU Mediterranean States, have depended and continue to depend on olive oil as one of their primary agricultural industries.

*Environmental implications* Olive oil production, from the planting of trees to pressing the olives at the mill, is associated with a variety of positive and negative environmental implications. The Mediterranean landscape is covered with olive trees. This is because olive trees are well adapted plants for the arid Mediterranean climate, placing minimum demand on water supply, due to their drought resistant characteristic, compared to other agricultural crops. In addition to preventing soil erosion, olive trees provide an agricultural ecosystem to native insect and bird species. On the other hand, the intensification of olive cultivation is associated with negative environmental consequences which include nutrient imbalances and toxins in the soil due to application of chemical pesticides and fertilizers, and the compacting of the soil through the use of mechanized tilling.

*Social and cultural importance of olive oil* The Romans extended the cultivation of the olive tree throughout their occupied territories on the Mediterranean coast (International Council of Olive Oil, 2005). The cultural importance of the olive for Greece in particular is apparent in its history and mythology. Some historians date the appearance of the olive in the Greek islands to the Phoenicians in the 16th century B.C. and on mainland Greece sometime between the 14th and 12th century B.C., where its cultivation increased and gained great importance (International
Council of Olive Oil, 2005). It is a symbol of abundance, glory and peace within Greek mythology. Zeus was originally the protector of the holy olive tree, the "oria elaia" (Loumou and Giourga, 2003). Legend goes that the city of Athens obtained its name because Athenians considered olive oil more essential than water, thus preferring the offering of an olive tree from the goddess Athena over a spring of water gusting out of a cliff from Poseiden the god of the sea.

The olive-laden landscape, which claims approximately 5.5 million hectares of European soil (EC, 2000), has aesthetic and sentimental value to the people of that region, appearing in traditional artwork and literature. The EU Mediterranean countries can all be characterized by their olive tree landscapes; they share a cuisine that is centered on olive oil; and olive oil production is something embedded in their histories (Loumou and Giourga, 2003). Olive trees were traditionally grown in hill-side landscapes in the European Mediterranean. Like much of agriculture, olive farming has moved toward industrialized agricultural practices, leaving many of the traditional olive groves to abandonment and depriving their corresponding communities of the cultural and economic roles fulfilled by olive oil production.

Economic importance of olive oil Mediterranean regions, specifically those states that are part of the EU, have depended and continue to depend on olive oil as one of their agricultural industries. The Greeks had used olive oil as a medium of transaction and marketing since the Minoan Times (Loumou and Giourga, 2003). More recently, olive oil production has become a significant industry for the southern Member States. The European Community (2002) figures showed that there were 2,311,998 producers between 1991 and 1996. As of the year 2000, the EU produced 70% of the world supply of olive oil (EC 2000). Its five most significant producers are Spain, Italy, Greece, Portugal and France respectively (Beaufoy, 2000).
The economic viability of olive oil has fluctuated throughout history, depending on the scale of farms, competitiveness of the market, environmental constraints such as drought or frost, and governmental intervention. Within a global market, the least viable olive oil system is small-scale production. Small land holdings limit a producer’s ability to cultivate numerous trees. With small quantities of oil production, it is difficult to meet irrigation costs or other costs associated with encouraging production levels. Small scale producers would find it difficult to compete on the market against large producers. Therefore, the economic benefits of olive oil production are distributed mainly to large-scale intensive producers.

While the productive value is high, intensive practices compromise the integrity of surrounding ecosystems and have encouraged the movement of olive cultivation out of remote traditional olive regions, subjecting those communities to marginalization.

2.5 Current state of olive oil in the European Union

The scale of olive oil production that achieves the highest environmental, social and cultural success, is not the most economically lucrative system. Olive farms in southern Europe with the highest environmental values, including biodiversity, landscape conservation, and water conservation, have not shown to be as competitive as mechanized, industrial practices (Beaufoy, 2000). A study conducted by the Technical College of Agricultural Engineers, Madrid (Escuela Tecnica Superior de Ingenieros Agroneomos or ETSIA, 1998) found that for olive oil production in the southern Member States of the EU, the farms that were found most favorable to the health of local ecosystems suffered from net annual losses of €402.50 per hectare while the farms that threatened negative environmental effects on the ecosystem made an average annual profit of €1,378 per hectare. These economic disparities come as a result of market competition coupled with EU subsidies that reimburse farmers according to their volume of production. Numerous studies including the “report on sustainable agriculture” of the European Community (EC, 1999) conclude that the general state of European agriculture is the domination of intensified production leading to
several negative effects on the environment and well being of rural communities. Beaufoy (2000) and Loumou and Giourga (2002) identify three categories of olive groves used for oil production: a) traditional low-input groves; b) traditional high-input groves; and c) large modern high-input groves.

*Traditional low-input groves* The first category includes small groves of 40 to 250 trees per hectare, and is often characterized by scattered trees. These are the groves that are typically located in the remote mountainous areas, and are in continual decline because of their inability to compete economically. Beaufoy (2000) and Loumou and Giourga (2002) describe the traditional small groves as having terrace walls, as they are predominantly associated with steep terrain. Their understorey is often maintained by grazing rather than through the use of herbicides or heavy tilling. There is little to no chemical fertilization associated with these small productions; manure is the most common application for the addition of nutrients. Pesticide application is rare and usually means applying traditional treatments that are benign to plant health such as copper and lime. Due to the inaccessibility of water sources in these inclining areas, traditional plantations are rarely irrigated. Farmers in these traditional groves generally do not replace plants when they are no longer in their full productive capacity, preferring to preserve the richness that olive trees add to the landscape and history of the region, and thus the oldest olive trees are found in these groves. The olive groves of Kefalonia fit into this category.

*Traditional high-input groves* Next, the intensified traditional olive farms are typically located in hills and rolling plains, with 80 to 250 trees per hectare. Though the number of trees does not exceed the number in the first category, these small modern groves differ in scale due to the maximization of yield per tree the farmer attempts to achieve. In order to encourage maximum fruiting every year, this system of olive farming engages in repeated tilling, application of herbicides to mange the understorey, and the use of 2-6 kg/ha of combined fertilizer per tree and 2 to 10 pesticide treatments per year. Though not all have
been equipped with irrigation, these groves are increasingly receiving water by way of drip irrigation, to further encourage maximum fruiting and a heavy average weight for each olive.

*Large modern high-input groves* Finally, the intensive modern olive farms are located on plains, with the capacity for 200 to 400 trees per hectare. There is no terracing and the understorey is managed through repeated use of herbicides. Chemical fertilizers are usually applied through drip irrigation in the form of Nitrogen (150-350kg/ha annually). Finally, trees are treated with pesticides 2 to 10 times a year as they are under intensified traditional practices.

It is apparent through the above figures offered by Beaufoy (2000) that the low-input traditional olive farms have potentially the highest natural values, including biodiversity and landscape conservation (see Table 2.1). They also provide the most positive effects (such as water conservation in upland areas) as well as the least negative effects on the environment. These plantations also represent an ancient culture, harboring trees that date 500 or more years and continuing the traditional practices of small olive groves. The more intensified the plantation and the higher the chemical inputs, the greater the negative environmental impacts, particularly in the form of soil erosion, run-off to water bodies, degradation of habitats and landscapes, and exploitation of scarce water resources (Beaufoy, 2000). A table of the environmental effects of each system is provided below. In addition to degrading local ecosystems, the high-intensity systems are more representative of industrialized agriculture than they are of the olive landscapes associated with Greek tradition, therefore compromising the cultural heritage for the sake of high productivity.
Table 2.1: Characteristics of the three categories of olive farm scale

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Low-input traditional plantations, scattered trees</th>
<th>Intensified traditional plantations</th>
<th>Intensive modern plantations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical location</td>
<td>Hill and mountain areas. Also in marginal lowland areas and around villages</td>
<td>Hills and rolling plains.</td>
<td>Rolling and flat plains.</td>
</tr>
<tr>
<td>Range of tree density</td>
<td>60-250 per ha and scattered trees.</td>
<td>80-250 per ha</td>
<td>200-400 per ha</td>
</tr>
<tr>
<td>Tree characteristics and management</td>
<td>Old or ancient. Usually pruned, although may be infrequent. In some cases, pruning is very limited or non-existent and trees are allowed to develop a very large canopy. Olives may be in mixed orchards with other fruit trees. Trees may be younger (due to replanting) and have a regularly pruned canopy. There is a tendency to increase the tree density in traditional plantations by planting between existing rows. Short-stem varieties. &quot; Dwarf&quot; or &quot;bush&quot; varieties may be replanted at 25-30 years and mechanically pruned.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terraces with supporting walls</td>
<td>Common in some low areas.</td>
<td>Very rare.</td>
<td></td>
</tr>
<tr>
<td>Management of understory</td>
<td>Grazing and/or mowing and/or tillage, which may be frequent or occasional. Animal traction or tractors and hand mowers on narrow terraces.</td>
<td>Repeated cultivation and/or herbicides (e.g. Simazine, Glyphosate).</td>
<td>Repeated use of herbicides (e.g. Simazine, Glyphosate).</td>
</tr>
<tr>
<td>Fertilisation</td>
<td>None or natural and/or chemical fertilisers (e.g. 1-2 kg combined fertiliser per tree).</td>
<td>Chemical fertilisers (e.g. 2.4 kg combined fertiliser per tree depending on plantation, rainfall, irrigation, etc.).</td>
<td>Chemical fertilisers usually applied through irrigation and/or leaf sprays. Nitrogen input 150-195 kg/ha.</td>
</tr>
<tr>
<td>Pesticide use</td>
<td>None or occasional. Sometimes use traditional products, such as Bordeaux mixture, copper, lime.</td>
<td>2-10 treatments per year depending on the area, pests, year, etc. See main text.</td>
<td>2-10 treatments per year depending on the area, pests, year, etc. See main text.</td>
</tr>
<tr>
<td>Irrigation</td>
<td>Not usual, although becoming common in certain specific areas, such as Crete. Increasingly common (mostly deep although some sprinkler systems).</td>
<td></td>
<td>Usual (drip system).</td>
</tr>
<tr>
<td>Harvest method</td>
<td>By hand, or may be left in years of little harvest.</td>
<td>By hand or mechanical.</td>
<td>Mechanical.</td>
</tr>
<tr>
<td>Typical yield</td>
<td>200-1,500 kg/ha</td>
<td>1,500-4,000 kg/ha</td>
<td>4,000-10,000 kg/ha</td>
</tr>
<tr>
<td>Consistency of annual yield</td>
<td>Very low</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Labour requirement</td>
<td>Very high; harvest, pruning, maintenance of terraces and walls, grub control, etc.</td>
<td>High; harvest (when manual), pruning,</td>
<td>Low.</td>
</tr>
</tbody>
</table>

Economic concerns shape the face of olive oil production From an environmental standpoint, traditional, low-input practices are the most favorable. However, the differences in yield and labor input explain why the more environmentally and culturally supportive system is a less attractive alternative for the individual farmer. While the average annual yield of the traditional low-input plantations is 200 to 1,500 kg of olives per hectare, the most intensive plantations can produce up to 10,000 kg/hectare (Beaufoy, 2000). Further hindering the production capacity of the low-input traditional groves is the fact that a lack of heavy irrigation and chemical inputs limits the trees to their natural production cycle of every other year, or what is known as alternate bearing. Intensely fertilized and irrigated plantations succeed at getting at least some olives from trees every year. Further, the labor requirement is much higher for the smaller plantations, where the harvest and pruning are done by hand in comparison with the mechanized system of harvesting and pruning common to modern practices.

Source: The European Forum on Nature Conservation and Pastoralism; Final report 2000
The ESTIA study (1998) on these three types of plantations for the country of Spain estimated that the low-input traditional plantations received €97.50 per hectare in production support each year while the most intensive plantations received €975.0 (ten times the amount of the former). Though the direct costs were significantly lower for the traditional groves (€650 per hectare) compared to the intensive farms (€1,547/ha), the sales were disproportionately lower at €150 per hectare compared to €1,950 per hectare annually for each plantation. This explains why the net annual income for low-input traditional olive oil farmers was a loss of €402.50 per hectare while intensive modern plantations made an average annual profit of €1,378 per hectare. These large economic differences lead the majority of olive oil producers toward intensified practices. In Greece and Spain between 55-65% of the national olive areas correspond to the "intensified traditional" type, 25-40% are "modern intensive" plantations, while only 5-10% are in the "low-input traditional" category (Beaufoy, 2000).

Economic, cultural, climatic and landscape variables compete to determine what practices olive oil producers will choose. In the mountainous regions of the European Mediterranean, steep terrain limits the amount of mechanization possible within the olive groves. These areas are also associated with human populations that are more resistant to change in practices, and therefore older traditional practices tend to be most prevalent in these regions. Such resistance simultaneously offers the attribute of cultural preservation and hinders a community in its ability to adapt and compete. Traditional attitudes, inflexibility in production and weak infrastructures may prevent agricultural adjustments (MacDonald et al., 2000). According to Campagne et al. (1990) farming communities in remote mountainous regions may be less adaptable to the modernization of agriculture due to age, constraints on skills, and ingrained tradition. MacDonald (2000) also attributes the resistance of certain agriculturalists to adjust their practices to an aversion to risk-taking.8

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8 These authors acknowledge cultural limitations on adapting to more modernized practices that will make small agricultural communities more competitive. Though they do acknowledge that
2b Policy considerations

The EU policy that has had the greatest impact in the olive oil sector since the 1960s has been the Common Agricultural Policy or CAP (Beaufoy, 2000). Payment support schemes were the founding fabric of the CAP to aid Mediterranean EU Member States in being competitive olive oil producers. Similar to the agricultural policies of the EU, Greek policies since the mid 20th century have concentrated on price support schemes that encourage high productivity and facilitate agricultural exports. Price support schemes achieved the productivity and marketing goals of the EU and Greece, but were cause of new problems relating to the degradation of the environment and the marginalization of traditional agricultural communities in Greece and the EU at large. In recent years, both EU and Greek policies have been reformed to focus on preservation of natural ecosystems and the restoration of lagging rural communities. Though current subsidies continue to aim at making EU and Greek agriculture competitive, reformed policies are now including environmental preservation and the revitalization of marginalized rural communities as integrated priorities.

This section of the research analyzes the EU policy framework since the mid 20th century under two policy regimes, what have been called the ‘two pillars’ of agricultural policy within the EU (EU, 2005). The first pillar is characterized by price support schemes emphasizing productivity and market competition. This policy regime was meant to equip EU agriculturalists to be able to deliver products that could compete against cheaper imports and help make the EU a net-exporter of agricultural products. The ‘second pillar’ emphasizes rural development, combining agriculture and rural development goals under a new EU
subsidy scheme. Greek policies that target agriculture and rural development have mirrored these two EU policy regimes.

2b.1 The history of the CAP

*Regional Development in the 1960s* The first production and export subsidies in European olive oil came at a time when Italy was the sole significant producer within what was then called the European Economic Community (EEC). In order to support agriculturalists of various designations, the EEC created the Common Agricultural Policy (CAP) in 1962. Since then, the CAP has been Europe’s most important system of agricultural subsidies.

Prior to receiving subsidies from the CAP, EU-produced olive oil was non-competitive even on the domestic market, as cheaper olive oils were imported from non-EU Mediterranean producers such as Morocco, Syria, Tunisia, and Lebanon. Because of a more ideal climate for the cultivation of olive trees, coupled with lower cultivation and production costs due to their developing economies, these non-EU countries could produce olive oil at a much lower cost than the developed countries of the Mediterranean European Community. Consequently, they could sell their olive oil at lower prices than their European counterparts. For the EU to compete with these lower priced imports, government subsidies were considered essential to pay the difference between the high costs of European olive oil production and the lower market value of olive oil which had been determined, in part, by the cheaper imports.

To protect domestic producers from market disturbances resulting from cheaper imports, the EC incited Regulation No 136/66/EEC September 22, 1966, which included olive oil subsidies in the CAP. Article 3(3) of the Regulation

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9 Italy was the only EC State that was a significant producer of olive oil (with France producing very little) until 1981 when Greece joined the Community, and shortly after in 1986 when Portugal and Spain joined.

10 Regulation No 136/66/EEC established ‘a common organization of the market in oils and fats’. The Council declared olive oil “of special economic importance” and “the most important source of oil and fats for large categories of consumers” (EC, 2005). As such, olive oil was an important
established that where prices within the Community were higher than world market prices, the difference would be covered by a refund so that olive oil could be exported to third countries without compromising the price that the farmers received. The difference between the cost of production and the price consumers were willing to pay represented the subsidy granted to the producers. The goal of the regulation was to ensure producers a fair income, while supplying consumers with affordable domestic olive oil.

If successful, the production subsidies would allow for a long-term production of olive oil. Because production subsidies encourage mass production and result in a surplus stock, the next step would be to facilitate exportation. Subsidy moneys from Regulation No 136/66/EEC would make up the difference between the real price of the European olive oil and the cheaper price of foreign markets, allowing producers to make a comparable profit per liter as they made domestically, while selling at more competitive prices in foreign markets11.

The reforms of 1984 CAP subsidies to olive oil increased from previous years, however, not due to an increase in the number of hectares12 in production. In 1981, olive oil subsidies in Italy tripled, in large part due to fraud. Significant numbers of farmers were claiming parking lots and forests as olive groves in order to receive extra funding. The European Community recognized the need to control the possibility of fraudulent claims. Consequently, in 1984, amendments

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11 The 1981 accession of Greece into the EEC was significant for the olive oil sector. With the addition of this major olive oil producer, the Community was on its way to becoming a key player in the world trade of olive oil. In 1986, Spain and Portugal, the first and fourth world producers of olive oil respectively, joined the EEC as well. By that time, the three top producers – Spain, Italy and Greece – were thriving and the European market was dominated by their oils. The Council continued to dole out subsidies to olive oil farmers from the CAP in order to maintain the dominance at home and further expand their place in the world market. Through the continuation of export refunds, the EEC completely transformed itself from being a net importer to a net exporter of olive oil.

12 Hectares are the European measurement for land. One hectare (10,000 m²) is equivalent to 2.417 acres or 107,639.1 feet².
were made to the 1966 regulation. Rather than being awarded according to the size of plot, the subsidies were now to be distributed in relation to the quantity of olive oil actually produced. This required that producers keep their yields in oil in a record that was subject to auditing. Beyond making it more difficult for producers to claim more subsidies than fit their qualifications, the reforms would prove to cause a major change in olive farming practices. Encouraging farmers to get as much yield as possible from their land, the new production-based subsidies prompted higher chemical input and mechanization.

The reforms of 1998 Because the amount of monetary aid was determined by the quantity of oil produced, fraudulent claims were no longer made on the number of trees farmers cultivated, but had transformed to false reports of the amount of oil produced. Such fraud was possible and profitable because individual olive groves producing less than 500 kilograms of oil per year could receive aid for all of the oil they pressed, even if the majority of it was for personal consumption rather than for market. These stresses on the CAP subsidies gave birth to the 1998 reform. This reform included amendments that would increase the maximum guaranteed quantity (MGQ) of olive oil eligible for production aid by 31.6%, or from 1.35 to 1.78 million tons. They simultaneously reduced production aid awards from €142.2/ton to €132.5/ton. While the aforementioned amendment liberalized the amount of production, the latter made it less profitable for smaller farms to make false claims on the amounts of oil they put on the market. More quantities of olive oil were eligible for subsidies, while the aid offered per kilogram was less. These reforms encouraged farmers to produce more.

Accordingly, the reforms adopted by the EU in 1998 further encouraged unsustainable farming practices. In order to obtain the highest potential yield in olive oil, farmers took up the practice of high-density planting in their groves. Because of the natural tendency of olive trees toward alternate bearing, olive farmers were especially pressed to have densely planted groves. The more trees per hectare, the more each one would have to compete for nutrients from the soil,
therefore causing a greater need for fertilizer, more often in the form of chemicals. Irrigation became vital in the semi-arid climate of the Mediterranean to promote abundant and fleshy olives, especially during years of low rainfall. Intensive irrigation practices in regions where water was already scarce further aggravated water scarcity, and created a greater divide between regions that had sources from which to irrigate and those which did not. To further guarantee the maximum yield from each tree, farmers needed to ensure that their crop was not consumed by insects. Chemical pesticides, often issued by the government, became the norm and led to now-known effects of chemical runoff into nearby water sources. Today, the EU Council recognizes the environmental problems associated with agriculture (including olives) that were escalating in the 1980s and 90s. As regards water quality, nitrogen surplus was especially a problem in the 1980s, only slightly declining in the 1990s within the Member States (EU Council, 2006). Problems of ammonia emissions, eutrophication, soil degradation and decline in biodiversity were also occurring in many areas (EU Council, 2006).

Though the CAP subsidies were successful in making the olive oil sector flourish as an economic activity, negative environmental and social effects outweighed the economic benefits. This was evident in local environmental degradation and the further impoverishment of the non-EU olive producing countries - which at that point were still not being addressed under EU policy - but also with respect to the quality of the oil. Concerned with the marketability of its olive oils, the European Commission published a communication in 2000 called, ‘quality strategy for olive oil’, in which it set out a plan for enhancing the quality of European olive oil (EC, 2002). A reform in 2001 made a move to transfer funds from subsidies to the farmers to grants for quality development measures (EC, 2002). The amendment stated that Member States should finance quality enhancement programs by withdrawing a certain percentage of their production aid (European Commission Press Release, 2003). In the meantime, inequitable trade in the global olive oil sector triggered concern from the populace and governments with whom the EU was trading. Whereas subsidy programs were created to develop
the olive oil industry in a community whose markets were threatened by outside oil producers, they had now caused the EU olive oil sector to grow to such a disproportionate scale that non-EU Mediterranean producers could not compete in the olive oil market (Fitzgerald and Gardiner, 2003). Production subsidies allowed EU farmers to produce on a mass scale not attainable by farmers in developing countries. Because the latter were too poor to subsidize their production, countries like Morocco, Syria, Tunisia and Lebanon no longer had a chance at selling their olive oil in markets where EU oil was present.13

Agenda 2000  In 1999, the EU was preparing to add 13 new Member States into the Union. With this addition, the problems associated with rural depopulation and lagging areas would become more pertinent to the overall competitiveness of EU agriculture. With Agenda 2000, the Commission recognized:

“agricultural support is distributed somewhat unequally between regions and producers, resulting in poor countryside planning, a decline in agriculture in some regions and overly intensive farming practices in others, generating pollution, animal diseases and poorer food safety”

(EC, 1999)

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13 The lowest-cost producers of oil are on the southern and western shores: Morocco, Tunisia, Lebanon, Syria, and Turkey. But 95 percent of the olive oil sold in world supermarkets comes from Spain, Italy, and Greece. This is because the European Union, through its 'Common Agricultural Policy,' neutralizes the comparative advantage of its Muslim-world neighbors by paying European olive oil growers $2.3 billion each year. This is the equivalent of one dollar for every quart of oil Europe produces; over a third of the world's $5.7 billion in olive oil production value; and two dollars for every dollar of olive oil trade outside the EU (PPI, 2003). In recent years, Morocco, Syria, Tunisia and Lebanon have not been able to compete in the olive oil sector due to surpluses in EU subsidized olive oil. For instance, Morocco, had 260 modern olive oil factories, which could produce 290,000 tons of oil a year for export alone, and yet its biggest year for export was 35,000 tons in 1997. By contrast, growers in the Andalusia region of Spain are able to export half a million tons of oil every year (PPI, 2003). The difference was that Spanish producers received export subsidies, while Moroccan producers had no capital to invest in the exportation of their oil. An indication of the exclusion of developing countries in the world market is to be found in supermarkets of the United States. Since 1996, U.S. imports of olive oil have doubled, and yet there are just as few olive oils from the Arab-world represented on the U.S. supermarket shelves today as before (PPI, 2003).
The Commission was responding to problems associated with the price support mechanism that had been the trend within CAP measures. Despite being successful in attaining most of CAP's initial objectives, price support schemes encouraged the high intensification of agricultural production. Agenda 2000 represented a reform that introduced environmental measures to the CAP. The overall objective of Agenda 2000 was to contribute to the regeneration of rural areas, thereby preserving the environmental and human resources affected by agriculture. Within the reform, the Commission promised: “The European agricultural policy will in the future focus more on the environment, food quality and the vitality of rural life” (EC, 1999). Agenda 2000 emphasized the importance of lagging agricultural communities and introduced special aid schemes for what had been called less favored areas within the EU\textsuperscript{14}. Among the regions considered as less favored are mountainous areas subject to limitations of land use and a significant increase in production costs due to challenging terrain and remote location. The EU also gives consideration to areas threatened with abandonment. Less favored areas are the target of special EU funding for the preservation of agriculture where it will improve the environment and landscape and encourage tourism. The spending from the EU budget for Agenda 2000 was settled until the year 2006\textsuperscript{15} (EC, 1999). Most significant about Agenda 2000 was its recognition of rural development as a priority to strengthening EU agriculture. Future CAP reforms would follow suite.

\textit{The 2003 reforms} Responding to pressures from other countries to amend the

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{14} The European Union states in Agenda 2000 that “Certain rural areas are designated as less favored areas (LFAs) because the conditions for farming are more difficult, due to natural handicaps which increase production costs and reduce agricultural yields. These conditions may threaten the long-term survival of farming, continued land management and the viability of rural communities in these areas. Farmers in LFAs are eligible for compensatory payments. Under Agenda 2000 these payments were adapted to reflect better the role which farmers play as managers of the natural landscape in such areas: payments are now calculated per hectare and not per head of livestock as before, so breaking the link with production, and are conditional on the farmer respecting good farming practice.”
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\item \textsuperscript{15} The spending plan for years 2007-2013 fall under Regulation (EC) No 1698/2005 to be discussed below.
\end{itemize}
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disparities it had created on the world olive oil market and further addressing
some of the environmental problems manifest in large-scale production, the EU
Commission met in Luxembourg in June of 2003 to reform the CAP once again.
It was stated in the official report that, “These reforms will lead to enhanced
competitiveness, stronger market-orientation, improved environmental respect,
less trade distortions and stabilized incomes for farmers” (EC, 2004).

To address the problems of intensive farming, the CAP Reform readopted its
original form of subsidy awards. Where once it was in the interest of
development to encourage mass production, it had now become of dire need to
discourage intensive farming and the consequent flooding of markets. This
separation of subsidies from the amount of production was termed “decoupling”
by the Commission. Once again, awards would be granted based on the land
measurement and number of trees, and would be awarded under a Single Payment
Scheme (SPS). The new system of decoupled payments was scheduled to take
effect in the 2005/06 marketing year.16

Though the amendments aimed at encouraging sustainable agriculture, payments
continued to be based on the size of the olive groves, therefore subsidizing
production rather than producers (Jeffery, 2003). Payments based on the size of
land holdings still encouraged large-scale farming practices rather than
sustainable agriculture. A relatively small group of large-scale European farmers
were the primary recipients of funding, receiving on average 35% of their income
from CAP subsidies (Fitzgerald and Gardiner, 2003).17

16 It was assumed under the reform that a reduction in production-linked subsidies would help
prevent dumping olive oil in the markets of the developing world. Sensitive to the political
pressure to be fair players in world trade, the EU farm policy promised to be less trade distorting.

17 European Union taxpayers paid €43 billion in 2005 (2.3 billion for the olive oil sector alone),
while just 20 percent of Europe’s farms received roughly 80 percent of CAP funds (Oxfam
Council Regulation (EC) No 1698/2005 which builds on programs that support rural development was incited on September 20th, 2005 to be implemented January 1st, 2007 and effective through 2013. The Regulation responds to the problems caused and the criticism evoked by the price support schemes of the first pillar of the CAP. For the purpose of guaranteeing that funds are used for the redevelopment of the countryside, the regulation creates a financial aid program framework for rural development policy that is unique to other projects of the CAP. This fund is called the European Agricultural Fund for Rural Development (EAFRD). The EAFRD fund, under principles of the second pillar of the CAP, will contribute to achieving three objectives of rural development. They include, improving the competitiveness of agriculture by means of support for restructuring; improving the environment and the countryside by means of support for land management; and improving the quality of life in rural areas and encouraging diversification of economic activity (EU, 2006). As the CAP has always done, this Regulation aims to build “the competitiveness of agriculture” through subsidies. The difference is that the EU now acknowledges that in order to create a competitive agriculture that is sustainable in a broader sense, policies must support environmentally and socially sustainable practices. The Policies now focus on building the small, traditional agricultural communities, recognizing that their survival is necessary for the overall preservation of the countryside. According to EU summary of legislation (2005):

“Regarding land management, the support is to contribute to sustainable development by encouraging farmers … to employ methods of land use compatible with the need to preserve the natural environment and landscape and protect and improve natural resources. The main aspects to take into account include biodiversity … water and soil protection and climate change mitigation. Against this backdrop, the Regulation provides, in particular, for support for mountain regions with natural handicaps and other disadvantaged areas” (EU 2005).
2b.3 Rural development policy in Greece

Shortly after World War II, the development strategy in Greece was based on industrialization, originating in private initiatives, and any design of rural development policy had to support this development model (Hassapoyannes et al., 1999). The Greek government used a price support scheme for agriculture in its rural development policy. The aim was to make Greek agriculture economically competitive by increasing its production. Hassapoyannes et al. (1999) identify the following points of emphasis within the agricultural policies of Greece during these several decades: An increase in agricultural incomes through improvements in productivity, price stabilization, and an increase in agricultural exports and self-sufficiency in basic primary products.

The goals were to be attained by means of a prices and incomes policy. Hassapoyannes et al. (1999) point out that the emphasis on prices and incomes policy temporarily assisted agriculturalists, but the overall structure of Greek agriculture was not addressed. While agriculture on the plains and coastal areas of Greece were supported under CAP subsidies (their landscape being conducive to mass production), the more remote agricultural areas did not receive EU subsidies. Though policies succeeded at modernizing the agricultural sector (through enhancing large-scale operations) and at improving agricultural incomes, structural problems such as small average size of agricultural holdings, low productivity (Hassapoyanes et al., 1999), isolation (Euromontana, 2000), and ageing population (Campagne et al., 1990; MacDonald et al., 2000; Hassapoyanes et al., 1999) made it so agriculture in rural Greece was not equipped to develop. The results were twofold: agriculture was moved to plains where mechanized practices with high chemical input were successful at producing higher yields (Syarrakos, 2005), and fewer people remained in the traditional agricultural communities (Hassapoyanes et al., 1999). The massive exodus of labor from agriculture during the 1960s and 1970s aggravated the structural problems and added new problems associated with rural abandonment (Hassapoyanes et al., 1999). Emigration reduced the agriculture population by more than half, from 45% to about 17% in 1991 (Syrrakos, 2005). The effects on the rural landscape
were apparent, with the total cultivable land area decreasing by 10.5% in the period between 1987-1993 (EUROSTAT, 1997).

Hassapoyannes et al. (1999) argue that the structural problems of Greek agriculture weakened the sector to the point that Greece was unable to compete against international food products. Policies supported the income of farmers but there was an absence of policies to promote investment in restructuring the sector in a manner that would prepare it to compete without depending on subsidies. The policies implemented by the Greek government did not change for agriculture with the accession of Greece to the European Economic Community (EEC) in 1981, as they were in conformance with the framework of the Common Agricultural Policy (CAP). Acting as the umbrella policies for all European Community States, the policies of the EEC overlooked the fact that Greek agriculture was not suitably developed to be able to compete. Like the Greek national policies, those of the EEC concentrated on price supports, perpetuating the structural problems of Greek agriculture (Hassapoyannes et al., 1999).

Because Greece never adopted an integrated rural development policy of its own and none was supplied by the greater Community, it depended on regional development policies to achieve partial goals (Skuras, 1996 quoted by Hassapoyannes et al., 1999).

The approach towards rural development was sectoral, not integrated, based on special programs that were implemented separately by different planning agencies (Hassapoyannes et al., 2006).

Today, Greek rural development and agricultural policies are taking a slightly different direction. A priority of the Greek government is to redistribute its national population back to the abandoned countryside by restoring the remote agricultural communities, and investing more in structural building. The Greek Ministry of Rural Development and Food identified at the new millennium several policy objectives to promote the development of agriculture, the
competitiveness of Greek products and the restructuring of the countryside. The
plan for the restructuring of the countryside concentrates on an integrated
economic and social intervention in agriculture. This intervention seeks to make
Greek agriculture "attractive, modern and viable" (Ministry of Agriculture, 2000).
Greek Prime Minister Kostas Karamanlis announced that it would be a national
priority to establish "a new economic policy that will ensure development in all
aspects, prosperity and more jobs for all people" and "a new agricultural policy
that will give to the Greek people the ability to become more competitive in
Europe and worldwide" (Ministry of Rural Development and Food, 2004). This
reflects the growing national goal for the modernization of rural Greece. Fueled
by the opportunities offered by the global economy, the nation hopes to bring jobs
and life back into the countryside.

Both Greek national and EU policies have been reformed in response to criticism
and problems concerned with a development process focused solely on the price
support schemes. The latest governmental tendency reflects a theory of
development that dates back to theorist Karavidas (1937). Critical of the
modernization approach of his time, he espoused a development that was founded
on the specific features and endogenous dynamics of the Greek rural area
(Hassapoyannes et al., 1999). His theory of development combined technological
progress and capitalist specialization with economic and cultural autonomy. With
respect to the agricultural sector, Karavidas argued “that the empowerment of
communities and of local co-operatives can better serve capitalist development”
(Hassapoyannes et al., 1999).

Karavidas’ perspective merges social and capitalist principles, using social
structures to support capitalist pursuits. The objectives of the Greek
government’s rural development and agriculture policy remain primarily focused
on technological and economic improvement. However, their policies are
embedded in an understanding that the empowerment of communities and of local
coop-eratives can better serve capitalist development (Hassapoyannes et al.,
1999). The philosophic approach presented by Karavidas is apparent in the direction Greek national policy is going today.

In conclusion, agricultural and rural development policies in the European Union in general, and specifically in Greece can be categorized into two regimes: one which emphasizes making agriculturalists more competitive through increased production, and the other which emphasizes environmental quality and rural community development as a priority over the general marketability of a nation’s agricultural sector. The first policy regime of the CAP modernized agriculture, while the second regime attempts to equip the lagging rural communities to survive within that setting.  

Under the new regime, there should be renewed support for traditional agricultural communities to become economically autonomous while embellishing principles of sustainable agriculture. The idea is not to subsidize these communities in a fashion that they are dependent on subsidies to continue production. Rather, policies are now designed to financially support small producers whose practices will preserve the environment and rural communities in order to build their capacity to survive in the market.

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18 Both regimes, or pillars, are built around the objective of economic development, their differences lying in the way public subsidies are spent. The prior regime attempted to make EU agriculture competitive by rewarding subsidies based on the level of production of agricultural goods, while the second regime attempts to make agriculturalists competitive by investing in structural needs. In other words, policy has shifted from supporting production to supporting producers’ income directly and towards an objective of achieving sustainable agriculture.
Chapter III: Research approach and methods

The underlying theory that guides this research is the social science approach of phenomenology. Phenomenology, a qualitative approach to case study analysis, is concerned with subjective experience, placing emphasis on how people experience phenomena, rather than treating people as objects of circumstance (Schutz, 1970). While human behavior is in part determined by surroundings and circumstances, the relevance or meaning given to these outside factors depends on human interpretation. In this way, people form their reality, which explains how impressions and opinions are formed to outside forces (the market, governmental policy, etc.).

This research project was designed to include the various factors that influence the way a community farms, including the influences of climate, government policy, and the market. Such knowledge can be obtained through a literature review and policy analysis, as done in the previous chapter of this work. Phenomenology, however, acknowledges that human agents are the final determinants of their own interactions in their landscapes. A case study is thus appropriate to more accurately explain the tendencies of local olive oil producers in Kefalonia, as well as to better assess what olive oil production model would be acceptable, and therefore, most successful in the community of Farsa. For the most comprehensive understanding of the olive oil production on Kefalonia, a combination of approaches was necessary. This section briefly discusses the use of policy analysis and then explains in detail the methods used within the case study.

Policy Analysis  Because an olive oil production system in Farsa is dependent, in part, on governmental policy, a policy analysis is an important component to couple with the case study. The policy analysis was performed by accessing
documents from European Union websites and publications, synthesizing the information of particular regulations as they apply to the case study, and analyzing their influence in sustainable agriculture in rural communities. Several levels of government policy are considered because each level of policy operates simultaneously to influence local agricultural practices and community development. Under examination are United Nations, European Union, and Greek national policies guiding rural development and agriculture. Policy consideration is vital to the research due to the causal relationship that EU and Greek regulations have had with agricultural practices throughout the 20th and early 21st century.

Whereas in the first half of the 20th century, European agriculture was predominantly characterized by small-scale practices, post WWII policies encouraged high-input, large-scale farming practices. More recently, policies are attempting to bring agriculture back to a similar state of what it used to be – sustainable and supportive of rural communities. The regions that have suffered the consequences of rural abandonment are known in UN and EU policy as Less Favored Areas, or LFAs. This section of the research gives a historical account of the major EU and Greek policies in order to shed light on why agriculture has become industrialized, how particular rural communities have become less favored areas, and what is currently being done to restore the human and natural environments in such areas. A review of the current rural development and agricultural policies of the EU serves the purpose of offering insight into opportunities for government assistance in redeveloping agricultural communities.

Case study The way in which a community develops depends in part on the global market and governmental policies that work under those global forces. However, perhaps more influential to the way a community develops are the cultural nuances and local attitudes that shape how a community reacts to such forces. Bebbington (2001, p. 414) states, “Rather than speaking of globalization generically, it is more important to consider the types and sequences of globalized
relationships in which people and places have been embroiled, for the mix and sequencing seem to matter greatly in determining the final patterns of change”.

Another value of a case study lies in the portability of its findings. The particular site of this case study was chosen, in part, because it lends itself to a greater understanding of rural development and sustainable agriculture within the broader Mediterranean region. More specifically, it is the ambition of this thesis for the findings to serve as a model to other marginalized agricultural communities in the Mediterranean region.

Through the case study, the following local variables are examined: 19: i) the typical characterization of the case study olive groves including, but not limited to, the topography, size of plots and number of trees, cultivars of olive trees and the yield from each; ii) the current maintenance practices including tilling, pest control, fertilization and irrigation; iii) the cultural significance of olive oil in Kefalonia today and in historic Farsa; and iv) the economy of Kefalonian olive oil production including costs and benefits of producing oil, government support, and the resource potential of the agricultural region of old Farsa and v) other Kefalonian agricultural production models.

Methodological tools were selected based on the research questions.

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19 Variables are things that we measure, control, or manipulate in research. They differ in many respects, most notably in the role they are given in our research and in the type of measures that can be applied to them. The terms dependent and independent variable apply mostly to experimental research where some variables are manipulated, and in this sense they are "independent" from the initial reaction patterns, features, and intentions of the subjects. Some other variables are expected to be "dependent" on the manipulation or experimental conditions. That is to say, they depend on "what the subject will do" in response. Independent variables are those that are manipulated whereas dependent variables are only measured or registered. Somewhat contrary to the nature of this distinction, these terms are also used in studies where we do not literally manipulate independent variables, but only assign subjects to "experimental groups" based on some preexisting properties of the subjects. For example, if in an experiment, males are compared with females regarding their white cell count (WCC), Gender could be called the independent variable and WCC the dependent variable.
A table was designed in order to identify the appropriate source of information for the nature of each question. Table 3.1 displays the category of inquiry shown in columns and the best suited source from which to get the information shown in rows. The research tools created to extract the desired information from the appropriate source are identified in the cells corresponding to the column of the question and the row of the source. In the table, the ‘General characteristics of Kefalonian olive groves’ is a larger heading for several sub-groups of inquiry. The first grouping, ‘plot and tree characteristics’, includes questions about the type of terrain olive trees grow on in Kefalonia, the average size of parcels, the number of trees on each parcel, the different cultivars of trees found on the island, the yield in olives and oil, and the preferred areas on the island for olive tree cultivation. The next sub-group of questions centered on tree abandonment issues, seeking to find out the causes and consequences of abandoned olive trees. The next sub-group of questions focused on general practices within olive groves. This included questions on tilling, fertilizing, irrigation and pesticide practices. The next larger heading is ‘Cultural importance of olive oil in Kefalonia’. The first grouping under this heading was the uses of olive oil today in Kefalonia, and the other is the historic importance of olive oil in old Farsa. Finally, the third larger category of inquiry was ‘Economics of olive oil in Kefalonia’. Within it, questions on producer needs focused on the business relationship between mills and producers, and costs and/or savings of making oil. The next group of questions sought to understand the market potentials for Kefalonian-produced olive oil. To answer the questions of the market potential, it would be necessary to get answers about the local market potential for Kefalonian olive oil: the amount of local oil being sold on the local market today, and the possibility of building upon the local olive oil market. Questions about overseas markets were also necessary: where, how, and at what price Kefalonians sell their oil, and the major obstacles in exporting. The next grouping of questions were meant to inform the research of agricultural business models that could be used to support a sustainable olive oil production in old Farsa once it is rebuilt. The questions sought solutions to problems in absentee ownership, financing an olive oil mill,
organizing agricultural operations. Also pertinent to discovering an agricultural model suitable to the community of Farsa were questions testing the willingness of land owners to reclaim olive oil production on their land. The next group of questions necessary to inform the research fell under the sub-group of governmental influence, giving insight into the role of EU policies in olive oil production in Kefalonia, as well as the presence of local government in olive oil production and how the producers react to that presence. Finally, the last category of inquiry was the resource potential of the existing trees in the agricultural boundaries of Farsa. The decisions regarding the selection of research tools is illustrated in Table 3.1. Nine different research tools are depicted in the matrix, consisting of four types: survey questionnaires, semi-structured in-depth interviews, participant observation, and spatial analysis. Each survey and interview was designed to survey insights from a broad range of human subjects to inform the research inquiry. Below is a discussion of the nature of the methods employed and a detailed description of each.
The methods appropriate for extracting the information needed to answer the research questions were predominantly qualitative, with the exception of spatial analysis used to assess the resource potential of olive trees present in old Farsa. Qualitative methods include a set of techniques that are used to explore subjective meanings, values and emotions (Clifford and Vallentine, 2003). The qualitative methods included surveys, semi-structured in-depth interviews and participant observation.

The use of surveys is a research method used for gathering information about the characteristics, behaviors and/or attitudes of a population by administering a
standardized set of questions to a sample of individuals (McLafferty, 2003). While survey questionnaires are valuable in their ability to extract general information from a group of people, thus lending to a basic understanding of habits, needs, and attitudes, interviews are instrumental in collecting more in-depth data by virtue of allowing for extensive responses. The interviews were designed to pose many more questions than the surveys, their purpose being to delve deeper into the issues that concern people who produce olive oil, and to highlight the feelings of the producers toward various aspects of olive farming and olive oil production. In addition to exposing the practices used by the farmers, interviews allow for stories from the interviewees that further portray the cultural variables within the subject under study.

An interview is a verbal interchange where one person, the interviewer, attempts to elicit information from another person, the interviewee, by asking questions (Longhurst, 2003). In-depth interviews, also known as intensive interviews, use individuals as the point of departure for the research process, placing primary value on the respondents and assuming that individuals have unique and important knowledge (Hesse-Biber, 2006). Within the interviews, patterns emerge from the “thick descriptions” as coined by Hesse-Biber (2006, p. 123) from the people of Kefalonia about their relationship to olive oil. Interviewing “offers researches access to people’s ideas, thoughts, and memories in their own words rather than in the words of the researcher” (Hesse-Biber, 2006, p.123). In-depth interviews may be semi-structured or relatively unstructured. The interviews used for the sake of this research can be characterized as semi-structured interviews. In a semi-structured interview, the interviewer prepares a list of predetermined questions, and delivers them in a conversational manner offering participants the chance to explore issues they feel are important (Longhurst, 2003).

The questionnaires and semi-structured in-depth interview templates can be found in Appendices A and B respectively. A Human Research Exemption Form was
completed and administered for the sake of conducting survey research with human subjects. The Human Research Form can be found in Appendix C. Each survey and interview was prefaced either verbally or in writing by an explanation of the purpose of the inquiry. Participants were made aware of the Farsa planning project in which AWISH hellas and the municipality of Argostoli are currently engaged, as well as the research work undertaken by the author. They were reminded that their participation was voluntary and that they had the right to abstain response on any of the questions.

3.1 Surveys/questionnaires
The ‘inquiry and source of information’ matrix helped determine the need for three different survey questionnaires. Each one targeted the population that could be anticipated to best answer the different groups of questions. The survey questionnaires designed to answer the research questions were: Survey 1 for olive oil producers, Survey 2 for olive oil vendors and restaurateurs, and Survey 3 for land owners. Each questionnaire was written originally in English then translated into Greek20. The administration of each different survey varied, as will be specified below.

Survey 1 for olive oil producers
This survey was designed to illuminate the author’s understanding on the factual information concerning olive oil production in Kefalonia. The survey consisted of questions to characterize the general state of olive oil production in Kefalonia. The main focus was on the size of plots typical to Kefalonia olive groves, the quantity of olive oil each farmer produces, the reasons why each one farms olives and produces olive oil, the obstacles faced, and the relationship each producer has with the olive press21 management. This particular questionnaire was designed to discuss business decisions made by olive oil producers, for instance, regarding the

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20 The surveys and interviews were all translated by Katerina Perraki, program coordinator of AWISH hellas.
21 The terms ‘olive press facilities, ‘olive press’ and ‘olive mill’ are used interchangeably in this thesis.
producer’s preference of olive press and whether oil was sold or consumed at home. Supplied after most questions were multiple choice responses to help the interviewees better understand the scope of each question and to facilitate organization of the results. There were fourteen surveys administered. Five of the surveys were administered primarily in the olive groves among those who volunteered to participate. These five volunteers spoke English and so the survey was delivered in its original form. The other nine were administered at five different olive press facilities. In this case, they were administered by two Greek assistants at the olive presses. Before the author and survey facilitators arrived at the olive mills, a phone call was made to the manager of each facility to request permission to administer the surveys. Upon arrival, the two Greek assistants would introduce themselves to the producers on premises, explain the purpose of the surveys, and ask permission to question them. There are 5 olive mills on the main island and 5 on the Paliki Peninsula. Of these, three were visited on the main island and three on the peninsula. The locations of the mills visited on the main island were the villages of Troianata, Dilinata, and Faraklata, shown in Figure 3.1. The manager at Faraklata refused to allow surveying, so responses were gleaned from only two of these three mills. The three mills visited on the peninsula were “Ekologiko” which is near Lixouri and named for its ecological practices22, a mill at Saint Thiliki and one in Stakanthata. Not all of the island’s mills were visited due to resource limitation, the challenge to find transportation to the mills, and the availability of translators and survey facilitators.23

22 The “Ekologiko” olive press facilities use less water in the pressing process than the typical olive mill. Further, the water is not raised to higher than 25°C during the extraction of the oil from the olive. The manager of this mill, Kostas Magdalinos, argues that his oil is of superior quality due to the lower temperatures, while other mills are able to extract higher volumes of oil form the olives due to higher temperatures, but the quality is reportedly compromised.

23 There were two survey facilitators, both bilingual. One was chosen because of her affiliation with AWISH hellas: Katerina Perraki, Program Coordinator. The other facilitator was Thodoros Chianis, the Assistant to the Director of the organic farmers union in Argostoli. He was chosen because of his in-depth knowledge of the olive oil system as well as his connections with the olive oil producers. The peripheries of the research were explained to them before administering the surveys. The purpose of the two assistants was to help increase the number of responses. Two factors made it less likely that surveys would be completed if each person was left to do it alone: 1) the population primarily represented at the olive presses was aging and not everyone was literate, and 2) without human interaction, the target population would be less likely to fill out a written survey.
Figure 3.1: Locations of olive mills visited in Kefalonia
The survey team went to visit each press facilities either in the morning or in the late afternoon in order to find the greatest number of people there, avoiding the siesta period. Of the fourteen people surveyed, all were male and over the age of fifty. Though the respondents were not selected for any biased reason, this demographic characterizes the general population present at the mills. There were some women present, but they were overwhelmingly outnumbered by men.

Figure 3.2: Translator and survey facilitator Thodoros Chianis administering surveys at olive mill
Photo by A. Lunde, 2006

Survey 2 for olive oil vendors and restaurateurs
Targeted at grocers, small produce stands, and restaurants, this survey questionnaire aimed at measuring the local market opportunities for olive oil producers. Questions were designed to reveal the current purchasing practices of vendors. From the responses, the author sought to infer whether there is opportunity in the local market for further growth of the olive oil industry around Farsa. The questionnaire consisted of twelve questions that were directed at identifying the source of the olive oil sold by vendors or used by restaurateurs,
and focused on the reasons that influenced the choice in olive oil purchased, gauging demand for olive oil by each vendor/restaurateur, and to revealing some of the obstacles that prevent Kefalonian olive oil to have a larger presence on the local market.24

Survey 3 for land owners  This final survey was designed to evaluate the desires of current landowners to revitalize their olive groves in the surrounding agricultural land of old Farsa village. Because a major portion of the current land owners now reside in Athens, president of the Farsan Community of Athens assisted in distributing the questionnaires amongst Farsa village members at a community meeting in Athens. For the land owners who remain on the island, predominantly in new Farsa village, the surveys were distributed by the community’s board member, Mr. Vassilis Voutsinas, at a town meeting. The purpose of the survey for land owners was to asses the property owners’ intended future use of their land in old Farsa for the production of olive oil, and their desires and needs regarding olive oil production.

3.2 Semi-structured in-depth interviews

Semi-structured interviews targeted four groups of informants25. The four targets were: 1) olive oil producers, 2) olive mill managers, 3) The olive mill owners

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24 The surveys were presented to each vendor or restaurateur, who was asked to fill out the questionnaire on site and return it. By virtue of having few questions, and requiring short responses, these surveys were compatible to being completed by the sample population rather than needing facilitation from an assistant. The grocery markets, produce stands, and restaurants were chosen from the cluster of businesses centrally located in Argostoli, the capital of Kefalonia. Argostoli hosts 13,000 of the island’s total population of 45,000, or 29% of the total island population. As the biggest town on the island, followed closely only by Lixouri at 9,000 people, Argostoli is the major business center for the island, and thus an appropriate concentration for the vendor surveys.

25 Five of the interviews had to be facilitated and translated by a Greek translator. In these cases, the original questions were delivered in English and the volunteer translator asked the farmer in Greek and then translated the responses immediately back into English. The translators were the same three individuals who were selected to facilitate the survey questionnaires. In the other eight cases, the farmers spoke English and the interview could be administered in its original form. The interviews were recorded with audio- and video-tape, and later transcribed into documents.
from old Farsa village, 4) the assistant director of Bio EU, a union for organic farmers in Kefalonia, and 5) the director of the Robola wine cooperative in Kefalonia.

**Interview 1 for olive oil producers** The first interview targeted olive oil producers in order to expand on the information collected by Survey 1. Those interviewed were chosen based primarily on availability and willingness. Connection was made with several of the interviewees via the AWISH hellas staff who made phone calls to olive presses on the island and asked for permission to come and speak to people who were bringing their olives in to be pressed. Acquaintance was made at the press, and often followed by an invitation to come to visit the olive groves of a few farmers who were enthusiastic about participating in the interviews.

**Interview 2 for olive mill managers** The second interview was designed for the managers of the olive oil mills on the island to develop a picture of the system that exists between the olive oil mill and the producers, as well as assess how an olive press in the redeveloped Farsa could function. This interview was administered to three of the olive oil presses: Saint Thekli and Ekologiko on the Paliki Peninsula and Dilionata on the main part of the island.

**Interview 3 with olive mill owners from old Farsa village** This interview was designed specifically for a local Farsan couple, Mr. and Mrs. Voutsinas, whose family ran the main olive oil press in old Farsa prior to 1953. The questions

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26 The married couple from the old Farsa village were Mr. and Mrs. Voutsinas. They were chosen for the interview because they operated the major olive oil mill of old Farsa village prior to 1953.

27 The semi-structured survey designed for farmers was three pages long and lasted for an average duration of one hour. A total of thirteen of these in-depth semi-structured interviews were administered.

28 Of the twelve interviews, three have olive trees within the agricultural boundary of old Farsa. The others all have olive trees in the greater Kefalonia region, either near the capital Argostoli, a little further north near the adjacent village of Dilionata, or on the Paliki peninsula near the town Lixouri. All but two of the people surveyed were over the age of fifty, for no biased reason; the majority of people involved in olive oil were of this age. Of the 12 interviews, only two were with women and the rest with men. All of those interviewed were long-term inhabitants of Kefalonia.
asked were similar to the questions asked in the interview for producers, but with the aim of understanding more fully the historical role of olive oil in old Farsa.

*Interview 4 with the assistant director of the union for organic agriculturalists*

An interview was conducted with Thodoros Chianis, Msc in organic agriculture, and the Director’s Assistant at the Bio EU, the office of the union for organic farmers in Argostoli. The questions were based on similar issues as addressed in the interview for producers, allowing Mr. Chianis to express his thoughts based on his experience with olive oil producers island-wide. Having worked with a portion of the olive oil farmers in attempt to assist them in the process of becoming certified organic, Mr. Chianis had expertise in issues regarding the island’s olive oil production.

*Interview 5 for the director of the Robola wine cooperative of Kefalonia*

The ambition of the author was to offer a model that the community of Farsa could follow for the creation of a sustainable olive oil production. Spiros Andanatos, the director of the Robola wine cooperative was instrumental in sharing a business plan that has been successful for several decades. Though the cooperative’s product is wine rather than olive oil, there are similar variables such as land constraints, financing, market reach, and cultural tendencies that make the Robola cooperative an appropriate model to follow for the future olive oil production of Farsa. The semi-structured in-depth interview designed for Mr. Andanatos included several questions on the general management of a cooperative, the business agreement between the management and the producers, the means by which the coop finances the running of the facilities, and how the cooperative handles absentee ownership of vineyards.

3.4 *Participant observation*

Participant observation is a method based on participating and observing. Field notes and video recordings are used as a method for data collection and extrapolation of data collection (Laurier, 2003). Two trips were made to
Kefalonia by the author. The first trip was in the fall of 2005, for a duration of three months. The second trip was made the following November, 2006, for two weeks of follow-up interviews and field research\(^{29}\). Many of the semi-structured interviews were conducted under olive trees, participating in the harvest and spending extended afternoons with some of the people interviewed. Notes and video recordings were used to document observed behavior. Participant observation was complimentary to the surveys and interviews, providing a deeper insight into the behavioral tendencies of Kefalonian olive oil producers, that may not have otherwise been divulged in surveys or interviews.

### 3.5 Spatial analysis

To answer the question of how many trees are still standing in old Farsa village and the potential yield they would give in olive oil, a quantitative method was selected. A spatial analysis was a more useful technique for estimating the number of trees in the area than would be a survey or interview. Quantitative methods imply statistics and mathematical modeling (Clifford and Valentine 2003). Adding a quantitative method with qualitative methods is valuable to allow for a well-rounded analysis of a complexity of problems (Hesse-Biber, 2006). While the qualitative methods applied in the research were useful at getting at the “lived experiences” of individuals, quantitative methods like spatial analysis are better suited at answering mathematical questions (Hesse-Biber, 2006, p. 120).

The tool used to conduct this spatial analysis was Geographical Information Systems or GIS. GIS are organized collections of data-processing methods which act on spatial data to enable patterns in that data to be understood and visualized (Batty, 2003). GIS is synonymous in some contexts with quantitative geography (Batty, 2003). A combination of field work using a tape measure and a GPS or

\(^{29}\) Because of the role that Huxley College plays in the university curriculum in Kefalonia undertaken as a community service learning project in the redevelopment of old Farsa village, I was introduced to the people of the community, including the president of new Farsa and many of the older inhabitants who once lived in the village above that now lies in ruins.
Global Positioning System unit and a GIS program (ArcMap) was used to estimate the number of trees remaining in the boundaries of Farsa. In ArcMap 9.2, a property map of old Farsa was georeferenced to an aerial photo issued by the municipality of Argostoli. To estimate the number of trees located in the agricultural lands of old Farsa, 19 plots measuring 10m by 10m were selected within the area designated as the ‘olive dense’ area based on the visual analysis of the aerial map. Olive trees were counted within each sample plot. A GPS unit was used in the field to spatially locate each of the 19 plots in order to control for error, where the trees counted might possibly stray out of the main ‘olive-dense’ region.
Chapter IV: Case study analysis

This chapter assesses the state of olive oil production in Kefalonia based primarily on the research methods of surveys, interviews, and participant observation. Results of a spatial analysis are also discussed in this chapter. The primary objectives are to examine: a) typical characteristics of olive groves including the topography, size of plots, cultivars of olive trees and the yield from each, b) current maintenance practices such as tilling, pest control, fertilization and irrigation, c) cultural role of olive oil in Kefalonia today and in historic Farsa, d) economics of Kefalonian olive oil including costs and benefits of producing oil, government support, and resource potential of the agricultural region of old Farsa. Meeting these inquiry objectives helps define a plan for developing an olive oil system that could function as an integral part in the sustainable development of the Farsa case study.

This chapter is organized in five sections. Section 4.1 discusses the general characteristics of the landscape and olive varieties. Section 4.2 examines the typical maintenance practices that are determined by the general characteristics discussed in section 4.1. This second section also factors in other variables beyond landscape and olive variety, such as government intervention, and cultural behavioral practices. Section 4.3 follows by delving further into the culture of olive oil within the lives of Kefalonians, reviewing the historical role that olive oil played in old Farsa prior to the earthquake of 1953 as well as the its importance today. Section 4.4 assesses the economic feasibility of olive oil production on the island, exploring the business relationship producers have with the olive mills, the expanse of the local olive oil market, and the savings of producing as opposed to purchasing olive oil. Finally, section 4.5 applies spatial analysis to estimate the number of olive trees within the agricultural area of old Farsa. Spatial analysis allows an estimate of the potential yield in olive oil harbored by the agricultural region of Farsa and beyond.
4.1 General characteristics of olive groves in Kefalonia

According to the 2000 census conducted by the Greek Ministry of Finance, there were 534,700.8 hectares of land with trees of various sorts in Kefalonia, divided among 4,735 plots. Of these, 518,780.2 hectares have olive trees (on 4,720 plots). These statistics are revealing of the olive-dominated landscape of Kefalonia. To get a more detailed image of the sizes of individual plots and the number of trees on each, Survey 1 asked each producer to specify the size or his or her land holding and the number of trees on it. Based on the surveys, land holdings were small.30 The plots ranged from 10 to 110 stremata,31 (the equivalent of 32,808-360,889ft²). See Table 4.1 below. These figures are high compared to the statistics kept by the Census Office of Kefalonian Agriculture. According to the last census, of 1991, the average land holding was 10.8 stremata island-wide. The difference found between the survey results and the census statistics could be attributed to the nature of sampling only 14 olive farmers on the western side of the island. In both cases, the size of agricultural plots in Kefalonia are small, due to the limited amount of land on an island that is 904 km² with a population of 42,088 inhabitants or a population density of 46.6 people per square kilometer. Olive tree density ranges from 2.5 to 13 olive trees per strema for the farmers surveyed, as shown in Table 4.1. Their average tree density per strema is 8.9. In the 1999-2000 census of Kefalonian agriculture, the density of olive trees per strema island-wide was 10.9.

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30 The range of olive trees in cultivation was 50-600, with a mean of 174.35 and a median of 110.
31 Stremata, the traditional Greek measurement for farm land One strema is equivalent to 1/10 of a hectar or 1,000 m².
<table>
<thead>
<tr>
<th>Number of olive trees</th>
<th>Plot size in stremata</th>
<th>Density (trees/strema)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>20</td>
<td>2.5</td>
</tr>
<tr>
<td>300</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>60-70</td>
<td>12</td>
<td>5.4</td>
</tr>
<tr>
<td>70</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>350</td>
<td>110</td>
<td>3.2</td>
</tr>
<tr>
<td>86</td>
<td>4</td>
<td>21.5</td>
</tr>
<tr>
<td>170-180</td>
<td>15</td>
<td>11.7</td>
</tr>
<tr>
<td>600</td>
<td>56</td>
<td>13</td>
</tr>
<tr>
<td>120</td>
<td>30</td>
<td>4</td>
</tr>
<tr>
<td>100</td>
<td>35</td>
<td>2.9</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>120-130</td>
<td>20</td>
<td>6.3</td>
</tr>
<tr>
<td><strong>Average density</strong></td>
<td></td>
<td><strong>8.5</strong></td>
</tr>
</tbody>
</table>

Table 4.1 Number of trees, size of plots, density of trees per strema (extracted from responses of Survey 1 for producers)

*Primary olive tree cultivars in Kefalonia* The four main varieties mentioned by respondents included: Koroni, Thiaki, Kalamata, and Korfuelias or what they call ‘Dopia’, meaning ‘local’.

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32 Korfuelias is the cultivar identified as what the local olive oil producers refer to as ‘Dopia’ which simply means local in the Greek language. The word Dopia will be used in this thesis to refer to this particular cultivar, whose true identity is not consistently agreed upon by the local producers. It is called Dopia probably because it is ubiquitous on the island, one of the more common varieties of olives used in the production of olive oil amongst Kefalonians.
The Koroni variety or in Greek ‘Κορωνέικη’, grow 5-7 meters tall, with olives having an average weight of 1.3 grams, the ratio of flesh to pit being 6.6:1, and the olives yielding up to 27% of their weight in oil under the right conditions. The Koroni variety is implemented for the production of high quality oil. It is a very productive variety and resistant to drought (Pontikis, 2000). According to Mr. Voutsinas, Koroni was imported to Kefalonia around the 1950s, coming from Ithaca and Crete. The olives are more abundant than Dopia olives but are smaller, rendering less oil from the olives. They reportedly produce a high quality of olive oil for Kefalonians and they take well to the early harvesting that some farmers must do as pest prevention measures.

Next, the Thiaki, or “Θιακη” in Greek, is common on Kefalonia. The trees grow from 5 to 8 meters high, the average olive weight is 1.6 grams, the relation of flesh to pit is 6 to 1, and the yield in oil per kilogram of olive is about 1:5 or 20%. The Thiaki variety is also cultivated for an olive oil of high quality and the plant is drought-resistant. (Pontikis, 2000). The Kalamata variety, or Καλαματα variety, coming from the Kalamata region of Greece, is also cultivated in Kefalonia. The trees grow from 7 to 10 meters tall, with the fruit weighing an average of 5.6 grams, the ratio of flesh to pit is 8.3:1, and the yield in oil from the olive is about 17%, yielding significantly less than the Koroni and Ithaki varieties. (Pontikis, 2000). Kalamatas are primarily grown for table olives and do best in regions with ample precipitation, but their olives are nonetheless commonly found in Kefalonian olive oil mills.

Finally, what the respondents called ‘Dopia’ is commonly used to make Kefalonian olive oil. Many farmers were unable to identify the official cultivar. Those who thought they knew the true name of the variety claim that it is ‘Korfuelias’, (Not all farmers are convinced, however, that this is the true variety that they call ‘Dopia’) The designation of the word ‘local’ is not a true indication that the variety is native to the island. It is more likely that this variety has been
dubbed ‘local’ because of its ubiquitous presence on the island. According to Vassilis Voutsinas, a prevalent member of the community of new Farsa and the son of the olive oil mill operators of the historic village, in old Farsa they called a different variety ‘Dopia’ or ‘local’, indicating the generic usage of the term. Because of the uncertainty of the botanical name of this variety, it is futile to list the text-book qualities of what the locals call the ‘local’ variety. According to Mr. Voutsinas, however, Dopia is rounder in shape than the other varieties and it produces more olive per tree than Koroni, but the quality of the oil is lesser quality than that of the Koroni. Most farmers grow more than one variety.

The range of yields in oil from olives reported by respondents ranged from as much as 1 kilogram of olive oil for every 5 kilograms of olives to as little as one kilogram of olive oil for every 10 kilograms of olives. Table 4.2 below shows the number of respondents (frequency) within each ratio of olive oil to olive flesh.

<table>
<thead>
<tr>
<th>Olive oil ratio (yield)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 5</td>
<td>4</td>
</tr>
<tr>
<td>1 to 5 or 6</td>
<td>1</td>
</tr>
<tr>
<td>1 to 6.5</td>
<td>1</td>
</tr>
<tr>
<td>1 to 7</td>
<td>2</td>
</tr>
<tr>
<td>1 to 7 or 8</td>
<td>1</td>
</tr>
<tr>
<td>1 to 10</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4.2 Frequencies of yield categories
(Extracted from results of Survey 1 for producers)

Based on the figures from Special Arborization: the Olive crop (Pontikis, 2000), it seems logical to infer that the varieties of the olives will determine the amount of
oil the fruit will yield, where Koroni would give the greatest yield in oil and Kalamata would give the least. However, based on the accounts given by the farmers, there is no indication that the quantity of oil produced from a given weight of olives is directly linked to the variety of olive. Table 4.3 reveals no indication that the variety of olive has a pattern effect on the yield of oil per kilograms of olives amongst the Kefalonian olive farmers within the study.

<table>
<thead>
<tr>
<th>Case</th>
<th>Oil to olive ratio (yield)</th>
<th>Olive varieties</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 to 5</td>
<td>Dopia</td>
</tr>
<tr>
<td>2</td>
<td>1 to 5</td>
<td>Koroni</td>
</tr>
<tr>
<td>3</td>
<td>1 to 5</td>
<td>Koroni</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ithaki</td>
</tr>
<tr>
<td>4</td>
<td>1 to 5</td>
<td>Dopia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Koroni</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kalamata</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ithaki</td>
</tr>
<tr>
<td>5</td>
<td>1 to 6.5</td>
<td>Koroni</td>
</tr>
<tr>
<td>6</td>
<td>1 to 7</td>
<td>Koroni</td>
</tr>
<tr>
<td>7</td>
<td>1 to 10</td>
<td>Dopia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Koroni</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Korfuelias</td>
</tr>
<tr>
<td>8</td>
<td>1 to 5 or 6</td>
<td>Koroni</td>
</tr>
<tr>
<td>9</td>
<td>1 to 7</td>
<td>Koroni</td>
</tr>
<tr>
<td>10</td>
<td>1 to 7.5</td>
<td>Koroni</td>
</tr>
<tr>
<td>11</td>
<td>1 to 8</td>
<td>Dopia</td>
</tr>
</tbody>
</table>

Table 4.3 Yield oil per parts of olive by varieties
(Extracted from results of Survey 1 for producers)
With data from the producers (cases) that cultivate several varieties of olives, it is difficult to discern what yield each variety would give by itself. For example, for the producer (case #4) with a high average yield of 1 kilogram of oil to every 5 kilograms of olive, it cannot be known whether it is the Kalamata, Koroni, Ithaki or Dopia variety that is most responsible for yielding such a high return in oil. However, it can be assessed from the table that the variety of olive does not indicate the amount of yield in oil. For example, cases 2, 5, 6, 8, 9 and 10 all have only the Koroni variety and their yields are different, ranging from 1:5 to 1:7.5 (oil:olive). Even more drastic, case #1 and case #11 both produce oil from the Dopia olive. And yet, case #1 reported a yield of 1:5 while case #11 reported the low yield of 1:8.

To further investigate the difference between yields in oil amongst Kefalonian farmers, the location of the olive grove and the ratio between oil and olive were extracted from the questionnaire results. See Table 4.4. As can be seen in the map provided, the farmers who claimed the highest yield of oil per weight in olives are located predominantly in the western area of the main island and the Paliki peninsula, while the farmers who attested to having the lower yields (7 to 10 kilograms of olives to produce 1 kilogram of oil) are located a little further north-east on the main island. There is not enough data to support that there is a direct correlation between grove location and oil yield. However, several farmers from the peninsula claimed in interviews that the soil in their area was more conducive to high-yielding olives than the soil on the main part of the island. Isolated research on the soil and terrain as they affect the yield in oil could be useful. The results matrix does not indicate, however a difference between the yield rates on the peninsula and those in the western (Farsa) area of the main part of the island.
Figure 4.1: Yields in olive oil reported by respondents, by region
### Table 4.4 Yield in oil per parts of olive reported by respondents compared to location of trees

(Extracted from Survey 1 for producers)

<table>
<thead>
<tr>
<th>Case</th>
<th>Oil to fruit ratio</th>
<th>Rank of yield</th>
<th>Location of trees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 to 5</td>
<td>high</td>
<td>Assos</td>
</tr>
<tr>
<td>2</td>
<td>1 to 5</td>
<td>high</td>
<td>Farsa</td>
</tr>
<tr>
<td>3</td>
<td>1 to 5</td>
<td>high</td>
<td>Farsa</td>
</tr>
<tr>
<td>4</td>
<td>1 to 5</td>
<td>high</td>
<td>Farsa</td>
</tr>
<tr>
<td>5</td>
<td>1 to 6.5</td>
<td>high</td>
<td>Delaportata</td>
</tr>
<tr>
<td>6</td>
<td>1 to 7 or 8</td>
<td>medium</td>
<td>Faraklata</td>
</tr>
<tr>
<td>7</td>
<td>1 to 5 or 6</td>
<td>high</td>
<td>St. Thekli</td>
</tr>
<tr>
<td>8</td>
<td>1 to 7</td>
<td>medium</td>
<td>St. Dimitris</td>
</tr>
<tr>
<td>9</td>
<td>1 to 7</td>
<td>medium</td>
<td>Hariazi</td>
</tr>
<tr>
<td>10</td>
<td>1 to 8</td>
<td>low</td>
<td>Dilinata</td>
</tr>
<tr>
<td>11</td>
<td>1 to 10</td>
<td>low</td>
<td>Trojanata</td>
</tr>
</tbody>
</table>

*Land and tree abandonment* The island is littered with olive trees that were apparently abandoned.\(^{33}\) The phenomenon can be traced to absentee land owners, the aging population, the fact that most Kefalonians are extremely busy with other

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\(^{33}\) ‘Abandoned’ refers to olive trees that are no longer kept in a productive state. They are characterized by over-grown volunteer branches that shade out lower branches and inhibit fruit growth. The olives that grow in these trees are generally small and sparse. As an olive tree ages, especially without proper pruning, its ability to produce wanes dramatically. However, olive trees can remain healthy and standing for hundreds of years. Some of the farmers boast of trees on their land that are several hundred years old.

The olive oil producers who were surveyed reported a range of 0 to 30 abandoned olive trees on their land.
jobs\textsuperscript{34}, the steep topography which limits access to olive groves and a lack of well-maintained roads which hinders many farmers from accessing trees that they would otherwise keep in production. Thodoros Chianis, the Assistant to the President of the Union for organic farmers, spoke of these phenomena: “Many people have gone away to Athens or Patras and they are not harvesting the olives that are in their land, or they may be too old to harvest, not to mention young people don’t have enough time because they have different jobs.”

a) absentee ownership - With many of the land owners now residing in Athens or elsewhere, a lot of olive trees have gone untended. In the property boundaries of Farsa, for example, half of the plots belong to absentee owners.

b) aging population - The issue of an aging population is crucial to the life-span of olive oil production in Kefalonia, as a majority of the people who were once central to the production of olive oil are getting too tired to harvest the olives. The continuation of olive oil production depends on younger generations to continue the tradition.

c) working population – The middle-aged population is represented in the olive oil mills and in the fields. However, some of those surveyed expressed difficulties finding the time to harvest. As a mountainous island that is removed from the European continent, Kefalonia is not conducive to an olive oil production that is competitive in the face of the international market. Therefore, no one makes a living from olive oil production. Instead, residents who produce olive oil have employment other than olive oil production, and many of them have more than one employment\textsuperscript{35}. Because none of them make a significant income at

\textsuperscript{34} As will be shown later in this chapter, no one on the island of Kefalonia makes a primary income from olive oil production. Olive oil production is primarily a semi-subsistence agricultural activity for Kefalonians, which is becoming increasingly more difficult to find time for, with the many jobs that residents seem to be carrying.

\textsuperscript{35} It was evident that many Kefalonians are employed with more than one job. Whether this is due to a high price of living on the island that requires an extra income or whether it is a product of a cultural work ethic has not been examined in this research project. However, it has been found as a factor relevant to the survival of the tradition of olive oil production on the island.
producing olive oil, the time they spend harvesting is time unpaid. And the time they have on the weekends during the limited harvest season is subject to weather conditions, making it harder for them to harvest their olives on time. One woman, Despina Grigoropoulou, a beautician in Lixouri, said that the only way her olives get harvested is for her brother-in-law to save one of his four weeks of vacation for the olive harvest season. She and her husband cannot take the time away from work to harvest. “Olive oil is fading out as an activity on the island because people are otherwise occupied,” she explained.

d) Steep topography - The Kefalonian landscape is characterized by steep terrain. Olive trees stand on the limited plains of the island, but they also dominate the steep slopes and the high plateaus. One farmer explained that, “some people, you know the older generation, wherever they had a place, they planted them.” His trees are mostly on plateaus and not on the slopes themselves. When asked if he did it that way on purpose he replied that his trees are on the plateaus simply because “that’s how it was, the field” when he inherited it. To reach his grove, he struggles up a steep and rocky road in his truck. Many olive groves do not even have these rough roads leading close to them. Another farmer, Markos Koytoyouris has at least 30 trees that he does not tend to because the terrain makes them too difficult to reach. The roads are no longer maintained and fallen branches, along with other debris make them impenetrable.

Because of the lack of a road that enters his olive groves in the steep hills in Zola, part-way between the peninsula and the main part of the island, Andreas Alexandros has to send his son to tend to the family olive trees that are on a slope. The area is only accessible by foot. To work there, one must park the truck down below and carry the ladders and nets up the hill, and then carry back heavy bags of olives after the harvest. For Andreas and his wife, a couple in their 80s, it is too difficult to work the trees when they are inaccessible by truck. If not for their son who cares for the trees, the olives would go without being harvested. Andreas
worries for his olive trees, as his son is busy running a new hotel and therefore progressively less available to maintain and harvest them.

Mr. and Mrs. Voutsinas, another couple in their 80s, said they have not maintained or harvested their olive trees in the hills of old Farsa for about a decade despite the proximity of their home, located directly below, in new Farsa. The road leading to the old village has not been restored since the earthquake of 1953. Even if they could walk to their trees, coming down with heavy bags of olives would be challenging. Their children must all work full-time and are therefore not always available to help them maintain the production of the family olive trees.

The dramatic inclines on which many of the older olive trees have been planted render harvesting difficult even for the young. The slope makes it difficult to use a ladder to get the olives from the higher outer branches, those not attainable from climbing the interior branches. The traditional system of placing a net under the tree to catch the olives as they are plucked from their branches does not work on hills as easily, as the olives will follow gravity and tumble off the boundaries of the nets. Thus, for these trees, baskets or cloths hanging from the shoulders of the harvesters are used to collect the olives. This slows the process, putting limits to the amount of olives people are able to pick in a day and the number of trees they are able to harvest within the limited harvest season.36

For all the above reasons, the people interviewed were not enthusiastic about harvesting olives from the trees on steep terrain. Marcos Koytoyouris explains that working with the trees in hard-to-reach areas is not worth while because the quantity of olives is very low and carrying the tools and the heavy bags of olives is very taxing. There are 50 trees on Mr. Koytoyouris’ property that have been abandoned, due to inaccessibility.

36 Depending on the year, the olive harvest generally happens between the end of October and December.
4.2 Maintenance practices

Tilling  As a consequence of the typically steep terrain, where trees are commonly either found on the hillsides themselves or on high plateaus, there is very little tilling that occurs under the Kefalonian olive trees. The steep terrain makes it impossible to till the ground around the roots. Furthermore, the lack of well-maintained roads leading to the higher plateaus makes the groves fairly inaccessible for tractors, while it is impossible to till around the trees that stand on steep topography.

This inability to till the soil below their olive trees is one factor that prevents Kefalonian farmers from yielding full production potential from their trees. Untilled ground does not absorb fertilizers as easily. However, those interviewed said that they use hoes to till around the trees that they are unable to till with a tractor or other motorized tills, encouraging some absorption.

Though the benefits of not tilling are that there is less chance of soil erosion when no tilling is occurring and there is not the waste in fossil fuels to run the machinery, there is no indication that Kefalonian olive farmers make a conscious decision not to till based on these factors. Those farmers interviewed whose land is flat and accessible by truck do till around their olive trees with either a tractor or hand-held motor tiller. Markos Koytoyouris is one farmer who would like to till the land around his olive trees but he complained that the road leading to his trees makes it impossible for him to truck his till up. As a result, he surrenders to the obstacle and foregoes trying to maintain his hard-to-access trees all together. Another farmer who does not till due to steep terrain identified the inability to till as his number one limiting factor in producing more olive oil. Based on these reports from the farmers, it can be assessed that the reason for not tilling is based solely on the steep terrain and inaccessible plots of Kefalonian olive trees.
Irrigation The steep terrain is a determining factor in irrigation as well. Farmers indicated three reasons that rendered irrigating their olive trees unfeasible: 1) No underground water such as wells, 2) The long distances and height the water would have to travel to the olive groves, and 3) The steep terrain the water would have to be pumped up to reach the olive trees. None of the farmers interviewed use irrigation on their matured olive trees. For the first 3 years, however, it is necessary to keep the suckling olive trees watered on a regular basis. The farmers do this typically with a garden hose or by making many trips with a bucket that they fill with water from a spout near their groves. Beyond the first few years, the trees depend on rain water alone.

The olive tree is an ideal plant for the Mediterranean climate, as its drought-resistant tendency can withstand the long dry summers. However, farmers who have been around Kefalonia during most of their lives say that the rains are less abundant now than they used, which hinders olive growth. Andreas Alexandros asserted that some years, the summer will go without a good rain and the trees go thirsty. Asked if the trees still produce fruit during the drier years, Mr. Alexandros explained, “The trees have fruit but not big, not nice.” Another farmer, Denis Thaferatos who has his trees on the peninsula, said that the trees need more water than they are receiving from the rains but that there is not enough access to water.37

The water contained in the olives is separated from the oil during the extraction phase. This means that some of the fattest olives yield low amounts of oil because most of their weight is in water. Constantinos Drakatos, who has his trees at the foot hills of old Farsa, claimed that the roots of the olive trees go deep enough into the ground, and therefore do not need much watering. “The rain

37 According to Mr. Thaferatos, the real need for water occurs in the spring - May and June - before the trees have started putting out their fruit. Any water that the trees absorb after that, in late summer and the fall, goes right into the olives which, according to Mr. Thaferatos, merely gives the olives water weight, making a heavy olive but not contributing to the quality of the oil. The ideal is for trees to receive a lot of water prior to fruiting and less as the season continues, so that the tree is healthy and the fruit are plentiful but not bloated with water.
water is enough,” he claimed. And according to his accounts, Drakatos still yields 20% in oil from his olives. That is to say, for every 5 kilograms of olives he is able to extract 1 kilogram of oil, the largest yield ratio reported in the surveys and interviews.

The olive farmers in Kefalonia are at the mercy of the rain due to the difficulties they face in getting irrigation to their trees. Because the years may be inconsistent in rainfall, the olive oil produced is inconsistent from one year to the next. As Andreas Alexandros said, “when the rain comes, oh it’s good.” But on the drier years, producers have to rely on their reserves of olive oil from the previous year when available. This inconsistency in production would make it difficult for any producer to make a reliable income from olive oil production. However, because their primary concern is to have oil for their own consumption, the inconsistency in oil is an inconvenience but not a limitation against which any of them are fighting.

Pruning and fertilizing To maintain the health of their olive trees, the farmers interviewed engage primarily in pruning the branches and applying fertilizers, both natural and synthetic, to the soil. All of the farmers interviewed said that they engage in some kind of pruning during the harvest season, using a combination of pruners, hand-saws, and chain saws to prune their olive trees. For some, this entails cutting only small sucker branches and dead branches, or as Markos Koytoyouris says, “the sick, strenuous or unnecessary branches.” For the bigger pruning, the farmers say they generally wait until February. With major cuttings, the branches that are cut will not produce fruit again for two years, as olives fruit on one-year old wood. The purpose of pruning is to concentrate the tree’s energy into a select number of branches, encouraging stronger growth and more abundant olives.38

38 The cut branches are often burned in the home fire place. Olive wood has the attribute of having a very high BTU in comparison to other woods. Also, the Kefalonian farmers claim that the burning of olive wood emits a very pleasant aroma.
As Kefalonians have one or more occupations outside of the farm, it is common that they do not have time to engage in pruning the branches of their olive trees. And yet, paying to have someone prune the bigger branches can be costly. Marilena Andanatou, a school teacher who has 180 trees with her brother, said she is worried about affording the cost of “the big cutting” that is necessary for her olive trees. She said that in the past whoever did the cutting would receive the branches in payment because, “olive wood is very expensive and very nice to burn.” She complained that people in the pruning profession today take advantage by demanding to cash payment in addition to receiving the wood. Marilena Andanatou received a bid of 2,000 Euros for the pruning of 45 trees. “They get you to pay twice,” she exclaimed. She decided that she will ask her cousin to prune her trees, thinking he will accept the branches in payment.  

**Pests and pesticides**  The major pest that olive farmers in Kefalonia are aware of is Bactocera (Dacus) oleae commonly called “Dakos”. It is a tiny insect that lays its eggs in the olives during the spring, when the weather becomes warm and wet. Between late summer and autumn is when the Dakos become very apparent in numbers and, if left untreated, by mid-autumn they will eat the vast majority of olives from the inside out. Dakos-infected olives that are harvested yield oil that is more acidic. For Kefalonian olive oil producers who desire high quality olive oil, acidic oil is highly undesirable.

![Dakos](image)

Figure 4.2 Bactocera (Dacus) oleae -Δάκος της ελιάς

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39 To fertilize, all farmers who were interviewed use animal manure. Of the twelve respondents of Survey 1, three apply synthetic fertilizers in addition to manure. Two of them could not remember the name of the fertilizer they use or what elements it contains. One farmer described the fertilizer as “a small grain like rice.” He says that the “rain melts it and then it goes down to the roots.”
The only way to combat the Dakos would be to eliminate what the farmers call the “mother generation”. Once the first generation of flies has laid its eggs in the olive fruit, the insects multiply to uncontrollable numbers. The farmers agree that the Dakos has probably always existed but that in the past five years it has become a greater problem. Several farmers attribute the increase in the insect’s population to the use of pesticides in its treatment which they think had a negative effect on other beneficial insects and birds 40.

For years, the prefecture of Argostoli has issued a spray to kill Dakos before they attack the olives. In previous years they had applied aerial spraying by helicopter. Complaints came from honey producers that the sprays were annihilating their honey bees, and eventually the prefecture altered their spraying technique to ground application. For several years now, the prefecture has hired people to load small tanks of a chemical mixture and spray each tree individually. Kefalonian farmers have been less than satisfied with this system. Some complain that the spraying is inconsistent. As Denis Thaferatos explained, “The farmers, they had disappointment with people who did that work because they didn’t spray all the trees, they just left some.” One of the major causes of this inconsistency is again the lack of roads to reach olive groves. Those groves not easily accessible by road would not get sprayed because the tanks need to be transported by truck. Andreas Alexandros is one who does not trust others to protect his olives from Dakos. “I don’t like people to come into my garden. Maybe one tree is spritzered (sprayed), one is not.” In addition, there are some accounts that the people who sprayed the trees would fill the tanks with water instead of the pesticide in order to avoid inhaling the chemicals. Constantinos Drakatos claimed that several people commissioned to do the spraying have admitted to him that they fill the tanks with water and dump the pesticide elsewhere. “They get so much money

40 In the words of Kostas Magdalinos, olive oil producer and the owner of the Ekologiko press, “Dakos has always exited but it used to be a tiny threat and this is because its predators were more abundant. Birds and spiders in the groves are decreasing because of the use of pesticides.”
from the government. But because they’re afraid of the chemical, they don’t put the chemical in it, just water. They spray and they get the money anyway.” He said that the farmer loses because he relies on his trees being treated. If he thinks that they have been sprayed, he doesn’t take preventative measures himself, so that when only water has been sprayed on his trees, the Dakos attacks. Because of the inconsistency of government spraying, many farmers purchase and apply the pesticide themselves. None of the farmers questioned knew what chemicals compose the pesticide. Half of the farmers interviewed use the pesticide spray to combat the Dakos problem. Andreas Alexandros said that he sprays his trees every 20 days during the months of July through September. Alexandros feels that the spray is expensive in the overall picture of his olive oil operations but he relies on the spray to protect his harvest from the insatiable appetite of Dakos. All the other farmers interviewed said that purchasing the spray was not a major expense for them, especially considering what they save in olive oil if they are able to protect their olives from being devoured by Dakos.

One alternative technique used to curb the damage done by Dakos is to harvest the olives earlier in the season, before Dakos have infested them. Such harvests are still affected substantially by the insects, as they first appear in spring and summer, while the olives are not close to maturity until late autumn or early winter. Further, when the olives are picked before they are fully mature, they have less body weight and will therefore produce less oil\footnote{Farmers who chose the method of harvesting earlier in the season in order to beat Dakos to the harvest claimed that, while the olives of an early harvest are smaller and will therefore yield less oil, their quality is higher, because the weight that the olives gains later in the season is merely water content.}. To prevent government spraying of their olive trees, some of the farmers put up signs outside of their groves asking that their trees do not get sprayed. Many of the farmers interviewed said that they choose not to have their fields sprayed based on concerns for the environment. Spiros Driskatos is one such individual who embraces environmentally sustainable practices and therefore posts signs to prevent the spraying. He puts signs at the property edge of his groves to indicate
the olive trees are ‘organic’. He also submits a request at the prefecture to request that those commissioned to spray omit his trees from their route.\footnote{Spiros Driskatos thought that mass spraying for the Dakos insect causes more harm than it does good: “The government gives a lot of poisons for Dakos and of course now all the island, all of Greece, where there is olive trees we have problems because millions of insects, not dangerous insects, but fragile insects that work for us, they die. The spray destroys everything. So it’s not balanced. And one ill brings another ill.”}

Other farmers do not attempt to beat the Dakos to the harvest because they claim that the Dakos becomes a significant problem in the summer and early fall, long before the olives are ripe enough to pick. Numerous farmers use a method in which they fill bottles, either with a poison or with molasses, and hang it from the tree branches. The use of molasses in bottles is an old technique that is still employed today, intended to attract the insect into the bottle and trap it in the sticky molasses. Hanging bottles containing chemicals is more effective at deterring greater numbers of the insect. None of the farmers know what is in the bottle, they said only that it must be the odor of the contents that kills the insects in the surrounding area. Hanging just one bottle in a tree will deter all the Dakos insects in an entire olive grove. The Dakos does not die but rather goes to trees where there are no bottles. Adjacent olive trees would need to have the bottles in order to be protected from Dakos that come from neighboring groves.\footnote{Dakos is reportedly more of a problem some years than others. In years when the spring is dry and cool, the Dakos becomes less of a problem, as its larvae thrive on warm, moist environments. Markos Koytoyouris said that during the 2006 harvest year, his olives are not ridden with Dakos as much as usual. “I don’t know for sure what is the difference from other years, maybe because the weather was not so wet this year.”}

Thodoros Chianis, assistant director of the Bio EU, the union for organic agriculturalists in Argostoli, suggested that there is more than just the Dakos attacking the olives in Kefalonia. He spoke of a bacterium called Pseudomonas savastanoi, which forms tumor-like growths on the smaller twigs of the olive tree. These are apparent on many of the olive trees. If pinched, the knot-like growths crumble. Only one farmer spoke about these knots. “In Greek we call them ‘convos’, it means knot.” He did not seem to think they were a problem. But
Thodoros Chianis claimed that this disease is also reducing the yield of olives. He claimed that olive oil producers in Kefalonia are not investigating tree and fruit ailments deeply because they do not need to make their living on olive oil production\textsuperscript{44}.

Still, Dakos is a concern for the producers, as they acknowledge the role of Dakos in making their olive oil more acidic. To Kefalonian olive oil producers, the aim of their olive oil production is not quantity or marketability, but rather to provide good quality olive oil for their own consumption. It is a matter of great pride. All of the olive oil producers interviewed and surveyed produce olive oil primarily for home consumption. Only three respondents said that they do not always produce enough for their own consumption and are obliged some years to purchase their olive oil from the supermarket or from friends with surplus olive oil. Two of these cases were a result of time constraints, where the primary employment does not allow them enough time to maintain their trees and harvest their olives. The third case was attributed to the old age of the farmer and his limited number of trees, so that in the years when he is too tired or the Dakos has eaten his olives for example, he is short on oil to supply his household with olive oil for the year.

Alternate bearing Olive trees that do not receive ample amounts of water either naturally or via irrigation, that are not adequately fertilized and tilled, and that are not consistently pruned are more likely to produce fruit on their natural cycle of every-other year. This is known as alternate bearing. Alternate bearing does not mean that every other year there are no olives on the trees. Olives will come every year but it is the natural habit of the olive tree to bear fruit fully only one out of two years. According to the Olive University (2007) this occurs because while fruit is ripening, olive trees are simultaneously sending up new buds in their vegetative growth that will be next year’s fruit (ripening on one-year old wood).

\textsuperscript{44} Mr. Chianis said, “Most people just talk about Dakos because, I don’t know, the main problem is Dakos…people are not looking very deep, so they think everything is Dakos.”
Therefore, the more energy put to the current year’s fruit, the less new shoots are sent out for next year’s fruit.

Heavy irrigation is one of the most effective tactics at combating this natural phenomenon, giving the tree more energy to share between its fruit and its buds. Pruning and fertilization are also important techniques used to encourage ample fruiting every year. The comments of the farmers interviewed revealed a general feeling of contentment with the trees bearing alternately, according to their natural tendencies.\(^45\) Those who farm on a larger scale (i.e. 300 olive trees as opposed to 20 olive trees) plan accordingly to be able to harvest olives every year. They prune half of the trees on alternating years so that there are always half of the trees producing olives. Those trees that are harvested one year are also the ones that get pruned, therefore refocusing their energy into new growth. But as olives grow on old wood (one year old), they will not produce a substantial amount of fruit until two years after pruning.

Even on the years of production, the yield in olives per tree is inconsistent. Some farmers reported as little as 12 kilograms of olives per tree while others reported as much as 24 kilograms per tree. The farmers said that yields are often random and depend on a multitude of factors such as the variety of olive tree, precipitation, the amount and type of fertilization used, pruning techniques, the soil type, and the presence of Dakos.

4.3 Cultural heritage and olive oil

Making olive oil is a longstanding tradition in Kefalonia. Survey 1 and 3 as well as Interview 1 asked people how they obtained their olive trees. Every respondent said that they inherited olive trees from their parents, who inherited them from their parents. Some of them harbor trees that were there for over 200 years.

\(^45\) The farmers with fewer trees tend to keep and store their olive oil from abundant years in order to cover the year when oil is less abundant. None of the farmers interviewed expressed a desire to force their trees into bearing ample fruit every year for the sake of higher production. One farmer, Bobis Neotos, believes that in the years of off-production, the trees are “tired and resting”.

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Older such trees still bare fruit but are far less productive than trees aging from 4 to 30 years of age. To establish a stronger harvest, people will plant new trees in addition to their standing trees. On the other hand, no one interviewed removes the older trees for the sake of planting new ones. The trees are sacred to them.

*Home consumption of olive oil* Based on Survey 1, the average household consumption of olive oil for a family of four amongst the olive oil producers was 270 kilograms per year. That breaks down to 22.5 kilograms per month or over 3 kilograms a week. These Kefalonians use olive oil in nearly everything they eat. They use all qualities from the first pressing of the olives to the last. They use the poorer quality oil from the last pressing to fry fish, for example. A favorite local dish consists of fresh tomatoes, feta cheese and bread doused in olive oil. And on every restaurant table there is a bottle of olive oil, sometimes accompanied by a bottle of light red wine vinegar.

*Harvest and labor* The harvest is a family occasion. Even some absentee landowners come from Athens during the olive season to harvest their olives. Friends often rotate to help each other with the harvest in each of their groves. From the months of October to as late as March, depending on the season and the variety of olives, Kefalonians are to be found in or below the olive trees. They place mesh netting underneath the trees and climb branches or ladders to harvest the harder-to-reach olives, combing them off with a little plastic hand rake. Mechanized harvesting exists on the island but all of the participants in this study harvest by hand, whether bare-handed or with the plastic rakes. Women and men alike, young and old, all join in the harvest. Some of the respondents said that they take vacation time from their jobs to do the harvest.

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46 One farmer explained the traditional snack: “With the dry bread we wet it and then put on top olive oil and oregano and it’s very good. And you eat that with tomato and feta cheese, which is very tasty.” He continued, “I remember eating this since I was a baby.”

47 Olive oil is used by some for purposes that go beyond the kitchen. For example, as a beautician, Despina Grigoropoulou washes her hair with olive oil and uses it as a skin moisturizer.
The harvest is completely reliant on family and friend participation. As the volume of olives is not great enough to make significant profits from the oil, there is no margin of profit to pay hired labor. There was only one respondent who employed people to help him with the harvest. While he runs an architectural firm, this respondent said he delegates the olive harvest to others. He employs three Albanian workers to do the job because, “they are hard workers and they agree to get paid in olives.” With the olives they receive, they take them and sell them to the mills. Paying any one to pick the olives would prove to be difficult given the small quantities of olives each grove has.

Figure 4.3 Constantinos Drakatos harvesting from his trees in lower, new Farsa
Photo by A. Lunde, 2006
Between the time and labor put in to the harvest and the pruning of the trees, and the price paid to get the olives pressed at the mill, many producers barely break even financially in making olive oil. Two of the respondents even said they lose money in making olive oil. And yet, they continue to produce. Some respondents were not even sure whether they break even, make or lose money in producing olive oil. They don’t keep track because they are not making olive oil for the purpose of supplementing their income. They do it out of a “sacred tradition”. Olive oil is sacred to the Greek people as a whole and Kefalonians are not an exception. Olive oil is used to anoint babies during baptism into the Greek Orthodox Church and it is placed on the forehead and temples of the dead just before they’re buried. “And the body is not touched again, it is the final seal,” according to interviewee Despina Grigoropoulou.48

Kefalonians take great pride in the quality of their oil. All the producers in this study, whatever the variety of olive and whatever the methods, claimed that their olive oil was superior quality. Some claimed that they yielded better quality oil from the olives picked early (usually to avoid an attack from the Dakos), while those who waited till the olives were mature to pick them claimed that their oil was superior. Some claimed that Koroni olives produced a superior quality of oil to the ‘Dopia’, while others claimed the opposite. In all cases, the producers in this study were all very satisfied with the outcome of their olive oil. Each producer retains a certain percentage of his or her oil from the first pressing. With acidity between 0-0.5%, this first pressing has the designation of ‘extra virgin’ olive oil. Kostas Magdalinos, the manager of the ‘Ekologiko’ olive oil mill near Lixouri, bragged that the oil produced there is “extra, extra virgin olive oil; the perfect oil,” because at the Ekologiko mill every pressing is done with cold water, not exceeding 25° C. A second pressing extracts olive oil with a little higher percentage acidity, about 0.5-1.5%. This ‘virgin’ oil is still very good for cooking

48 Mrs. Grigoropoulou explained why olive oil is used only at baptism and death: “We don’t use it for marriage because you could get married ten times, but you’re only born into the Church once and you only die once. Olive oil is too sacred to not be serious about. It’s your ticket into heaven.”
and even for raw consumption such as to dress salads. The byproducts of olive oil production, which are primarily the olive skins, are shipped to Patras. At a factory in Patras, this mixture, known as “liokoki” is processed to make “pivenelaio” or pit oil. This is sold at supermarkets as what is commonly known as olive pumice, a very low quality, high acidity olive oil byproduct that is used mostly for frying.

*Olive oil in the historic Farsa* The role of olive oil in old Farsa appears to have been similar to current practices throughout Kefalonia. Olive trees were considered sacred by the people of old Farsa. In her book *Farsa and the Farsans*, Yunianu Benetatou (1990) recounts a story of a man in the village who was so angry at his neighbor that he set fire to his olive grove. The offense of losing olive trees was so profound, much like losing a brother, that the neighbor took vengeance by killing the man who set fire to his groves.

Olive oil was an important subsistence farming activity and a way of life in the old village. During the Venetian occupation, the main subsistence activities were beekeeping, olive oil and animal husbandry. During the English occupation, shipping became the main occupation for men and boys of working age. In the period between WWI and WWII, olive oil production in Farsa grew beyond its role as a subsistence activity. The village merchants shipped Farsan olive oil to some of their Ionian neighbor islands and mainland Greece. The standing remnants of the village houses indicate that the living quarters in Farsa were small. The larger of the houses, those with two stories, were reportedly the homes of captains, ship-owners, land-owners, and the olive press proprietors, revealing the economic value of these vocations.
Most property owners in old Farsa had olive trees on their land. The majority of the people acquired the olive trees through inheritance. This varied from one family to the other. According to Vassilis Voutsinas\(^4\), poorer families might have owned only five or ten olive trees, while many families might have owned 100 or 200. Both Mr. and Mrs. Voutsinas reported that each of their families owned 50 olive trees. However, Mrs. Voutsinas recalls that her family alone harvested the olives of 500 trees that her father rented from other land owners. “And that’s just her family,” reported her son, Vassilis, “You can imagine there were thousands of other olive trees”. Vassilis said there was a fire in 1980 that swept through the hills of old Farsa, burning the majority of the olive trees. In consequence, “There were far more olive trees back then than you could count today,” he explained.

According to the Voutsinas family, the hills of old Farsa were dominated by a cultivar that they called ‘Dopia’, which simply means ‘local’. No one in the study

\(^4\) The information from Mr. and Mrs. Voutsinas and their son, Vassilis Voutsinas, comes from Interview 3.
remembered the actual botanical name of this cultivar, they only attested that it was not the same as the one to which they refer today as the ‘local’. Vassilis claimed that the ‘local’ variety of old Farsa produced more olives than the variety that is referred to as ‘local’ today. The old ‘local’ cultivar produced less oil per olive than other varieties but the oil was purportedly better quality than what the ‘local’ of today yields. Whereas today, most of the new plantings around the island are purchased from a nursery, in old Farsa, trees were grafted from the ‘local’ variety. Vassilis described a process in which they cut the ‘wild’ branches that resulted from a long rainy season and planted them in a mixture of sand and soil, where the branches could sprout roots. There were other varieties of olive trees available prior to the earthquake of 1953, but Vassilis claimed that the villagers preferred the ‘local’ variety. Though the long rainy season faced Farsans with having to constantly cut the sucker branches, ample rains aided in the production of olives. The Voutsinas family explained that they remember much more rain during the time that they lived and farmed in old Farsa village than they receive today. With more plentiful rains, the lack of irrigation was not as an important hindrance on olive oil production as it is today.50

Families would help each other harvest in a rotation, because greater numbers of people eased the work load.51 Those families with very few trees would be

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50 Mr. and Mrs. Voutsinas remembered the olive trees producing a substantial amount of olives every year. Mr. Voutsinas said that the villagers all took very attentive care of their trees, cutting the new branches each year, cultivating the soil around the trees, and applying manure. According to Mr. and Mrs. Voutsinas, the village would be occupied from August to September in preparing the soil that surrounded their olive trees by weeding around the trunks and above the roots and completely clearing the area directly below the canopies of the trees so that come harvest season, a blanket could be laid below to catch the olives that fell by themselves or were knocked loose by harvesters. At the end of October, most of the village would become animated with the olive harvest. Due to the large number of trees and differing preferences (immature olives versus well-ripen olives), the harvesting period lasted months, as it does today, from the end of October through April.

51 Because the men were usually away at sea, it would often be the women and children who were occupied in harvesting the olives. Children predominantly picked the olives from the lower branches and gathered the olives that were dispersed on the ground surrounding the trees. Adults climbed ladders and branches within the trees to pluck the upper branches. Vassilis reported that the olives were harvested strictly by hand, not with hand rakes as commonly used today. Harvesters wore aprons or baskets across their waists to collect the olives. Heavy-duty bags were
finished quickly with their own harvest and move on to help with the rest of the harvest because, as Vassilis put it, “Everyone wanted to participate because they knew the olive oil was essential.” Those who helped in the harvest would get a portion of the olive oil to add to their own stock.

As it was a community that lived mostly through subsistence\(^\text{52}\), Farsa bottled and stored most of its olive oil in cellars or ‘\textit{katoi}’ that were adjacent to most of the homes, so that families could preserve their oil to last throughout the year. Each family could estimate how much olive it would consume for a year and any surplus could be sold to merchants. According to Vassilis, the merchants probably sold the Farsan oil off the island to people in cities throughout Greece and perhaps beyond. The olive presses would also sell their byproducts, which included the skin and pits of the olives to a gentleman in Argostoli who in turn sold the byproduct in Patras for the purpose of making soap.

Mr. and Mrs. Voutsinas spoke only of two olive presses\(^\text{53}\). The largest one that Mr. and Mrs. Voutsinas refer to was located on the southern edge of town. This particular mill was owned by the family of Dimitrios Valinatos, the grandfather of Mrs. Voutsinas, great-grandfather to Vassilis.\(^\text{54}\) Dimitrios and his four brothers owned the mill, and Dimitrios lived above it with his wife and children. Though

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\(^\text{52}\) Other subsistence crops included grapes, lentils, and barley which were often planted underneath the olive trees.

\(^\text{53}\) From spending time among the older generation of Farsans who lived in the old village, there were differing accounts of how many olive oil mills existed prior to 1953. Accounts varied from two to four olive presses, the difference probably depending not only on memory but also on people’s discretion on what size of operation comprised a mill. There were consistent reference to at least two olive press facilities. The others referred to were likely smaller operations of which not all villagers were aware.

\(^\text{54}\) The other mill referred to in several interviews was owned by Aristotelis Valinatos, who Vassilis believed was a distant cousin of his mother. It was located in the eastern side of the village, adjacent to the school. The father of Andreas bought the smaller mill adjacent to the village school just one year prior to the earthquake. After the earthquake, he was able to transport the machinery from the mill down the hill to a new mill by way of rolling it down on top of logs.
he could not recall exactly how long the olive mill had been in operation, Mr. Voutsinas, who was born in 1927, does not remember a time when the mill was not in operation. It remained in operation until the earthquake of 1953. According to Mr. and Mrs. Voutsinas, the entire village brought some olives to the press that her grandfather and his brothers owned. Mr. and Mrs. Voutsinas estimated that between the two mills, Farsa produced more than 100 tons of olive oil every year, a significant quantity of production for the modest area of the agricultural surroundings of Farsa.

The one-room mill on the southern edge of the village remains equipped today with enormous grinding stones and two large metal presses being too heavy for looters or even rightful owners to take after the earthquake. The grinding stone is known as the Mola olearia, an advanced version of the “tropion” mill, which dates back to the 2nd half of the 4th century B.C. It is a mill stone design in which one or two lenticular millstones revolve in a circular motion in a large stone basin known as the mortarium to grind the olives. The Mola olearia advanced from this system with the introduction of a cylindrical millstone and beasts of burden to pull the stones around in a circle. In old Farsa’s main mill, a mule was tied to the millstones by a rope and encouraged to walk in a circle to create a grinding process of the stones against the olives to produce oil.

To operate the mill, the Valinatos family collected 10% of all the olive oil pressed there. Half of the oil was kept by the Valinatos family as the mill proprietors, and the other half would go to pay the five men who worked inside the mill, eliminating the monetary cost of employment for the owners. One pint (or half a liter) of each batch of oil was paid to the owner of the mule who pulled the mill stones in a circle. The byproduct of the oil, primarily the skins and pits, were collected in wool sacks. Of every 10 sacks, the mill would keep three (30%), for which they would receive payment from the merchant from Argostoli who would sell it in Patras to soap manufacturers. The proceeds of the remaining 70% of the skin and pit mixture would go to each olive farmer. In summary, there is no
report of any monetary exchange in the mill. The mill owners, their employees, and even the owner of the mule were paid with a share of the olive oil. According to Vassilis, the only costs to run the mill were the initial costs to purchase the equipment. As his great-grandfather, Dimitrios Valinatos, was a sea merchant, he used his earnings from shipping to pay for the initial capital costs of the mill.

The mill did not make a clear distinction between first pressing, second pressing and final pressing (pumice) of the olives. Because they relied on the olive oil for their personal supply, the villagers bottled and consumed every pressing they could get out of the olives. Mr. and Mrs. Voutsinas referred to one exemption where the villagers would use some of the oil from the first pressing as a type of medicine, believing that it was good for the general health of their stomachs. Beyond that, every drop of oil was consumed or sold, regardless of its quality. However, Vassilis made reference to a time in the last few years prior to the earthquake when the olives were infected by the Dakos insect, which made the oil acidic and thus bitter. This contaminated oil had to be sold to the merchants at a cheaper price and to be made into soap because it could not be sold to city dwellers as alimentary oil. As far as their own supply, they had no choice but to consume the acidic oil in the years where the Dakos was prevalent.55

After the earthquake of 1953  About one year after the earthquake of 1953, another olive mill was built in the lower village. It was in operation for approximately four years, until 1960 and employed five employees. Back then the trees were still harvested in the upper (old) village. With the absence of a new

55 The Voutsinas family said they believe that the Dakos probably always existed, though in prior years it was less of a problem than it is today. Mr. Voutsinas recalled that there were men sent from the prefecture to hang bottles from the olive trees. It was only in the last few years prior to the earthquake that the prefecture had changed the practice from installing bottles in the trees to spraying what Vassilis called ‘medicine’ from airplanes. The prefecture eventually stopped spraying due to complaints from the village bee keepers that the sprays were responsible for killing their honey bees, as happened island-wide. The spraying resumed the following year but by direct application in order to avoid indiscriminate poisoning.
functioning road, the access to the remaining trees was rendered very limited and the harvesting continually dwindled to the point that nearly no one harvests the olives from the old village today. Vassilis explained that his parents are too old to climb the roadless hill to their olive trees in old Farsa\textsuperscript{56}. Though the trees are abandoned in the hills of old Farsa village, those that remain are reminiscent of a community that was deeply embedded in olive oil production. The interview with the Voutsinas family revealed the similarities between how people used to produce olive oil in old Farsa village and how Kefalonians in general continue to produce today. The tradition remains similar, where harvest is a time of friends and family getting together to pick olives; the exchange between the olive oil mill and the producers remains the same, where the producer pays the mill with 10% of the oil yield; and even the same pest, Dakos, disturbs the growth of olives.

5.4 Economy of olive oil

The olive mills of present-day Kefalonia Of the four olive mills whose managers participated in Interview 2, the number of producers that bring their olives to be pressed at each mill on the island ranged from 150 to 1,141. Dilinata, located on the main island, toward the center, attracts between 150-200 producers depending on how productive of a season it is for olives. This mill averages about 100 tons of olive oil each year. Troianata, a village located south of Dilinata hosts about the same number of olive oil producers. Saint Thekli, located on the peninsula, presses the olives of between 250-300 producers each season. Stakathata, also on the peninsula, is a cooperative press comprised of 150 farmers, producing 980 tons of olive oil. The largest of the mills is Ekologiko, located near Lixouri, where over 1,000 tons of olive oil is produced each year\textsuperscript{57}. In 2005, its membership was at 1,141 producers.

\textsuperscript{56} Vassilis Voutsinas explained why it is difficult for his parents to maintain their olive trees in the hills of Farsa: “They have to get up there, there’s no road there, ok they have to climb. Even if they (the trees) produce many olives, they can’t bring them down because they’re heavy. There’s no road, there’s nothing. So why would they have to go up there and take care of trees? It’s too difficult.”

\textsuperscript{57} Run by Kostas Magdalinos, a retired fisherman, the mill is known as an “ecological” facilities based on its conservative measures in the use of water during the process and its use of the byproducts of olives as fuel.
The presses are generally open for operations starting in late October or early-mid November until February or later, depending on how long into the winter or spring the olives are harvestable. During the four main months of production, each mill employs two to four employees to run the facilities. However, each producer monitors the pressing of his or her own olives. Everybody takes turns sending their olives up the conveyor belt to be washed, into the grinding stones to be mashed, through the centrifugal tanks to be separated into oil and juice/water, through the pipes and out the spigot into their vats. To pay for the use of the olive pressing facilities, each producer pays a fee of 10% either in oil or in cash. The type of payment is sometimes a choice of each producer and sometimes decided by the olive press. Kostas Magdalinos, for one, accepted payment in oil until 2005. He switched his requirements to cash payment due to hardships with selling to traders. In 2004 Magdalinos received as little as 2 Euros per kilogram of olive oil from the traders who would take the oil to other locations of Greece or other parts of Europe. He said that traders mix the olive oil they buy from Kefalonia with other olive oils, as well as various other oils. They then sell it for around €8 per liter. Starting in 2006, he began charging €55 per ton of oil that each producer presses. Based on the 1,100 tons of olive oil that came out of the mill in 2005, Magdalinos’

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58 According to the cooperative in Stakanthata, in 2006 the wholesale price for olive oil made on the island was about 5 Euros per kilogram, plus the VAT (value added tax) of 9%, or a total of 5.45 Euros.
operation would have made €60,500 during its three to four months of operation. With this sum, he must cover the costs of paying four employees, as well as purchase and maintain the facility’s equipment. The Ekologiko mill runs primarily from the fuel of its own olive pits. Separated from their flesh, the olive pits are sent through a shoot into the yard of the mill and are shoveled into a giant furnace (three times the size of a conventional furnace). Magdalinos says that it takes about 3 times the volume of pits than it would coal to produce the equivalent output of energy, but the emissions are much cleaner and the cost is nothing, since they are using the byproduct of the olive pressing.

Choosing an olive mill  Forty percent of the producers surveyed in Survey 1 responded that they chose which olive oil press to frequent based on the convenience or proximity of location alone. Two respondents reported that their decision was based on a combination of convenient location and a relationship with the management of the press. One respondent chose his olive press based on his relationship with the management and the good service provided. Two responded that they chose where to press their olives based uniquely on their relationship to the management. Finally, one responded that he chose his olive press based primarily on the quality of service. It is apparent from these results that the proximity of the olive press to the olive groves is the leading deciding factor for the olive oil producers in this study in choosing an olive mill, closely followed by relationships held between the producer and the managers of the olive mill.

Selling olive oil  Sixty percent of the respondents from Survey 1 and Interview 1 consume all their olive oil or offer it as gifts. “Instead of giving a bottle of whisky to friends, we give a bottle of olive oil,” says Despina Grigoropoulou. The remaining respondents sell a portion of their oil locally. They either sell it to restaurants, marketers who sell in produce stands on the main street of Argostoli,
or to the olive press where they get it made\textsuperscript{59}. Of those six who sell their oil, all of them make “a very insignificant” income from doing so. Only two respondents sell a larger portion of their oil than they consume. One of them produces a total of 1,700 kilograms a year, of which 1,500 kilograms are sold and 200 kilograms are consumed at home in a household of seven people. The other producer makes a total of 820 kilograms, of which 640 kilograms are sold and 180 kilograms are consumed in a household of five.

Although half of the respondents from Interview 1 for producers avoid spraying their trees with pesticides, and many of those interviewed do not use synthetic fertilizer and thus could qualify for organic certification, few olive oil producers have the organic certification. According to the 1999 Kefalonian Census on Agriculture, there was only one registered organic farm island wide. This seemed confusing since there is a union for organic agriculturalists in Argostoli. Spiros Driskatos of Bio EU, the union for organic agriculturalists in Kefalonia, assists farmers in obtaining the organic certification. The number of organic agricultural holdings must have increased dramatically since the 1999 census. Only since 2003 has Mr. Driskatos handled the complicated paperwork and dealt with the Greek organic certification agencies to get about a dozen farmers registered as ‘organic’ or ‘bio’ as they refer to in Greek.

The benefit of organic certification for Kefalonian olive oil producers is strictly their eligibility to receive grants from the EU reformed CAP\textsuperscript{60}. As no one in Kefalonia exports their oil, there is little market incentive to use the organic certification. Further, the economic benefits of receiving grants based on organic status are arguably small. Bobis Neotos, who has twelve trees certified (the 350 others are on rented land and he is in the process of certifying them) received a total of €50 for the year of 2004 in EU aid. He says it is hardly worth the paper

\textsuperscript{59} In the case where olive mills will buy the oil from producers, the oil is often sold to traders. This is the one avenue to selling on the wider, non-local market. Discussion about the traders comes later in this chapter.

\textsuperscript{60} See chapter 2, Policy Review for details on the refocus of CAP policies from production support to supporting sustainable agricultural practices.
work for him at that price. But the Bio EU in Argostoli is designed to assist farmers to complete the necessary paper work. “The farmers, they complain about the paper work,” laughed Mr. Driskatos, “but we do the paper work and the phone calls to the office in Athens for them. They themselves do the minimum. They don’t know all the paper work it takes.”

Both Survey 1 for producers and Interview 1 for producers asked the respondents if they received monetary support. There were seventeen olive oil producers who received financial support from the European Union. One producer, Bobis Neotos, received grants based on his organic certification. The subsidies he received are part of the reformed Common Agricultural Policy (CAP) of the EU which refocuses support on sustainable practices after many years of investing in programs to increase production. The other producers receive financial assistance from the production payment scheme of the CAP. Markos Koytoyouris said he receives between €1 and €1.10 of production subsidy per bottle of oil he produces. Denis Thaferatos receives the same production-based subsidy. He stated that for 200 kilograms of olive oil he receives €240 or €1.20 per kilo.61 The difference in the amount of payment per kilogram of olive oil may be attributable to the quantity each of these two respondents produces, where the percentage of financial support increases as the quantity increases. Koytoyouris produces between 110 and 170 kilograms of olive oil annually, while Thaferatos produces over 1,700 kilograms per year. The financial assistance is designed to encourage more olive oil production for the sake of making EU producers more competitive. In Kefalonia, producers are assisted by the subsidies and are able to sell locally at more competitive prices than if they were not financially assisted.

61 Denis Thaferatos claimed that applying for and receiving the production subsidy is not difficult. “You send papers and then you take it.” He has received aid for five or six years (as of 2005). He was aware of the support program because “everybody knows about it”. And yet when prompted, 60% of the producers questioned were not aware of governmental support schemes for olive oil production. This might be attributable to age, as these respondents are all over the age of 60. Spiros Andanatos, manager of the Robola wine Cooperative on the island says, many of the older generation don’t look for grants because they are not linked with resources such as the internet and do not care for completing the paper work necessary.
Subsidized imported oil makes it necessary for Kefalonians to sell their oil at a competitive price. In effect, they use the same subsidies to be able to compete on their own terrain.

Local market potential for Kefalonian olive oil  Based on the surveys distributed to twelve different vendors in Argostoli - a combination of restaurants, small grocery markets, and outdoor produce markets – many of these vendors currently purchase olive oil that is produced on Kefalonia. Of the twelve respondents to this survey, eight said that they purchase olive oil that was produced in Kefalonia. The deciding factors for purchasing olive oil, however were strictly based on “quality” and “price” as opposed to “distance between producer and retailer” or “relationship between producer and retailer” which were the other possible responses on the survey. In only one case did the respondent say that he bases his purchasing decision on personal connections.62

The restaurateurs, grocers and market vendors who do not buy local olive oil are purchasing it from within Greece. They are buying oil from Kalamata, Agrinio, and the Peloponese. At the bigger supermarkets the shelves are dominated by the national olive oil brands including ‘Minerva’ and ‘Altis’. This shows that the olive oil market in Kefalonia is not dominated by the leading foreign producers – Spain and Italy – but that the biggest Greek producers dominate over local producers in the olive oil market. The four vendors who said they have never bought oil from within the island were all small markets (all the restaurants had local sources of oil). All four of these respondents claimed that no local olive oil producer had ever approached them to sell olive oil, and that if the price and quality were right they would consider buying from a local source.

62 Based on the contained size of the local population and the apparent connectedness of the population, it was expected that more vendors would respond that they purchase their oil based who they know. However, the survey results indicate that the predominant deciding factors were price and quality. This means that to sell to local restaurants, grocers and market vendors, producers will want to present a product of competitive price and quality, and cannot rely solely on their connections with local vendors.
The amount of oil that each vendor in the study consumes each month ranged from 15 liters (about 14.4 kilograms) per month to 500 liters (about 480 kilograms).\textsuperscript{63} It is apparent through the vendor survey that the potential for selling Kefalonian olive oil on the local market exists. And the combination of responses from producers and vendors indicate that there is already a relationship established between some local growers and retailers. However, on both ends (producer and retailer), there is room for development. Of the 12 vendors, four have never been approached by a local olive oil producer. This can be shown by the fact that of the 8 vendors who purchase from within the island, there were two who purchased part of their supply from outside the island, indicating opportunity for another local producer to sell oil through them. This calls for a look at the desire of local producers to sell their olive oil. In looking at the responses, it can be seen that five of the seven producers who do not currently sell their oil said that they would be interested in selling their surplus. The other two did not feel that they produce enough oil to sell it. Overall, the priority of all of the producers was to supply their own households with olive oil before looking to sell.

None of the participating producers said that they sell olive oil off of the island independently. However, one alternative market for surplus oil is the olive mill. The management of the olive oil mills occasionally sell the surplus oil to traders who ship their oil to inland Greece and even to Italy and Germany. But the two olive mill managers that said they have sold to traders in the past complained of an unfair deal. Kostas Magdalinos who runs the Ekologiko olive mill, stated that producers decide to sell their oil to traders only in desperation, after they’ve exhausted their options of selling to local acquaintances. Selling to individuals is not always evident however, because most everybody in Kefalonia has olive trees

\textsuperscript{63}The source that sold the most olive oil per month (500 liters) is major grocery store located in central Argostoli. Currently, this grocer purchases all of its olive oil from outside of the island, primarily from Tripoli, which is located in the center of mainland Greece. However, this major super market purchases local apples and wine, and said it would be interested in purchasing olive oil from a local source as well but that no one has approached the management with the possibility to purchase local olive oil.
and few people are in need of purchasing it from others. An interesting problem exists where olive oil is so ubiquitous on the island that it is difficult for producers to find a local demand\textsuperscript{64}. Because most households in Kefalonia are supplied with olive oil, producers who have surplus find they are left with little option than to sell to traders. The price offered by the traders, who come from Patras (the port town of southwest Greece) or other islands, is compromising. In 2004, according to Magdalinos, the price that traders paid per liter of oil started at only 3 Euros. The starting price was low because everyone was desperate to sell excess olive oil supplies, driving the value down for each bottle. As the supply went lower however, the price went up to 3.5 Euros in that same year. The traders however, were taking the oil to other parts of Greece, and other European countries, purportedly mixing it with all different quality grades of olive oil or even completely different kinds of oils including seed, vegetable and nut oils, bottling it and selling it at a much higher price. “Much of Kefalonian olive oil is possibly being mixed with these non-olive oils, especially nut oil because it has the character of not being detectable once it’s in the olive oil,” claimed Thodoros Chianis. But as for Kefalonian olive oils that are of premium quality, the traders keep it separate because they know they can receive a premium price in foreign markets. And as Mr. Chianis explained, “Those moneys are not returning back to the producer. It’s the middle man who takes the big profit.”

\textit{Lack of bottling facilities} The Kefalonian producers receive very little return for their high quality oil that the traders buy. They have no defense against this system because selling their product to off-island markets without going through traders would require a bottling facility on the island. The oil that is sold island-wide is often packaged in plastic bottles, typically old water bottles or soda bottles, or in tin vats. Selling product to a market off the island would require a registered bottling facility. Without this, oil producers in Kefalonia are dependent on traders if they wish to sell off the island.

\textsuperscript{64} Selling to restaurants would be a good alternative, because even when people have enough oil to consume at home, they will still go to dine in restaurants, therefore building a demand for olive oil.
As the assistant director of Bio EU, Thodoros Chianis has become acquainted with the dilemma Kefalonian producers face with the sale of their olive oil. “They can’t be competitive because first of all they don’t have a lot of land,” he explained. “Also the people who are producing an adequate amount of oil to sell, their profit is not enough to feed their family because the trading price is very low.” And according to Kostas Magdalinos, the traders have the power over the price. In order for Kefalonian producers to get the fair price for olive oil that goes to markets off-island, they would require access to a bottling facility on the island.

Economic gain of home consumption Though most producers in Kefalonia do not sell their oil, there are nonetheless economic incentives in producing one’s own olive oil. Households that produce the olive oil they consume save money by not having to purchase from the supermarket. Simple calculations can assess the amount of money the producers in this study would spend per month or per year on olive oil if they had to purchase it. First of all, from the surveys distributed to olive oil producers, it is apparent that the producers in the study are big consumers of olive oil (see table 4.6). The smallest amount of olive oil consumed in producer’s household was 3 liters month, while the most consumed in a the household of one of producers in this study was 69 liters per month or 833 liters per year. These figures show the important role of olive oil in Kefalonian cuisine as well as the economic savings each household makes by not having to purchase oil from the supermarket.
To calculate the savings, the median, or middle value in the data\textsuperscript{65}, was taken from the table of olive oil consumed per household of four and multiplied by the average cost of one liter of olive oil at the supermarket. At the major supermarket in Argostoli, 1 liter of olive oil ranged from 4.50 Euros to 7.60 Euros for conventionally produced oil (see table 4.7). Of the six olive oil products, the average cost was 6.4 Euros for a liter. Based on the median from the surveys, 15 liters of olive oil consumed in the home every month, by consuming its own olive oil, the average saved by the producer households in this study is an estimated €96 per month, or €1,152 each year.

\begin{table}
\centering
\begin{tabular}{|c|c|c|}
\hline
\textbf{case} & \textbf{liters/month} & \textbf{liters/year} \\
\hline
1 & 17 & 208 \\
2 & 16 & 187 \\
3 & 15 & 180 \\
4 & 69 & 833 \\
5 & 9 & 104 \\
6 & 5 & 60 \\
7 & 10 & 125 \\
8 & 25 & 300 \\
9 & 3 & 36 \\
\hline
\textbf{average} & 19 & 226 \\
\textbf{median} & 15 & 180 \\
\hline
\end{tabular}
\caption{Liters of olive oil consumed in respondents’ households (Extracted from Survey 1 for producers)}
\end{table}

\textsuperscript{65} In order to better represent the common trend in the amount of olive oil consumed in the households of the producers of this study, the median is preferable to the mean, as it represents the middle value of the dataset. The mean would give a result out of proportion as it reflects a high occurrence within the dataset that is not typical to the rest of the figures.
<table>
<thead>
<tr>
<th>BRAND</th>
<th>COUNTRY OF ORIGIN</th>
<th>COST</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minerva</td>
<td>Greece</td>
<td>€ 7.60</td>
<td>1 liter</td>
</tr>
<tr>
<td>Messiniako</td>
<td>Greece</td>
<td>€ 6.90</td>
<td>1 liter</td>
</tr>
<tr>
<td>Olivia</td>
<td>Greece</td>
<td>€ 5.90</td>
<td>1 liter</td>
</tr>
<tr>
<td>Axion</td>
<td>Greece</td>
<td>€ 6.20</td>
<td>1 liter</td>
</tr>
<tr>
<td>Altis</td>
<td>Greece</td>
<td>€ 7.30</td>
<td>1 liter</td>
</tr>
<tr>
<td>Kristos</td>
<td>Greece</td>
<td>€ 4.50</td>
<td>1 liter</td>
</tr>
<tr>
<td>Karapos</td>
<td>Greece</td>
<td>€ 5.50</td>
<td>1 liter</td>
</tr>
</tbody>
</table>

AVERAGE € 6.40 /LITER

Table 4.7: Olive oils at the local supermarket, country of origin and cost per liter
(Results of a survey taken at the major supermarket in Argostoli; A. Lunde, 2006)

An agricultural business model The discussion of this business model comes from the results of Interview 5 with Spiros Andanatos, the manager of the Robola wine cooperative on Kefalonia. The Robola cooperative represents 90% of the total grape production on the island, due to the unique qualities of the soil in the valley of Saint Gerassimou, where the cooperative is located. In 1982, eleven farmers joined efforts to create an enterprise in which they could set prices and regulations, assuring that they received a fair share in the profits of the wine they
produced. In 2006, the cooperative had grown to 300 active members. Each member pays a one-time membership fee of €190 which goes toward investments in equipment and a collective insurance that protects the member producers in cases of plant loss due to natural causes. The cooperative pays each member the same amount for his or her grapes per kilogram regardless of quantity. This stipulation supports the smaller and larger producers equally, rather than favoring mass production. The Robola cooperative also fulfills the role of managing the vineyards of absentee landowners. Employees of the cooperative tend to the vines of landowners who are not present most of the year. They invest in new plantings, maintain the vines, and harvest the grapes. As part of the agreement, the cooperative takes most of the yield in wine as payment, writing the landowners a check for 10% of the value. The cooperative model has also served Robola wine producers by researching and applying for grants that will benefit all members. It has been the role of the cooperative’s manager to keep himself up-to-date on available grants. One particular grant which the cooperative received in 2007 was under the Ministry of Agriculture. From this grant designed for building small agricultural business, the cooperative received €150,000. In 2005, Mr. Andanatos was feeling confident about receiving major funding from the prefecture as part of the local government’s plan for the development of Kefalonia and Ithaca. If the proposal receives funding, the cooperative will build a cafeteria adjacent to the wine store. With a terrace overlooking the steep, green

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66 According to Mr. Andanatos, in order to be a member of the wine cooperative, each producer has to fulfill two simple requirements: the first requirement is to have a vineyard, and the second requirement is to pay a one-time fee of €190. In return, the members are all guaranteed that if they are able to produce grapes that meet the quality standards of the cooperative, the cooperative will always purchase the grapes from them. This agreement maintains a tight relationship between the producer and the cooperatives because the producer does not have to worry about where or whether he or she will sell the grapes each year and by giving such an incentive, the cooperative assures that each producer will consistently bring his or her grapes there to be pressed, thus assuring the operations of the facilities. Robola wine has easily found its niche due to the fact that the grapes can only grow in one limited region in the world. With bottling capabilities at its premises, the Robola cooperative can ship its products off the island, reaching mainland Greece, the UK, the U.S. and Germany.

67 The grant was to be used for modernization of the equipment within the cooperative. The total cost of the improvements was estimated at €300 and the cooperative would have to prove that it could match funds from the grant to meet this total. Andanatos said that the grant came from Measure 4.1 under the EU department of the Ministry of Agriculture.
valley, the new addition is meant to both attract more tourists and encourage them to stay on premises longer, thereby potentially spending more money.

The cooperative produces organic wines as well as conventional. Due to the fact that the yield of organic grapes is much lower than that of grapes that are treated with chemical pesticides and fertilizers, organic wines represent a small percentage of the overall production. However, the cooperative gives organic producers more per liter and is able to sell the organic at substantially higher prices (€8.60 compared to €4.70 for conventional). Andanatos claimed that the organic wines are becoming increasing in popularity, especially amongst tourists who visit the facilities. Even locally, there seems to be a growing interest in organic products, with the annual “organic week” bringing in the highest sales of organic wines for the Robola cooperative. According to the manager, the government is following the growing interest of informed consumers by encouraging producer to cultivate organic grapes through a subsidy that gives €300 annually for the first five years of transition. For producers beginning new vineyards under organic practices, the subsidy is higher, at €1,375 per year. With governmental subsidies coupled by high retail values of organic wine, Andanatos said that there is much incentive for producers today to switch to organic practices.

Robola wines are sold at the cooperative premises or are distributed by a local distributor to restaurants, gift shops, and grocery stores throughout the island, making Robola wine the most popular wine to purchase island-wide. The cooperative also ships a percentage 15% of its wine production aboard to the United States, United Kingdom, Holland, Austria, Germany, and Sweden. Shipping off the island is important to Andanatos because he does not wish to rely on tourists alone to buy the amount of wine that needs to sell to make a profit.68 It

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68 Although Andanatos does not wish to rely on tourism alone to sell the Robola wines, the number of tourists that visit the cooperative in the high season is extremely high, at 38,000 people. Therefore, when exporting, the cooperative targets the countries of the tourists that come through
is possible for the cooperative because they have a certified bottling facility on premises to bottle their wine.

**Farsa property owners** Much how the Robola wine Cooperative serves the interests of Robola wine producers in Kefalonia, a similar model may be conducive to olive oil production in and around Farsa, where olive pressing facilities would be cooperatively owned and run, and a managing body would help oversee production. Survey 3 for land owners tested the interest of Farsa property owners to reclaim olive oil production on their land. The results showed a strong support from Farsans who still live in the area as well as those who live away for a reclaiming of the land for olive oil production. Those who now reside in Athens supported the idea of having their land overseen by a managing body in Farsa, much like the managing body of the Robola wine cooperative, where they would receive a percentage of the olive oil that is produced. From the survey distributed to the Farsan community in Athens, nine respondents of thirteen said that they would like to restore their olive trees into production in the case that the village of Farsa is rebuilt. The other four did not answer the question. Because the trees standing in the agricultural area of old Farsa all date back to at least 1953 and because most have been neglected, their production capacity is compromised and planting new olive trees would be favorable for land owners who want to make enough olive oil for household consumption, and essential to support an olive press in the village. Therefore, the survey distributed to land owners asked if they would like to plant new trees on their land in Farsa. Only one respondent of 13 answered no. All the others responded that they were interested in the possibility of planting more olive trees on their land. These results reveal willingness by the land owners in this study to revitalize olive oil production on their land in the boundaries of historic Farsa.

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the cooperative store, the thinking being that tourists will recognize and purchase the Robola label on shelves in their home country after returning from Kefalonia.
The surveys revealed a willingness amongst the landowners to participate as a cooperative in the production of olive oil. Eight of the thirteen landowners surveyed had knowledge of cooperatives prior to reading the description included in the survey. Of these, only one claimed he had a good understanding of how cooperatives function, while two said they were fairly acquainted with the concept, and the other five said they were only a “little” familiar with the concept of a cooperative. Four admitted that they had no knowledge of what a cooperative was prior to reading the explanation. One participant did not respond to this question. Based on the brief explanation provided with the survey of how a cooperative could function for olive oil production in the rebuilt village, five landowners said they would be interested in becoming a member of the cooperative. The other six said they did not know yet. Again, one did not respond. Everyone who did not know yet whether or not they would join a cooperative in olive oil production also responded that they had little to no knowledge of cooperatives. The survey probed land owners further to examine whether they saw a potential benefit in being a producer group rather than farming their olives individually and patronizing one of the existing presses. Even those who were not sure if they would be interested in joining the cooperative identified a potential benefit of being part of a cooperative. The most popular response was that a cooperative would be attractive based on its role in tending to the olive trees for absentee land owners. The second most popular response was that a cooperative could aid them in making an additional income through the production and sale of their olive oil. Other anticipated benefits were the pooling together of resources to ease the costs of equipment, and keeping a tie with Farsa (for those who no longer reside in the area).
4.5 Olive tree estimation in Farsa

The census of 2003 to 2004 done by the Greek Ministry of Finance shows that the island of Kefalonia produced 1,623 tons of olive oil out of the total 333,720 tons produced in all of Greece, accounting for less than 1% of the national production. Regardless of their small contribution as an olive producing island on the national scale, it is clear that making olive oil is a valued tradition for Kefalonians. What is essential, more than contributing to national production, is that production remains high enough to maintain the running of a local olive oil mill. Based on the information provided by Interview 2 with managers of the four olive mills visited, the olive presses in Dilinata, St. Thekli and Stakanthata produced about 100 tons of olive oil each in 2005. The Ekologiko mill near Lixouri reported 600 tons of oil in 2005. To be displayed in this section is an estimation of the yield potential of the olive trees still standing within the agricultural boundaries of old Farsa. First, Geographic Information Systems (GIS) analysis was conducted to estimate the number of trees. Next, a calculation of the expected range of yield in olive oil was made based on the tree count data.

Based on the aerial photo and empirical knowledge of the area surrounding the old village, a section was selected that represented the primary olive-tree land within the boundaries of Farsa. Next, 30 GPS locations were selected. At each
point, 100 m² were measured, and a count was taken of the number of alive trees that grew within each plot. The purpose of tracking the locations of the plots was to be able to control that all the chosen plots are indeed within the property boundaries of Farsa, and further, that they fall within what was designated as the ‘olive-dense’ area. ArcMap9.2 was used to discern which GPS points were relevant to the study. From the 30 GPS points recorded, only 19 were within the ‘olive-dense’ area. These 19 plots were used as the sample plots to make an estimation of how many trees exist in the area defined as ‘olive-dense’.

The average number of trees per tested plot was multiplied by the number of m² plots that fit into the total area in order to get an estimation of the number of olive trees. The average number of trees per 100 m² plot was 3.5 trees. The total area of the ‘olive-dense’ region was calculated in ArcMap9.2 at 150,236.4 m². To calculate how many test plots would fit into the entire area, the “olive-dense” area was divided by the measurement of each plot (150,236.4 ÷ 100) to get 1,502.4 plots that measure 100 m². To arrive at an estimation of trees that reside in the ‘olive-dense’ region, this figure was multiplied by the average number of trees per plot (1,502.4 x 3.5). Rounding to the nearest tenth, the result was 5,258 olive trees in the total ‘olive-dense’ region.

Assuming that these trees could be brought back into production by pruning their wild branches and basic maintenance, and assuming they could produce an amount that falls within the range reported by the participant producers of 12 to 25 kilograms of olives per tree, these 5,258 could potentially produce between 63,092 and 131,450 kilograms of olives. Based on the average yield of one kilogram of oil per 7 kilograms of olives reported by the participants of this study, it can be estimated that there is a potential to produce between 9,013 and 18,778 kilograms or 10 to 20 tons of olive oil per season from the standing tees in historic

69 See Chapter 2 Methods for further explanation of the methodology used to count the trees.
70 Without rounding the numbers at all, the result was slightly higher, at 5,297.81045 olive trees.
Farsa⁷¹. The map resulting from this GIS analysis can be viewed on the following page, figure 4.8.

Figure 4.7 Standing olive trees in the hills of old Farsa
Photo by A. Lunde 2006

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⁷¹ To arrive at the yield in olive oil based on the 7 kilograms of olives to every kilogram of oil, the total number of olives in kilos – 63,092 and 131,450 – are divided by 7 to get the average amount that could be expected in olive oil. Per kilogram.
Figure 4.8 Olive tree-density on old Farsa

A. Lunde 2006
Chapter V: Conclusions and Recommendations

5.1 Conclusions of results
The premise of this thesis assumed that conditions supporting a sustainable olive oil production system exist in Farsa because of the current low-impact, culturally conducive practices of olive oil production on Kefalonia, complimented by reformed European Union and Greek policies that support rural development and sustainable agriculture. To prove the thesis statement, the following factors were examined in the case study: the typical characterization of the case study olive groves including the topography and the scale of production; the current maintenance practices including tilling, pest control, fertilization and irrigation; the cultural significance of olive oil in Kefalonia today and in historic Farsa; the economy of Kefalonian olive oil production including market potentials for olive oil producers, costs and benefits of producing oil, government support, and the resource potential of the agricultural region of old Farsa; and other Kefalonian agricultural production models. A brief summary of the results is followed by an assessment of the thesis statement, followed by recommendations for further work in this rural development project and research topic.

Summary of results The results showed that the four most common olive cultivars grown by the participants of this study were Koroni, Ithaki, Kalamata, and Korfuelias or what they call ‘Dopia’, meaning ‘local’. Based on the accounts given by the study participants, there is no indication that the yield in oil from olives is directly linked to the variety of olive. However, participants indicated that the location of olive trees and their yield are linked. Farmers who claimed the highest yield of oil per weight in olives are located predominantly in the western area of the main island and the Paliki peninsula, while the farmers who attested to having the lower yields are located further north-east on the main island. Kefalonian olive groves can be characterized by small parcels\textsuperscript{72}, and small

\textsuperscript{72} As shown in the results, parcels averaged 92,408 ft\textsuperscript{2} per land holder.
numbers of trees per producer. Steep terrain was a determining factor in farming practices of olive trees, making tilling, irrigation, and mechanized harvesting very uncommon amongst the participant producers. Producers shared a number of factors that limited the production of their olive trees and, subsequently, the production of olive oil. The steep topography limits them in their ability to harvest or even access some of the olive trees. Difficulties in irrigating on high, steep parcels, combined with inconsistent rain, compromise the productivity of olive trees. To promote higher productivity of their olive trees, the participant producers said they prune branches every year (and use the byproduct as firewood) and apply fertilizer, predominantly in the form of animal manure although some respondents said they apply chemical fertilizers whose contents they were unsure of. The producers who participated in this study also face a common challenge with an insect called Dakos. Most of them claimed that Dakos was a serious constraint in the yield of olives, though there was evidence that Dakos was not the only pest present in the olive trees. The ways of combating Dakos common amongst respondents were spraying with a pre-made chemical spray (though spraying is much less common now than in previous years when the government would apply it through aerial application), early harvest in anticipation of the pest’s attack, or hanging bottles containing either molasses or a poisonous chemical from the trees. A combination of climatic, topographic and maintenance factors create the setting for olive trees in Kefalonia to do what is known as alternate bearing. Producing a significant harvest crop only once every other year, the producers in this study are limited in the quantity of olive oil that they produce. Limited quantity may be one contributing factor to why producers in the study make olive oil primarily for home consumption. However, those with surplus sell their oil to local restaurants or back to the olive oil mills who then sell the oil to traders at a reduced price from the real value. Olive oil producers would have trouble selling off of the island without going through traders because there is no certified bottling facility on the island for olive oil packaging, which is

73 Also shown in the results, the number of trees each producer had ranged from 50-600, and averaged 174.35 trees, with a median value of 110 trees per producer.
mandatory under international trade regulations. For those who do not sell their oil, the economic benefit of producing olive oil lie in not having to purchase it from elsewhere.\textsuperscript{74} The participants were all extremely proud of the quality of oil that they produce and when possible, harvesting olives from their own trees is a priority for them. The results showed that the majority of the sample population inherited olive trees from their parents and grandparents, showing a long-standing tradition of olive tree cultivation on the island. Olive oil also had a dominant role in historic Farsa, both culturally and economically, dating back to the time of the Venetians. Similarities that were drawn in the results between practices prior to 1953 and contemporary practices reveal the traditional nature of olive oil production in the case study area. Little has changed in the last several decades in how Kefalonians produce olive oil. Kefalonians continue to harvest in the same manner as those who harvested in historic Farsa - with hand rakes to pick the olives and nets below to catch them. Also, already in historic Farsa the problem of Dakos infestation was prevalent. As in more recent decades, Farsans went through the process of hanging bottles in trees to thwart the insect, then to relying on aerial sprayings from the municipal government and then back to the use of bottles. Kefalonian producers went through the same process in the past few decades. Now, many producers are converting back to the molasses bottle method used by Farsans in the historic village. For labor, as was practiced prior to 1953, producers and their families or friends fulfill the tasks involved in olive oil production. The same system of payment between olive oil mills and producers continues today as it was in old Farsa village, where the mill would take 10% of the olive oil from each pressing, though some mills are converting to taking a percentage strictly in currency. The older age of most of the respondents in this study indicates that olive oil production is perhaps in danger of fading as this generation dies out. Their children are otherwise occupied by off-the-farm

\textsuperscript{74} Based on the results from Survey 1, the average household consumption of olive oil in Kefalonia was at just over 3 liters per week, or 280.8 liters per year. Translated into gallons, this would be 74.2 gallons consumed in a household of four annually, or 18.5 gallons per person. These figures almost rival the U.S. consumption of Coca Cola during its peak in 1980 when the per capita consumption was 39.6 gallons (Beverage Industry, 1996).
employment, and are therefore not replacing their parents in the olive groves at a sufficient rate. The producers in this study who were part of the working generation complained of not having enough time to tend to their olive trees, especially for the time-consuming harvest. Further, the aging population is, in some cases, unable to consistently tend to their trees due to steep terrain. As a result, respondents from both the older and younger generation reported abandoned trees on their property. There was also an indication of many trees being left unattended due to absentee ownership. Absentee ownership is common on the island, where olive trees are neglected due to the post-wars and post-earthquake trend of landowners relocating to Athens or elsewhere. The culmination of these various challenges has marked the Kefalonian landscape with abandoned olive trees. Due to a complexity of limitations, Kefalonian olive oil producers are unable compete on the international market and are limited even at the local market. As shown by the results of this research, producers are in some cases struggling to meet the costs (mostly in pay that is lost with time off from their employment) of olive oil production. There is a dormant resource in the hills of Farsa as well as throughout the island: olive trees. In the case study area of Farsa alone, there was an estimated 5,258 trees, which would potentially yield 10 to 20 tons of olive oil per season. The property owners that were surveyed in this study expressed a strong interest in revitalizing the production of their olive trees and planting more olive trees on their land. The majority of property owners also expressed an interest in participating in a cooperative system that would be instrumental in maintaining their olive groves and producing oil from their olives in a manner that is economically feasible for them.

Based on the results of this research work, the thesis statement must be amended to say that in order for olive oil production to be truly sustainable for the community of redeveloped Farsa, a plan for economic viability, which does not currently exist in the area, must be executed to compliment the existing low-impact, culturally conducive practices of olive oil production on Kefalonia. The current state of olive oil production in the area surrounding the case study can be
characterized by culturally engrained low-impact practices. Limitations caused by steep terrain and cultural tendencies have created an atmosphere of non-intensive cultivation practices. Furthermore, the cultural fabric of olive oil in Kefalonia is revealed by high home consumption of respondents, the trend of olive trees being passed down from one generation to the next, the historic ties of olive oil in historic communities such as old Farsa, and the great pride each producer takes in his or her own olive oil. These environmentally sustainable, culturally-conducive practices however, have not maintained a flourishing olive oil system in the area. The evidence lies in the trees that lie untouched. Under current conditions, there is little economic incentive to reclaim abandoned olive trees. Many factors contribute to make the olive yield of each tree very low, and at such low levels of production it is difficult for producers to compete on the market even locally. There lies economic potential in already existing olive trees, but there is presently no support system to put these trees into production. As shown in Chapter II of this thesis, literature shows that the inability of an agricultural activity to be viable for its community results in the abandonment of such agricultural practice. When these activities are discontinued, the surrounding community suffers from an absence of income generation and a loss of traditional practices. To preserve both the environmentally sustainable practices and cultural richness of olive oil production in Kefalonia, there must be economic support. Economic support could come from a combination of reformed CAP grants of the European Union, and a business plan that alleviates some of the financial stress from individual producers as well as exploits the market potential for Kefalonian olive oil.

Using the business model of the Robola wine cooperative, olive oil production in the area surrounding Farsa could be made a more economically viable activity. Bringing the olive trees of the island back into production75, tapping into grants from the EU, exploiting the local market potential, tending to the trees of absentee

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75 The results of the spatial analysis showed that in the area of 150,236m² designated as the “olive-dense” region of Farsa, an estimated 5,258 trees, were abandoned
landowners, and pooling together resources for the costs of production, an olive oil cooperative in Farsa could make olive oil production economically viable to its community.

6.2 Recommendations and limitations

It can be concluded that the system of olive oil production in Kefalonia is well established and ingrained in the culture. Therefore, it is appropriate to propose a supportive system that caters to the way Kefalonians produce olive oil. Based on the findings, it would be possible for olive oil producers in the Farsa region to farm their olive trees in a manner that is environmentally sustainable. The key is to identify a strategy that will monetarily support a sustainable system of olive oil production. A table was devised to help determine whether a cooperative would be an appropriate model for meeting the major challenges in olive oil production on the island. Based on the results of Interview 5 with the Robola wine cooperative, management tools offered by a cooperative business model are considered for meeting some of the challenges facing olive oil production in the redeveloping village of Farsa.
Table 5.1 Development model goals and strategies

<table>
<thead>
<tr>
<th>Goals</th>
<th>Strategies</th>
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<tbody>
<tr>
<td>Environmental health</td>
<td>Guidelines, education and incentives</td>
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<tr>
<td>Capital investment</td>
<td>EU grants, cooperative treasury</td>
</tr>
<tr>
<td>Labor</td>
<td>Cooperative employees</td>
</tr>
<tr>
<td>Market</td>
<td>Tourism, local distribution, bottling facilities</td>
</tr>
<tr>
<td>Reclamation of abandoned groves</td>
<td>Cooperative employees</td>
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Based on the findings on how the Robola cooperative operates in Kefalonia, a similar business plan could be used as a model for supporting olive oil production in Farsa and its surrounding areas where olive trees are now laying dormant. A collective of olive oil producers could invest in a cooperative olive oil mill and a managing body to oversee olive oil production for its members.

Inaccessibility The terrain surrounding old Farsa village is steep like much of Kefalonian terrain. The challenges of transporting equipment to (and olives out) of the groves would be ameliorated by the existence of an olive oil mill in the vicinity. Having an olive press right in the village of Farsa would make the harvest convenient for landowners in Farsa. The redevelopment of Farsa village is reliant on the rebuilding of roads that access the village from the main street of new Farsa, which would connect the village to the main circulation of the island.
In addition, new roads going from a central point amongst the olive groves in Farsa to the mill would be instrumental in facilitating the transportation of olives to the mill, especially for the aging population.

The management and a pool of paid employees would tend to the trees of absentee land owners, find marketing solutions for olive oil and its byproducts, pool together resources for financing an olive oil mill, purchase collective insurance, apply for grants, and regulate sustainable practices within the production of olive oil.

Absence ownership  A plan for olive oil production in old Farsa should aim to solve the problem of absentee landownership and the low economic return from the production of olive oil. Half of the land surrounding the old village belongs to absentee landowners. With half of the population living outside of Kefalonia, the redevelopment of the village alone would not necessarily assure the revitalization of the olive groves, as many of the landowners may still remain absent. Though roads would make the olive trees more accessible for those residents who remain in the area, the issue of abandoned trees would remain a problem. Borrowing the model of the Robola wine cooperative, employees of the Farsa olive oil cooperative would tend to the trees of part-time residents, produce oil from the olives and split the yield in oil with the owners. For example, 90% of the oil would go to the cooperative for resale or to pay its employees and 10% would go to land owners, as was done at the Robola wine cooperative. There was enthusiasm amongst land owners who live in Athens to delegate the care of their olive trees to a managing body in exchange for a share in the olive oil that results. This model of tending to abandoned olive groves could be adopted island-wide. The proposed olive oil cooperative in Farsa would manage the olive groves for absentee owners in the surrounding agricultural areas beyond Farsa, thereby solving the problem of tree abandonment on the island at large while simultaneously supporting the production capacity of the cooperative.
**Marketing** Opportunities that the cooperative would offer include creating a niche market for the olive oil based on the unique identity of Farsa as well as maintaining and promoting organic production, hosting agri-tourists, using the byproducts of olive oil production to make souvenirs, and exhausting the local market for selling olive oil produced in Farsa. Unfortunately, olive oil in Farsa does not hold such a unique niche as the Robola cooperative has claimed, nor is there a bottling facility for olive oil, which would be necessary for exporting the oil. However, these obstacles can be overcome. Regarding the niche market, the novelty of Farsan olive oil would be linked to the overall image of Farsa as a historical sustainable community and a model of sustainable development. Much like certified organic and fair trade agricultural operations market their goods\(^{76}\), the olive oil cooperative could sell its product based on its historic and sustainable value.

The cooperative olive oil press would be capable of acting as a supporting element of tourism. People attracted to the village, whether by the appeal of olive oil or by other attributes of the sustainable village, would provide a potential clientele for the olive oil produced in Farsa. Though the olive oil cannot be sold abroad without being bottled in a certified bottling facility, it could be sold in plastic bottles on site. Therefore, the olive oil that remains after all the producers have sufficiently supplied their households, would be sold at the press itself at retail price, possibly providing profits to the cooperative.

Once established, the cooperative should research existing grants to build and develop their premises. According to Andanatos of the Robola cooperative, there are available funds from both the Ministry of Agriculture for the development of small agricultural businesses and from the local prefecture for the development of Kefalonia. The prior funds necessary equipment and the latter would fund additions onto the mill, such as a cafeteria or store. On that note, the cooperative

\(^{76}\)Fair trade and organic certification may be options that would increase the marketability as well as the value of olive oil in Farsa. However, until a bottling facility is established on the island, allowing for overseas sales, such certification is not as applicable. However, Farsan olive oil could be marketed locally as a product of sustainable farming practices and a celebration of its historic value, much in the way that organic and fair trade labels are able to sell.
could also host olive oil festivals during the weeks of harvest. Agri-tourists might
go so far as to pay to pick olives in Farsa, with the benefit of receiving a share of
the oil. The event would be made even more attractive if there were public feasts
centered on olive oil and accompanied by traditional Kefalonian music and dance.
The community of Farsa may even wish to join efforts with the Robola
cooperative to serve a traditional Kefalonian meal bathed in olive oil and
complimented by the island’s own Robola wine. The money gained from the
admission costs for the harvest festival and the feasts would go into the
cooperative and be invested in the same manner that it is at the Robola
cooperative: either for purchasing necessary machinery for the cooperative and
purchasing insurance, or to be distributed amongst the individual members in the
form of a profit sharing.

To further benefit from the tourism in Farsa, the olive oil cooperative would have
items besides olive oil to sell on site. On another Ionian island, Corfu, many
boutiques sell a plethora of items carved from olive wood, ranging from bracelets
to serving utensils. The cooperative could use the wood from the pruned branches
every year to make bowls, candle sticks, boxes and more. Further, by borrowing
the ideas from historic Farsa, the cooperative would be able to make soap out of
the olive waste or “liokoki” that results from the extraction of oil from the olive.
These soaps too would be sold at the olive press and the profits would be
distributed within the cooperative.

As shown by the vendor surveys, there is willingness among marketers and
restaurateurs to purchase olive oil from local sources. Based on the responses, the
primary factors that would encourage local sales are quality and competitive
prices. Achieving a high quality in olive oil is an aspiration ingrained already in
the spirits of Kefalonians. Offering their oil at a competitive price on the other
hand may compromise the integrity of the cooperative. Unfortunately, the survey
neglected to collect statistics on how much each vendor paid for olive oil.
However, based on the fact that most vendors already buy locally, it might be safe
to assume that vendors are willing to pay a price that represents the true production costs of local olive oil. Selling locally as opposed to on the foreign market, the Farsan olive oil cooperative would save in transportation costs, bottling costs and the cost of commissioning a distributor, which were all described as significant expenses for the Robola cooperative. Calculating those factors into the equation would show that selling locally, even if it is at ‘competitive’ prices, is a sound marketing decision. However, the exportation of olive oil will become profitable after a certain level of production that must be calculated by the cooperative when the time arrives. If at some time there is enough volume of olive oil that the return in sales would pay for the bottling and transportation fees, investing in a bottling facility and shipping costs should be considered. The first step would be to talk with the Robola wine cooperative to inquire about the process and costs of running a bottling facility. The olive oil cooperative might also explore the possibility of renting use of the bottling facility of the Robola cooperative, if indeed the facility required for bottling wine would be acceptable for bottling olive oil.

**Financing** To meet the costs of building, equipping, and running an olive oil mill, the cooperative could rely on membership fees, sales in olive oil, and government grants. A one-time entry fee would give the funds needed to make initial investments in the equipment for the cooperative press facilities. There was receptiveness from land owners to the idea of creating a collective of olive oil producers in order to overcome the obstacles of investment costs and absentee landownership. Furthermore, the problem of small parcels of land that limit the number of trees producers hold would be addressed by collective buying. The pooling together of resources for the purchase of equipment such as netting and ladders for the harvest would alleviate each individual producer from having to purchase such equipment for a relatively insignificant number of trees.

Each member would be guaranteed use of the facilities for the purpose of pressing his or her olives. In cases of surplus, where the producer has already satisfied his
or her household demand, the cooperative would purchase the oil at a fixed, equitable price and sell it to local vendors or to tourists that come through Farsa. Membership to the cooperative would be extended to the larger area of Kefalonia. In addition to solving the problem of olive tree abandonment, expanding the cooperative’s reach would also be instrumental in contributing to the profitability of the business.

It would be the role of the cooperative management to research and apply for EU grants that now exist for sustainable agricultural practices and small agro-businesses. Support schemes of particular relevance to sustainable agriculture and rural development activities fall under the second pillar of the CAP: rural development. The EU states, “To help the further 'greening' of the CAP, the traditional compensatory allowances in support of farming in less favored areas (LFAs) will be extended to areas where farming is restricted by the existence of specific environmental constraints” (EU, 2007). These “specific environmental constraints” refer to natural disadvantages of LFAs, where landscape restraints and remote locations make agriculture more economically challenging. As a remote hillside community, Farsa well meets this description. The reforms promise to “improve the competitiveness of rural areas with the aim, above all, of improving the quality of life of rural communities and creating new sources of income for farmers and their families” (EU, 2007).

To improve integration of environmental objectives under the reform, the EU requires that Member States make direct aid payments conditional on compliance with environmental provisions. The subsidies allotted by Regulation 1698/2005 are meant to “preserve the environment and European rural heritage via agri-environmental measures” (EU, 2007). Therefore, funds are not allocated based on production and competitiveness alone. Investment is being made into communities that harbor good environmental practices, to the point that the European Agricultural Fund for Rural Development (EAFRD) under a recent CAP reform gives “support for investments without commercial return needed” as
long as they “comply with environmental commitments” (EU, 2007). Within the EU Official Journal L 2777 of 21/10/2005, there are three articles that appear relevant to remote rural communities. Displayed below are the stipulations for 1) Article 34(3) for ‘semi-subsistence agricultural holdings’, 2) Article 35 for ‘producer groups’, and 3) Article 37 for “mountain areas”.

1) Semi-subsistence agricultural holdings - Individual producers could be eligible to benefit from Article 34(3) for ‘semi-subsistence agricultural holdings’. As stated in the official EU Official Journal L 277 of 21/10/2005:

1. Support to agricultural holdings which produce primarily for their own consumption and also market a proportion of their output (semi-subsistence agricultural holdings) shall be granted to farmers who submit a business plan.
2. Progress in respect of the business plan referred to in paragraph 1 shall be assessed after three years.
3. The support shall be paid in the form of a flat-rate aid up to the maximum amount specified in the Annex and for a maximum of five years.
4. The support shall be granted in respect of applications approved by 31 December 2013.

2) Producer groups - Article 35(2) of Council Regulation (EC) No 1698/2005 grants money to ‘producer groups’. As a cooperative, the olive oil producers in the redeveloped village of Farsa would be eligible to benefit from moneys allocated by this article. Article 35 stipulates:

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77 This grant is awarded in an annual payment of up to €1,500 per agricultural holding.
78 The Annex is the appendix to the Regulations that specifies the maximum amounts and time frame of each funding opportunity. The Annex of each of the Articles discussed in this thesis were accessed and their content is included in the paragraphs explaining each Article.
1. Support shall be granted in order to facilitate the setting up and administrative operation of producer groups for the purposes of:
   a) adapting the production and output of producers who
   b) jointly placing goods on the market, including preparation for sale, centralization of sales and supply to bulk buyers;
   c) establishing common rules on production information, with particular regard to harvesting and availability.
2. The support shall be granted as a flat-rate aid in annual installments for the first five years following the date on which the producer group was recognized. It shall be calculated on the basis of the group’s annual marketed production, up to the ceilings set in the Annex.
3. The support shall be granted to producer groups which are officially recognized by the Member State’s competent authority by 31 December 2013. 80

As stated under the Annex of Council Regulation (EC) No 1698/2005, the ceiling percentage of marketed production during the first five years following recognition under Article 35(2) is 5% for the first two years, 4% the third year, 3% the fourth year, and 2% for the fifth year. The grant could total up to €390,000 in the span of the five years.

3) Mountain areas
Finally, under the same Regulation, there are funds available to mountain areas. Article 37 lays the “Conditions for measures targeting the sustainable use of agricultural land” including regard to mountain areas. The article states:

80 Articles of Regulation (EC) No 1698/2005 were accessed from the EU Official Journal online at:
1. **Payments should compensate for farmers’ additional costs and income forgone related to the handicap for agricultural production in the area concerned.**

The cooperative and individual olive oil producers would qualify for grants provided under Council Regulation (EC) No 1698/2005 on support for rural development by the European Agricultural Fund for Rural Development. These subsidies are to act as seed-money for sustainable agricultural operations, thus complementing national, regional and local actions while contributing to the priorities of the European Community. Individual producers could benefit from Article 34(3) for ‘semi-subsistence agricultural holdings’. The cooperative could apply for Article 35(2) as a ‘producer group’. The olive oil producers might also find funding under Article 37 designed to aid agriculturalists in mountain regions. The cooperative of Farsa should make further research to see if their community is eligible for this support which grants up to €250 per hectare (10 stremata) per year to farmers in disfavored mountainous regions.

*Sustainable agricultural practices* The cooperative would act as the overseer of environmentally sustainable practices in the olive groves of its members. To be true to the label of sustainability, producers would be responsible for following certain stipulations. The cooperative would simultaneously facilitate these practices and require that they are followed. Management could organize a system to separate the pits from the olive oil process and use them to burn in a furnace on site to fuel the facilities, as done by other local olive mills, thus cutting down on economic and ecological costs of powering the facilities. To address the debris that results from major pruning, the managing body of the cooperative would perform the major pruning of olive trees for its members, free of charge, taking a portion of the wood to sell as firewood. Each landowner would have the option of keeping a portion of the wood for his or her own use. The management would also aid the producers in locating natural fertilizers and benign agents or
other certified organic agents to control for pests. It may be instrumental to commission someone from within the cooperative to research the various diseases and pests that hinder the productivity of olive trees, as well as identify alternative methods to treating trees for disease and pests, such as Dakos. As suggested by Thodoros Chianis, Dakos may not be the only pest damaging the olives. Further investigation into the diseases and pests inhabiting the olive trees and organic products or methods available to control them would lend to greater productivity.

Because the cooperative will potentially be made of many members from the greater region around Farsa, there would be sufficient production occurring every year to support the mill. Further, a system should be created in which producers in shortage can obtain an advance in oil from the cooperative. Such a system would decrease the incentives for forcing the yield of olive trees through heavy irrigation, chemical inputs, and tilling. However, because sufficient water is desirable for olive trees, the lack of irrigation could be addressed by an integrated water catchments system. As proposed by a group of students from Western Washington University in 2005, a system of rainwater catchments could be comprised in the redeveloped village. With the use of storage barrels and pumps, rainwater would be distributed in a manner that is not stressful to water sources in the area. Olive trees could then receive water during dry spells, encouraging olives to mature to their full potential.

Further Research The findings show that the setting for a sustainable olive oil system exists in Farsa because of the current low-impact, culturally conducive practices of olive oil production on Kefalonia, complimented by reformed European Union and Greek policies that support rural development and sustainable agriculture. The complimentary support of a cooperative that preserves sustainable practices within the production of olive oil, that maintains the olive trees for absentee land owners, and that acts as a managing and

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81 In October of 2005, a group of 5 Western Washington University students studying Industrial Design presented to the community of Farsa a plan to make efficient use of rainwater for the use of plumbing and irrigating in the future redeveloped village.
financing body for olive oil producers will be key to preserving the cultural heritage of the historic Farsa and to promoting sustainable rural development.

The community of Farsa, and its greater region of Kefalonia, was an ideal case study for exploring the hardships faced by communities in marginalized regions, factors that lead to agricultural abandonment, and its potential solutions. It was the intention of this research to contribute to a strategy for the revitalization of olive groves surrounding the area of Farsa. The problem is not, however, restricted to Farsa. This research work was limited to the area of Farsa due to temporal and monetary constraints. Further research into the resource potential that lies in abandoned groves island-wide would be complimentary to this work. The development of a sound business model, borrowing from what has been started by using the Robola wine cooperative as an example, would also be a useful contribution to the research begun on behalf of this marginalized rural area. Further studies should be made regarding EU grants for which olive producers using sustainable practices and young businesses may be eligible, as the financing alternatives to sustainable venture business development were not sufficiently evaluated. Other agricultural activities traditional to the island should also be explored in order to create a redevelopment strategy that is well-rounded and sustainable for generations to come. This thesis aspires to provide insight for other developing rural communities throughout the Mediterranean. The hope is that other agricultural communities with constraints and advantages similar to those in Farsa will benefit from some of the ideas outlined in this research. Marginalized communities are not restricted to developing nations. They occur where poor access, steep terrain, and other physical constraints render the once traditional and subsistent farming practices unviable in the current setting of mass production and international trade. By utilizing the concept of an agricultural business cooperative, while exploiting opportunities offered by globalization which simultaneously allows for tourism and exportation, economic viability may compliment the environmental and cultural values of these remote traditional agricultural communities.
APENDIX A: SURVEY TEMPLATES

1) SURVEY FOR OLIVE OIL PRODUCERS

1) Name:
2) Name of the press where you bring your olives:
3) The primary factor that influenced your choice: A) convenient location B) relationship with the managers/owners C) good economic deal D) other_______
4) Location of your olive groves:
5) The types of olives you grow to press:
6) Your preferred variety:
7) The yield in olives per tree
8) The yield in oil based on kilos of olives:
9) The number of stremata your trees are on:
10) The number of trees in production:
11) The number of trees out of production:
12) Olive tree density per stream
13) Circle the one that applies to you: A) you inherited your olive groves B) you purchased your olive groves
14) The percentage you pay to the press for making your olives into oil:
15) Circle the one that applies to you: A) payment is in cash B) payment is in oil C) payment is in combination of cash and oil.
16) Do you make an income from your oil: A) Yes B) No
17) If so, circle one: A) It is your primary source of income B) Secondary source of income or C) Very insignificant source of income:
18) The percentage of your olive oil that you a) sell:_____; b) consume:_______
19) a) About how much olive oil your household consumes per month:
   b) The number of people in your household:
20) Do you purchase olive oil outside of your own production: A) Yes B) No
21) Do you invest more money on producing oil than you get back: A) Yes B) No
22) What would make olive farming/oil production easier for you:
23) Do you receive any government aid?
24) If yes, in what form: A) subsidies B) grants
25) Would you like to sell more of your olive oil: A) Yes B) No
26) Who harvests your olives: A) You and your immediate family B) you and extended family/relatives C) you and friends D) Hired employees E) other_______
27) Circle the one that is the biggest factor in preventing you from competing on the market: A) small plots for cultivation B) terrain is too steep C) transportation
is too expensive D) you don’t have enough employees D) the initial costs for expanding are too great E) lack of affordable labor F) all of the above

28 Factors that would make it easier to sell your olive oil:

29 Why you choose to make olive oil:

2) Survey for Vendors: super markets, specialty shops, outdoor markets, and restaurants

This questionnaire is distributed by Amaris Lunde, a graduate student affiliated with AWISH Hellas for the redevelopment of Farsa. Our team has been working closely with the President of Farsa, the Governor of Kefalonia and the local residents that remain near Farsa to develop a promising plan to rebuild the village in a sustainable manner. This particular survey is focused on the local market for olive oil for the purposes of the thesis work of Amaris Lunde which aspires to create a model of an agri-economic activity within rural development. Your response would be much appreciated.

1 Name of your business:
2 Type of business:
3 What countries do your olive oils come from primarily? (if from Greece, which regions?)
4 What do you base your purchase on:
1) Price 2) quality 3) closest distance 4) connections/relations with the producers 5) Other __________
5 Do you carry olive oil that was produced on Kefalonia?
6 If yes, from whom do you buy? What area of Kefalonia?
7 Have you ever carried olive oil that was produced in Kefalonia?
8 Have any local producers ever presented themselves to you to sell their olive oil through you?
9 Have you ever sought out local olive oil producers to do business?
9b Why or why not?
10 Would you consider buying olive oil from a local producer if you were confronted?
11 Are there any other products that you buy locally?
11b If yes, what?
12 What would it take to make you more interested in buying olive oil from local producers?
13 About how many bottles of olive oil do you sell on average per month?

3) Survey for property owners within old Farsa

This questionnaire is distributed by Amaris Lunde, a graduate student affiliated with AWISH Hellas for the redevelopment of Farsa. Our team has been working closely with the President of the Athens Chapter of the Farsan Community, the President of Farsa, the Governor of Kefalonia and the local residents that remain near Farsa to develop a promising plan to rebuild the village in a sustainable manner. This particular survey is focused on agricultural resources, specifically olive oil for the purposes of the thesis work of Amaris Lunde which aspires to
write a model of an agri-economic activity within rural development. Your response would be much appreciated. Included is a self addressed envelope in which you may mail your response to our team.

0 Year born
1 What do you produce?
   Wine  Honey  Olive oil  other
2 What are you going to do with your olive trees in the case of rebuilding the old village?
3 Do you have olive trees on your property in Farsa?
4 Do you still collect those olives?
5 Do you use the oil for personal consumption, for sale, or for a combination of the two?
6 Did you used to participate in the harvest prior to 1953?
7 Who helped in the harvest?
8 Why don’t you cultivate your trees any more?
9 Would you like to bring your trees in old Farsa back into production?
10 Would you like to plant more olive trees on your land in Farsa?
11 What are some of your memories of the olive oil harvest in old Farsa?
12 Do you have olive trees elsewhere in Greece?
13 What aspect of the olive tree is important to you? Aesthetics  Producing oil  Other

Note: One business model to help people in a community pool their resources together and have access to pressing facilities is a cooperative. Like the Robola cooperative in Kefalonia, a Farsan olive oil cooperative could potentially tend to the land of absentee land owners, press their olive oil for them and pay them a percentage of the production, either in olive oil or in cash. Cooperatives require their members to pay annual dues to invest in the equipment and pressing facilities, and each member receives a share of the profits, according to the level of production they are contributing with their olives. Please answer the following questions regarding the possibility of an olive oil cooperative beginning in Farsa:

14 Prior to this survey, what was your knowledge on cooperatives?
15 Would you be interested in being a member of a cooperative olive oil mill operations in the redeveloped village?
16 Do you have any reservations about joining a cooperative olive oil system?
17 What kind of benefits would you most desire from being a member of a cooperative?

Note: There are marketing approaches to help sell agricultural products and raise their value. One such approach is Organic certification. This would require that you do not apply any chemicals to your trees or soil, including synthetic pest control, herbicides or fertilizers. This would improve the safety and arguably the quality of your oil, but would also raise its value and sell for more on the market. Please answer the following questions regarding organic certification for your olive oil that goes through the coop:
18 Prior to this survey, what was your knowledge on certified organic products?
19 How important is the consumption of organic products to you?
20 Do you think that following regulations under organic certification would be worth the possible economic returns it would give?

Thank you very much!

Amaris Lunde of Western Washington University

**APENDIX B: INTERVIEW TEMPLATES**

4) INTERVIEW FOR OLIVE OIL PRODUCERS
5) INTERVIEW WITH MR. AND MRS. VOUTSINAS
6) INTERVIEW WITH THODOROS CHIANIS
7) INTERVIEW FOR OLIVE MILL MANagements
8) INTERVIEW WITH THE ROBOLA WINE COOPERATIVE

1) Interview for olive oil producers

The General:
Name:
Why did you decide to start producing olive oil?
When did you start cultivating/producing oil?
How did you acquire your olive trees? Did you inherit or purchase the land and groves?
How many hectares of land are your olive groves on?
How many trees do you have?
The variety of olives you cultivate:
Are some easier for olive oil than others?
Which ones give the best yield?
Do you get olives every year or every other year?
How much olives in kilos do you generally get per year?
What yield in oil do you get per year in general?
What is the land like that you have your trees on?
What other agriculture or husbandry do you do?
What is your main source of income:

Cultivation practices:
What kind of pests do you encounter?
How do you treat these pest problems? Your technique:
Does the government spray for pests? Do you allow this? If you avoid it, how?
Is it possible to request that the government not spray for pests?
Do you irrigate?
Do you till the earth?
How do you encourage the health of your olive trees?
What do you do for fertilizers?
What do you do for weed control?
At their best, how many kilos of olives can each of your trees be expected to produce?
And at their worst, how many kilos of olives does each tree produce?
Would it even be possible for you to produce mass quantities of olive oil if you tried, i.e. tilled, irrigated, applied pesticides?
If so, why is it you do not follow such practices?

**Government and other support:**
Are you receiving support from the government? Municipal, national or European Union?
Is the support financial or knowledge-based?
Are you receiving support from non-governmental entities? Explain:
Are you aware of any programs that could help you in producing olive oil economically that you are not taking advantage of?
If so, why are you not taking advantage of these opportunities?

**Economics:**
Production costs:
How did you pay for the initial start-up costs of cultivating and producing?
What were the major costs at first?
What are the major costs now?
Did you have any outside help financially to start this new enterprise?
Who helps with the harvest?
Is olive oil production an economically lucrative activity for you?
If not, what are the reasons that make olive oil not economic for you?
Why do you continue to do it if it’s not economic for you?
In your opinion, what change in the system will it take for it to be more feasible for farmers in Kefalonia to cultivate/produce olive oil?

**Marketing & Business:**
What kind of olive oil do you produce?
Virgin, extra virgin:
Are you producing certified organic or under any other certification?
Who do you sell to?
What price does it cost you per bottle to produce oil?
What price do you sell each bottle produced?
Do you sell to any local retailers?
If not, why not? Have you ever tried?
Do you sell oil to friends? How does that work for you?
Where do you bring your olives to press?
On what factors did you make your choice of where to press?
What is your satisfaction level with your olive press/factory?
What happens to your wastes after the pressing: leaves and pits and waste water?
What are your major problems, complaints as an olive oil producer here in Kefalonia?
Will you continue to make olive oil in the future? Why or why not?
2) Interview with Mr. and Mrs. Voutsinas

The mill:
Whose family did the olive press belong to?
How many people owned the press?
And how many years was it in operation? (the new Farsa)
How many people worked there?
What years was the mill in function?
What months did it operate?
How did it support itself? Did people pay money or olive oil to the mill?
What were the major costs of running the mill?
Was the mill your main source of income?
How much of the village actually brought their olives there/how many families?
Did they do much at the other mill or was it just your grandfather?
So did everyone have olive trees?
Do they know how many olive trees approximately there were in old Farsa?
About how much oil did the mill produce every year?
How did you acquire the mill/ your olive trees? Did you inherit or purchase the land and groves?
Back then was there already the distinction between virgin, extra virgin, etcetera?
What kind did most people produce?
Who did they sell it to?
Oh, but what about the oil?
What kind of insect was it and how did they deal with it?
Was it chemical or a soap?
Did anybody sell or trade their oil, or did everyone make it for their own family only?
What happened to your wastes after the pressing: leaves and pits and waste water?
How many olive oil mills were there in Farsa?
Was there any competition between the various mills, or any other problems?
No.

Olive farming back then:
Do you have any idea how many trees there were in production around the village?
How many hectares of land were your olive groves on?
How many trees did you have?
The variety of olives you cultivated:
So they were smaller olives probably, with less water.
Did you get olives every year or every other year?
Describe the olive harvest: Who helped, how long did it last, did people generally look forward to it or resent it? Was there celebration around that time?
And how did they keep the olive oil?
Ceramic?
What was the land like that you had your trees on? Flat, hilly, steep?
What other agriculture or husbandry did you do personally and the villagers as a whole?
Was there any kind of financial support, either from the municipal government or a cooperative financial group to help support olive oil production?

**Cultivation practices:**
Was there the Dakos or other pest problems back then?
If yes, how did people treat them?
If no, why do you think there has been a change from no pests to severe problems with pests?
Did the municipality spray everybody’s trees for pests like the government does on Kefalonia today?
Did you have an irrigation system?
Was there enough rain at that time to encourage good olive growth?
Did you till(cultivate) the earth?
How did you encourage the health of your olive trees?
What did you do for fertilizers? Animal manure?
What did you do for weed control?

**Conclusion:**
Do you still have olive trees in the hills of old Farsa? Are they in or out of production?
Right, because they no longer cut them, they have pretty much abandoned them.
Would you like to plant trees in the old Farsa again?
She uses it to cook for everything?
Do you mostly serve it raw or use it to cook?
Where else do you have olive trees?

3) Interview with Thodoros Chianis
Can you name the olive varieties for me in the best English translation, and in the original Greek?
Are there abandoned olive groves in your area?
What will it take to bring people back to the abandoned trees and make oil from them again?
Tell me about the general state of olive oil production in Kefalonia.
IF the density increased here would you have the same problem?
Tell me about your dealings with olive oil producers through your job at Bio EU.
Do most farmers have olive trees?
Do most people in Kefalonia have olive trees?
Do most people inherit at least some of their olive trees?
Talk about the economics of olive oil production.
Do you have any stories of people fighting where there was olive oil or an olive tree involved?
Why do you think Kefalonians make olive oil?
In your opinion is olive oil production functioning in its ideal manner (is there a balance between what people put in and what they get out of olive oil production)?
If something needs to be changed to make olive oil production more conducive to a good quality of life for the producers/residents of Kefalonia, what is that?
What factors make it difficult to compete on the market?
*Do you think that Kefalonian olive oil would have a potential of being competitive, or is it restrained by too many factors? Or do you think that Kefalonians would not be interested in expanding their enterprises even if it were a possibility? 
Tell me about the way people treat the Dakos pest.
Are there other pest problems with olive trees?
Tell me about all the limitations here in Kefalonia in producing olive oil.
Do you know the general practices regarding weed control, and fertilizer application and pesticides? 
**What seems to be the level of knowledge of the average olive oil producer that you deal with regarding available grants or subsidies? Or other helpful programs? 
Once they’re informed do they generally take advantage of such opportunities? 
How helpful are subsidies in your opinion? 
Local olive oil seems to appear in restaurants but not so often in the grocery stores of Argostoli. Do you have an opinion as to why this disconnect between local oil producers and retailers?

4) Interview for olive mill management
What’s your name and position?
How many farmers bring in olives to be pressed?
Does each person monitor their own olive pressing, or is there a staff/team that presses for everybody?
What’s the contract/agreement between the press and the farmers?

**Investments**
What were the major start – up costs?
How did you meet up the start-up funding to open the coop?
What do you think would be the minimum number of farmers/kilos of olives to financially support the operations of a small olive press?
What are your major expenses in maintaining production and managing the coop?
What taxes do you pay as a coop?
Do you have employees?
Do you ever lose money in the production of the oil?

**Selling**
If you sell at all, at what scale?
To Whom?
What price does each one sell at wholesale price?

**Government influence**
Are there any government aids you do/can take advantage of? What are they?
How did you hear of the subsidies / grant?
Is the coop ever inspected by a government inspector / the ministry of agriculture?

**Oil production**
What’s the equipment you use?
What variety of olives do you take?
What factors do you think vital to the best oils?
What’s the range of liters of oil that you produce per year or last year?
What is your yield in oil in litters per kilo of olives?
What kind of waste comes of the oil process? And how do you dispose of the waste waters? What are the effects of these waste waters?

How prominent of a problem is Dakos to your farmers? (Do you know how they control it? Does anybody use alternative methods?)

Are there abandoned olive groves in your area?

Does anybody rent these abandoned groves out to be farmed by someone else? Or do you think there is anybody willing to tend to these trees in exchanged for the majority of the oil?

**Miscellaneous**

How long did it take between starting set – up and opening for operation?

When do you work?

What do you use to clean your tanks and other equipments?

How do you promote/market your oil(s)?

Where do you sell? Locally or away?

How significant are the transport costs?

**5) Interview at the Robola wine cooperative**

Tell me about the cooperative model: when this cooperative began, how it functions, what its benefits are to each individual producer.

How do you market your product?

Do you produce organic wine as well as conventional? In what ways is it different: harder to sell? More difficult to follow the guidelines? Higher price?....

What does the cooperative do to assure quality of its wine?

What are the member dues?

Do you ever seek out or receive grants? What grants is the cooperative eligible for?

Does the cooperative management care-take the vineyards of absentee owners?

What is the agreement between the land owners and the cooperative in this case?

Now does the cooperative itself receive any grants from the government?

And how many employees does the cooperative have?

What do you feel are the major challenges running a cooperative?

What is the range per litre for wines?

So what kind of places do you sell locally?

Are you your own distributor?

Is it a big cost to have a distributor or does it pay itself off?

How do you seek out grants?

What are the local, or national or EU policies that affect you? You know, such as regulations that you must abide by.

Did you tell me how many liters you produce per year of wine?

What kind of waste materials come from the wine process and what do you do with them?
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